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RESEARCH ARTICLE

PROFILE OF HEPATITIS B VIRUS IN RELATION TO EDUCATIONAL AND OCCUPATIONAL STATUS OF PATIENTS IN KARU, NASARAWA STATE OF NIGERIA

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ABSTRACT

Image classification has gained vital attention Investigations were carried out to determine Hepatitis B virus profile of patients in Karu, Karu Local Government Area of Nasarawa State, Nigeria. A total of three hundred and eighty four (384) blood samples comprising of two hundred and forty (240) male and one hundred and forty four (144) female were collected from patients using 5ml syringe and needle. The blood samples were dispensed into ethylene diamine tetra acetic acid (EDTA) tubes. Each sample was centrifuged at 3000 revolution per minute for 5 minutes in a centrifuge to get the plasma. Three (3) drops of each sample (plasma) was dropped into the five sample wells and results were recorded in fifteen minutes. Results showed that the highest rate of infection was from those in secondary schools with 90(48.39%) followed by tertiary institution with 78 (41.93%). Those in the tertiary institution and secondary schools were more at risk with 12(40.00%) positive HBe Ag each with the least from the adult education and no any form of education 0(00.00%). There was significant difference ($p<0.005$) with rate of hepatitis B virus infection between educated and uneducated individuals. Business individuals were more infected with 78(40.63%) followed by students 66(34.37%). Civil servants infected with HBV were 36(18.75%) and applicants 12(6.25%). There was no significant difference ($p>0.05$) between business men and their non- business counterparts. Vaccination is important in the prevention of infection with this virus. Therefore mass immunization of those not vaccinated and enlightment programs be encouraged through campaigns, seminars and workshops.

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INTRODUCTION

Hepatitis generally is the inflammation of the liver and it is mainly caused by viruses, auto-immune diseases, chemical agents and irradiation (Ochei and Kolhatkar, 2007). Eleven viruses are currently recognized as causing hepatitis. Two of these are herpes viruses (Cytomegalovirus and Epstein Barr virus) and nine are hepatropic viruses that specifically target liver hepatocytes (Willey *et al.,* 2008). Conventionally, hepatitis refers to the disease caused by viruses which primarily affects the liver. This is mainly caused by hepatitis viruses which include hepatitis A, B, C, D, and E and hepatitis G and Transfusion Transmitted Virus (TTV) that were recently discovered and not properly characterized (Ochei and Kolhatkar, 2007; Willey *et al.*, 2008).

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Most people become infected at birth or through sexual means, vertical means (mother to child at birth), contact with body fluids such as blood and blood products during transfusion, and body fluids contaminated equipment (Baker *et al*., 2009; Falase and Akinkugbe, 2002; Willey *et al.,* 2008). The virus can also pass through the placenta to the fetus of an infected mother and through other means such as saliva, sweat, semen, breast milk, urine, faeces (Falase and Akinkugbe, 2002; Willey *et al.,* 2008). Blood and other body fluids can be infectious by mouth; the virus infecting the recipient through small scratches or abrasions (Nester *et al*., 2009). It is also the most frequently reported laboratory acquired viral infection, especially in people working in clinical laboratories and with blood (Willey *et al.,* 2008). Some authors called it an occupational disease among medical and dental personnel (Grist and Mandel, 1986; Lozano *et al*., 2010). The disease could be symptomatic or asymptomatic. Half of the people infected are asymptomatic. However, symptoms normally appear 1-4 months after contact in those that are symptomatic (Willey *et al*., 2008).

MATERIALS AND METHODS

Sample Size: With a population of 205,477; confidence level = 95; confidence interval = 5. The sample size = 383(Raosoft.com software).

Sample collection: Samples of 5ml of blood were collected from each patient using a 5ml syringe and needle. It was dispensed into ethylene diamine tetraacetic acid (EDTA) tubes. Blood samples were centrifuged at 3000 revolutions for five minutes. The plasma was dispensed into clean, labeled tubes using Pasteur pipette and was immediately subjected to analysis

Sample analysis: The reagent and stored samples were brought to room temperature (27^0C). The pouch at the notch was removed from the device. The test device was placed on a clean, flat surface and labeled with the respective specimen's number. The plasma was taken from the tubes using a dropper; 2-3 drops (60-90µl) into each of the sample wells ensuring no bubbles. The buffer was added to specimen that did not flow within thirty seconds to the result window. The timer was set and results were recorded within fifteen minutes. This analysis was carried out according to manufacturer's instructions.

Questionnaires: Questionnaires were used to seek information from every client with respect to occupational and educational status (primary education, secondary education, tertiary education, adult education and no any form of education).

