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PREVALENCE OF HEPATITIS B VIRUS INFECTION AMONG STUDENTS ATTENDING FEDERAL UNIVERSITY, GASHU'A CLINIC

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ABSTRACT

Hepatitis B virus infection is a major global health problem of public health importance. It's a major cause of liver disease worldwide. Therefore, this study was carried out to determine the prevalence of HBV infection among students attending Federal University Gashua Clinic. A self-administered questionnaire was used to obtained information from participants, and rapid tests were used for the detection of HBsAg. The data was analyzed using SPSS. Out of 200 students screened for HBV, 30(15%) were positive for HBsAg. This include 22(11%) among male students while 8(4%) were among their female counterpart. Also highest prevalence of HBV was recorded among students between age group >29 years (12%), followed by age group 26-29 (8%), then 22-25 (6%) and 18-21 years (4%) respectively. This study demonstrated that the prevalence of hepatitis B virus infection is high among this population and indicating high risk of horizontal transmission. Therefore, there is a need for prevention programs to target this vulnerable population. Keywords: Prevalence, Hepatitis B surface antigen (HBsAg), Gashua.

INTRODUCTION

Hepatitis B infection, which is caused by the Hepatitis B Virus (HBV), is a major public health problem with 2 billion people infected worldwide and more than 400 million chronic carriers worldwide. Globally it causes about 1.2 million deaths per year and various complications including chronic hepatitis, cirrhosis and liver cancer.¹ It was reported that 15-40% of HBV infected patients would develop cirrhosis, liver failure, or HCC and 500, 000 to 1.2 million people die of HBV infection annually.² "HEPATITIS" means "inflammation of the liver", and can also be caused by other types of infection (bacteria fungi etc); toxic drugs; poisons; alcoholism and others.³ Hepatitis B is spread when blood, semen, or other body fluids from a person infected with the virus enter the body of someone who is not infected. The virus is most commonly transmitted from mother to child during birth and delivery, as well as through contact with blood or other body fluids, including sex with an infected partner, injection-drug use that involves sharing needles, syringes, or drug-preparation equipment and needle sticks or exposures to sharp instruments.⁴ Age, gender, geographic region, socioeconomic status, immunization status, lifestyle, sanitation and hygiene, and their relative contributions can influence the prevalence of HBV infection.⁴. Hepatitis B surface antigen (HBsAg) is presents in about two weeks before the onset of symptoms and persists throughout the course of the disease. At the recovery, it declines and is no longer detectable after 4-5 months. Persistence of HBsAg beyond six months indicates chronic infection or a career state.⁵ Chronic Hepatitis B infection which encompasses a large spectrum of the disease remain a serious public health problems globally with over

240 million people being infected and causing 650,000 deaths annually. Liver cancer is the worst consequence of HBV infection and is the second leading cause of deaths due to cancer in the world.⁶ Sub-Saharan Africa (SSA) has the highest prevalence of Hepatitis B, with 80 million people carrying HBV.7 Despite Hepatitis B virus prevalence being relatively high in SSA, screening and treatment are still limited or absent in this region.⁸ The majority of the people in SSA regions become infected during childhood, and between 5 and 10% of the adult population is chronically infected. The pooled prevalence of Hepatitis B virus in Nigeria from studies carried out between 2000 and 2013 is 13.6% and for children it is 11.5%. 9Co-infection with evidence of chronic HBV seems to result in more severe liver disease than either infection alone.10

Hepatitis B virus is most commonly transmitted from mother to child at birth (Prenatal Transmission), or through horizontal transmission (exposure to infected blood), especially from an infected child to an uninfected child during the first 5 years of life.¹¹The Hepatitis B virus is normally transmitted through blood transfusion, contaminated equipment, drug users unsterile needles, or anybody's secretion (saliva

, sweat, breast milk, urine, etc).¹¹ Sexual transmission of Hepatitis B Virus which is scarcely documented, could also occur among healthy adults particularly when unvaccinated people engage in risky sexual behaviors.¹² The virus can also pass from the blood of an infected mother through the placenta to infect the fetus.¹³ Therefore the aim of this study is to determine the prevalence of Hepatitis B virus infection among students attending the Federal University Gashua Clinic, Bade local government, Nigeria.

