Prevalence of Hepatitis B Virus among students of Faculty of Natural and Applied Sciences, Nasarawa State University, Keffi Nasarawa State Nigeria.

Abstract

Hepatitis is a major viral infectious agent of public health importance. The aim of this study was to determine the prevalence of hepatitis B virus among students of the Faculty of Applied and Natural Sciences, Nasarawa State University. The study involved 200 participants randomly selected from the departments that constitute the faculty. Collection and screening of blood samples were performed using standard procedures. Results obtained from the study revealed a high prevalence of 13.63% HBV infection among students within the ages of 21-25 years. The result also showed a higher prevalence rate of 8.42% for students accommodated within the university hostels. It further revealed a higher prevalence rate of 8.57% for the married students. It was also revealed through this study that the prevalence rate was higher among male students (8.42%) than that reported for the female students (2.85%). This study however revealed that common risk factors for hepatitis B infection among our participants were tribal marks and multiple sex partners. On the other hand, this study revealed that blood transfusion, tattoo mark and non-use of condom were not implicated as predisposing risk factors in HBV infection among the study population. From the outcome of this study, it can be deduced that age is a critical factor in HBV infection among students and thus must be given priority in policy formulations aimed at tackling the hepatitis B in the Nigeria the university.

Keywords: Hepatitis, Students, Blood, Virus, Prevalence

Introduction

Hepatitis B infection is a disease of the liver caused by the hepatitis B virus (HBV) which has a partially double stranded DNA and belonging to the family *Hepadnaviridae* [1]. It is one of the notable viral infectious agents of public health significance worldwide. Nigeria, is documented highly endemic for the said infection as about 75% of its population is likely to have been exposed to the virus at one time or the other [2]. Commonly, the virus has been transmitted by blood transfusion, fluids (semen, sweat, saliva and tears), use of contaminated needles, vertical transmission (mother to child) and sexual contact [3]. Owing to the fact HBV has the potential to

affect organs such as the liver and kidney, chronic infection is of particular concern. Prevention is the only safe strategy against high prevalence of viral hepatitis. Having enough knowledge and proper attitudes toward this infection is cornerstones of preventing transmission.

Young people constitute the larger population of the university and most studies had reported higher prevalence of hepatitis B among younger people as they are more likely to subscribe to the risk factors than the rest of the population groups. The university on the hand had not been sensitive to its roles in the promotion the health of the members of the university community by adequately sensitizating, screening and immunizing members of the university community. The Faculty of Natural and Applied Sciences is one the foremost and largest faculties in the Nasarawa State University and has almost the same number of female students as the male and thus information on the prevalence of an infection such as hepatitis B from such a system could be relied upon for effective policy formulation aimed at achieving a hepatitis B free system.

METHODOLOGY

Study location

The study was carried out in Nassarawa State University, Keffi located between Latitude 85'N of three equator and Longitude 78'E and on altitude of 85 m above sea level.

Sample Size Determination

$N = Z^2 Pq(1-p)/d^2$

N= desired minimum sample size if the target population is > 10,000

Z = standard normal deviation at the required confidence interval (1.96) which corresponds to 95% confidence interval

P = Prevalence rate 14% (0.2)

d= degree of accuracy (i.e 0.005)

Sample size was determined using the above formulae, after which 200 were randomly selected from each of the departments that make up the faculty.

Inclusion Criteria

All students of the Department of Applied Sciences who willingly consented to participate in the study and had not been immunized against HBV.

Collection of Blood Sample

The venous blood sample was collected from each participant using the prick method. The blood sample was aseptically transferred into the test strip and labeled properly for reading.

Sample Analysis

Enzyme-linked immunosorbent assay (ELISA) kit produced by LabACONR (Hangzhou Biotest Biotech Co., Ltd, China) which has sensitivity and specificity of 99.9% respectively was used according to the manufacturer's instructions. The result was reported as either positive or negative.