Special Conference Edition, June, 2023 MATERIALS AND METHODS Study Area

The study was carried out at the Federal University, Gashua Clinic. The Federal University, is located within the campus of Gashua, Bade local government area of Yobe State. Its geographical coordinates are 12 52'5" North, 11 2'47" East. Gashua is a community in Yobe state in northeastern Nigeria, on the Yobe River a few miles below the convergence of the Hadejia River and Jamaare River.

Study Population

Two hundred (n = 200) blood samples from students of Federal University Gashua, aged between 18 to 30 were collected and screened for HBV. Blood samples were collected from individual who volunteered. Demographic information about each participant was obtained by oral interview and questionnaires, such information included sex, age, marital status, family history of HBV.

Sampling Method

For the purpose of this research, a simple random sampling was carried out. Two hundred students were enrolled and voluntarily agreed to participate in the study to identify the number of cases of hepatitis b infection due to hepatitis b virus as well as factors that influences the distribution of hepatitis b virus.

Experimental procedure

The blood samples are collected from two hundred (200) students of Federal University Gashua. Fifty (50) samples were tested for HBV each week to determine the prevalence rate of Hepatitis B. The blood sample was collected using the finger pricking method or venous collection.

Pricking Method for Blood Collection

The patients were asked to sit on the appropriate seat, wearing hand glove and use a cotton wool lightly soaked in alcohol to clean the finger, using firm strokes to remove grease from the ball of the finger. The finger is allowed to air dry. With a sterile lancet, the ball of the finger was punctured using a quick rolling action (Gordon, 2009).¹⁴ By applying gentle pressure to the finger, the first drop of blood was expressed and wiped away with dry cotton wool (making sure that no strands of cotton wool remained on the finger). The blood sample was collected by applying gentle pressure using a plastic pipette.

Venous Collection Method

Blood samples were collected as eptically by venipuncture using 5 ml sterile disposable hypodermic syringes and needles and transferred into anticoagulated bottles. The samples were allowed to settle, and the plasma obtained were used for the test.^{15, 16}

Determination for detecting HBsAg

Hepatitis B surface antigen (HBsAg) detection was done using the in vitro diagnostic kit manufactured by Wondfo Biotech Co., Ltd, USA. The test kit (dipsticks) is a rapid immuno-chromatographic assay designed for the qualitative determination of HBsAg in human serum or plasma. The assay was carried out at room temperature. The test strips were removed from their foil pouches and immersed into plasma samples with arrows pointing towards the samples. The strips were taken out after about 10secs and placed on a clean, dry, non-absorbent surface to stand for 10mins. This is to allow time for the reaction to take place. Positive samples generates a red colour band in the test region of the strips and another in the control region while negative samples showed a colour band in the control region only.

RESULTS

The results of the prevalence of hepatitis B virus (HBV) infection among students attending Federal University Gashua Clinic revealed that out of 200 serum samples screened, 30(15%) were positive for HBV, while 170(85%) were negative for HBV infection. (Table1).

Table 1: Distribution of Hepatitis B Virus infection among students attending Federal University
 Gashua clinic

 based on age
 Gashua clinic
 Gashua clinic

Variables	Number Examined N = 200	Number Infected N = 30	Percentage (%) N = 15
Age Distribution			
18 - 21	12	4	2
22 – 25	32	6	3
26 - 29	76	8	4
> 29	80	12	6

Distribution of hepatitis B virus infection among students attending Federal University Gashua Clinic based on sex revealed that out of 200 students that were screened for HBV, 30(15%) were positive for HBsAg (Table 2).

Table 2: Distribution of Hepatitis B Virus infection among students attending Federal University
 Gashua clinic

 based on sex
 Second Second

Gender	Number Examined N= 200	Number Infected N= 30	Percentage (%) N = 15
Male	140	22	11
Female	60	8	4

The risk factors that were associated with current HBV infection were: Having a sexual relationship, unprotected exposure to patient's body fluids, history of sexually transmitted disease, family history of hepatitis B virus infection, history of injection, history

of blood transfusion and needle stick injuries were significantly associated with HBsAg carriage (Table 3). Risk factors significantly associated with past exposure to hepatitis B were similar to those for current HBV infection. These include having a sexual relationship, unprotected exposure to patients body

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fluids, history of sexually transmitted disease, family history of hepatitis B virus infection, history of injuries (Table 4) **Table 3:** Risk factors for HBV infection among students with current infection (positive HBsAg)