Table 1: Socio-demographic Characteristics of FAS Students of Nasarawa State University

AGE	NO SCREENED	POSITIVE	% PREVALENCE
15-20	31	3	9.67
21-25	44	6	13.63
26-30	40	2	5.00
31-35	18	0	0.00
36-40	40	0	0.00
46-50	9	0	0.00
51-55	5	0	0.00
Residence			
Hostel	95	8	8.42
Off-campus	105	3	2.85
Marital Status			
Single	165	8	4.84
Married	35	3	8.57
Divorced	0	0	0.00

Table 2: Prevalence of Hepatitis B virus infection among Male and Female Students of the Faculty of Applied Sciences, Nasarawa State University

GENDER	NO SCREENED	POSITIVE	% PREVALENCE
Male	75	8	8.42
Female	125	3	2.85
Total	200	11	11.27

Table 3: Predisposing factors to Hepatitis B Virus infection

History of Blood Transfusion	No. screened	Positive	% Prevalence
YES	43	2	4.63
NO	157	9	5.73
Tatto			
YES	98	0	0.00
NO	102	11	10.78
Tribal Mark			
YES	72	6	8.33
NO	128	5	3.90
Sharp Object			
YES	30	8	26.67
NO	170	3	1.76
Multiple Sex Partner			
YES	13	2	15.38
NO	187	9	4.81
Condom use			

YES	52	4	7.69
NO	148	7	4.72

RESULTS

Table shows the demographic characteristics of the Faculty of Applied students (FANS) of Nasarawa State University indicating that the highest prevalence of rate of HBV among students between the ages of 21-25 years. It also revealed that the prevalence among students accommodated within the hostel was higher (8.42%) that reported for off campus students were lower (2.85%). A higher prevalence rate of 8.57% was reported for married women, while 4.84% was reported for their unmarried counterpart. Table 2 shows the prevalence rate of HBV infection among male and female students of FANS, Nasarawa State University indicating a higher prevalence rate of (8.42%) for the male and 2.85% for the female. Table 3 shows the predisposing factors to HBV showing a prevalence of 5.73% among individuals who had never been transfused blood, while the prevalence among those who had been transfused was 4.63%. Similarly, the prevalence among individuals with tattoo was 10.78% that reported for people without tattoo was 0.00%. The prevalence rate among students with tribal marks was higher 8.33% than that reported for students without tribal marks (3.90%). The reported prevalence of this infection among students who had shared sharp objects with other was 26.67% while that recorded for those who had not shared sharp object with others was 1.76%. The prevalence of HBV was reportedly higher (15.38%) among students who had multiple sex partners than those

with just one sex partner (4.81%). The prevalence of the said infection was found to be higher among people who use condom (7.69%) contrary to that reported (4.72%) for non-condom users.

DISCUSSION

The national survey on seroprevalence of HBV infection confirms that HBV is endemic in Nigeria providing prevalence within the estimated prevalence in Sub-Saharan Africa [5]. In this study, the prevalence of HBV infection was reportedly higher among men than the women participants. This could be as a result of the fact that most Nigerian male are circumcised [6]. This factor is suggestive of the reason for the higher prevalence of HBV in males similar to Uganda and other sub-Saharan African countries, where chronic HBV infections have been found to be more common in males [7].Unprotected sex is a known means of transmission of HBV infection, and marriage provides a means of unprotected sex which could increase the chances of exposure and transmission of HBV. This view is supported by the findings of this study which reported higher prevalence rate among married students contrary to the observation made on their unmarried counterpart. In a similar study among students, married students had higher prevalence rate of HBsAg than the unmarried ones [8]. There has been a link between between age and acquisition of HBV. Age is one of the major determinants of the prevalence of HBV. In this study, the prevalence of HBV was highest among students within the age group of 21-25 years. A finding which is consistent with the report of Ndubuisi et al [9] which presented the highest prevalence of HBV among women within the ages of 24-35 years. This could be attributed to the fact that students within this age group are either in one form of sexual

relationship or the other which often may be observed without protection. This study however revealed that common risk factors for hepatitis B infection among our participants were tribal marks and multiple sex partners. This result partly conforms to the findings of Adebola et al [10] which identified tribal mark as a risk factor in HBV infection. On the other hand, this study revealed that blood transfusion, tattoo mark and non-use of condom were not implicated as predisposing risk factors in HBV infection among the study population.

CONCLUSION

From the outcome of this study, it can be deduced that age is a critical factor in HBV infection among students and thus must be given a place of pride in policy formulations aimed at tackling the menace in the Nigeria the university.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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