	Males	Percentage (%)	Females	Percentage (%)
Variables	N = 140	N=100	N = 60	N=100
Having a sexual relationship				
Yes	8	5.7	6	10
No	132	94.3	54	90
History of STD				
Yes	3	2.1	4	6.7
No	137	97.9	56	93.3
				2010
			_	
Family history of HBV			/	11.7
Yes	15	10.7	53	88.3
No	125	89.3		
History of injection				
Yes	2	1.4	1	1.7
No	138	98.6	- 59	98.3
		2010		2010
History of HBV immunization				
Yes	10	7.1	5	8.3
No	130	92.9	55	91.7
History of unprotected body fluids exposure/needle stick injury				
Yes	5	3.6	2	3.3
No	135	96.4	58	96.7

Table 4: Risk factors for HBV infection among the students with past infection

	Males	Percentage (%)	Females	Percentage (%)
Variables	N = 140	N=100	N = 60	N=100
Having a sexual relationship				
Yes	16	11.4	10	16.7
No	124	88.6	50	83.3
History of STD				
Yes	6	43	4	10.7
No	134	95.7	56	03 3
NO	134	55.7	50	95.5
Eamily history of HB\/				11 7
	10	0.2	7	11./
fes	13	9.3	/	88.3
NO	127	90.7	53	
History of injection				
Yes				10
No	9	6.4	6	90
	131	93.6	54	
History of HBV immunization	101	5510	51	
Yes				
No		71		83
110	10	02.0	F	01.7
History of upprotected body	120	92.9	5	91.7
fluide and a meridia dia attick	150		55	
fluids exposure/needle stick				
injury	_		-	
Yes	5	3.6	2	3.3
No	135	96.4	58	96.7

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The prevalence of HBsAg among students attending Federal University Gashua Clinic was 15.0%. The prevalence is inline with most studies carried out in Nigerian children where the prevalence ranged from 4.1% to 44.7%. This prevalence is greatly higher than 4.1% reported on adolescents age group in south eastern Nigeria, and 13.3% reported among people of local community in Keffi, Nigeria.¹⁷ In contrast, it is also lower than 18.6% reported in Oshogbo, Nigeria¹⁸, and 21.3% reported in Ibadan, Nigeria.¹⁹ Universally, it is higher than 11.5% reported among medical students in eastern Ethiopia²⁰ but it is lower than 67.4% reported in Northern Tanzania²¹

In 2017, estimates from the Institute for Health Metrics and Evaluation indicated that deaths due to viral hepatitis outnumbered those of tuberculosis, HIV, or malaria, with deaths from viral hepatitis s projected to exceed the combined mortality of tuberculosis, HIV, and malaria by 2040.²²¹²³. Globally, the majority of deaths due to HBV are from complications of cirrhosis and hepatocellular carcinoma, with a small minority from acute infection²⁴. Also, globally, an estimated 296 million people, or 3.8% of the world's population, are living with chronic HBV infection. Of these 296 million, the majority live in the WHO-defined Africa and Western Pacific regions.²⁵

The results of this research, prevalence of hepatitis B virus (HBV) infection among students attending Federal University Gashua Clinic reveals that out of 200 serum samples tested, 30(15%) were positive for HBV, while 170(85%) were negative for HBV infection. Higher prevalence of HBV was recorded among students between age group >29 years

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12(6%), followed by age group 26-29 8(4%), then 22-25 6(3%) and 18-21 years 4(2%) respectively (Table1).

Distribution of hepatitis B virus infection among students attending Federal University Gashua Clinic base on sex revealed that out of 200 students that were screened for HBV, only 30(15%) were positive for HBsAg. This include 22(11%) among male students while 8(4%) were among their female counterpart (Table 2).

CONCLUSION

This study revealed the prevalence of hepatitis B virus infection among students attending Federal University, Gashua Clinic. Of the 200 serum samples tested, 30(15.0%) were positive for HBV infection. This shows that hepatitis B virus is an endemic among students and indicating high risk of horizontal transmission.

RECOMMENDATIONS

- 1. Sharing of materials such as razor blades, toothbrushes, nails care tools among others, should be avoided among students.
- Students should be sensitize on the risks associated with horizontal transmission of HBV
- 3. Students should receive vaccine in order to achieve long term protection.
- 4. More knowledge about prevention is needed among students and appropriate educational programs regarding HBV and its modes of transmission, infection and the way of prevention.

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