Statistical analysis: The POSHOC for multiple comparism at 95% level of confidence using Excel 2001was used.

DISCUSSION

Results from the analyses of hepatitis B virus infection based on level of education showed that rate of infection was low among the educated and high among the uneducated. This could be due to the fact that their high educational status exposed the educated ones to enlightenment programs that broaden their horizons on the dangers of this virus. This is in agreement with the study of Wang *et al*. (2002) that the higher the educational status of an individual, the lower the rate of infection with hepatitis B virus. This is also in agreement with a study among pregnant women in Eastern Nigeria where it was found that the prevalence of this virus decreased with increase in educational and social status of the women (Emechebe *et al.*, 2009).

Those susceptible to the infection could be as a result of lack of exposure to programs that will enlighten them on measures to adapt in the prevention of this virus, or might have acquired the virus from childhood or due to close contact with the infected clients or other means of transmission as opined by Cheesbrough (2004); Lucas and Gilles (2009); Nester *et al*. (2009); Willey *et al*. (2008). Statistically, there was significant difference ($p<0.05$) between rate of infection among the educated and the uneducated. The rate of infection was also high in business individuals than their non-business counterparts, this may be attributed to the fact that they are prone to travelling, and if they are not vaccinated interaction with business partners who are infected and are not vaccinated will put them at risk and subsequently they may become infected as opined by Lucas *et al.* (2009). There was no significant difference ($p>0.05$) in rate of infection between business individuals and their non-business counterparts.

RESULTS AND DISCUSSION

Table 1. Hepatitis BVirus Profile Based on Educational Status of Patients in Karu

HBs Ag HBe Ag HBs Ab HBe AbH BcAb

ES	N(%)	P(%)	N(%)	P(%)	N(%)	P(%)	N(%)	P(%)	N(%)	P(%)
No any form (6)	0(0.00)	6 (3.23)	6(1.69)	0(0.00)	6(1.75)	0(0.00)	0(0.00)	6(2.56)	6(2.70)	0(0.00)
Adult (6)	6(3.03)	0(0.00)	6(1.69)	0(0.00)	6(1.75)	0(0.00)	0(0.00)	6(2.56)	0(0.00)	6(3.70)
Primary (36)	24(12.12)	12(6.45)	0(8.48)	6(20.00)	30(8.78)	6(14.29)	6(4.00)	30(12.82)	12(5.40)	24 (14.82)
Secondary (168)	78(39.39)	90(48.39)	156(44.07)	12(40)	162(47.37)	6(14.29)	90(60)	78(33.34)	102(45.95)	66(40.74)
Tertiary (168)	90(45.46)	78(41.93)	156(44.07)	12(40)	138(40.35)	30(71.42)	54(36)	114(48.72)	102(45.95)	66(40.74)
Total (384)	198(100)	186(100)	354(100)	30(100)	342(100)	42(100)	150(100)	234(100)	222(100)	162(100)

F_{cal}– 3.08. ($P<0.05$)Significant at 0.05 level of significance.
Key
HBsAg = Hepatitis B surface antibody; HBeAg = Hepatitis B enzyme antigen; HBsAb= Hepatitis B surface antibody; HBeAb = Hepatitis B enzyme antibody; HBcAb Hepatitis B core antibody; ES= Educational status, N= Negative, P= positive

Table 2. Hepatitis BVirus Profile Based on Occupational Status of Patients in Karu

	HBsAg		HBeAg		HBsAb		HBeAb		HbcAb	
OSN	(%)	P (%)	N(%)	P(%)	N(%)	P(%)	N(%)	P(%)	N(%)	P(%)
CS (114)	78(40.62)	36(18.75)	114(32.20)	0(0.00)	96(28.07)	18(42.86)	90(44.12)	24(13.33)	54(24.32)	60(37.04)
BS (126)	48(25.00)	78(40.63)	120(33.90)	6(20.00)	120(35.09)	6(14.29)	66(32.35)	60(33.33)	84(37.84)	42(25.93)
APP (30)	18(9.38)	12(6.25)	30(8.48)	0(0.00)	18(5.26)	12(28.57)	18(8.82)	12(6.67)	12(5.41)	18(11.11)
ST (114)	48(25.00)	66(34.37)	90(25.42)	24(80)	108(31.58)	6(14.29)	30(14.71)	84(46.67)	72(32.43)	42(25.93)
Total (384)	192(100)	192(100)	354(100)	30(100)	342(100)	42(100)	204(100)	180(100)	222(100)	162(100)

F_{cal} 2.20. f_{value}3.03. Significant at 0.05 level ($P>0.05$).

Key: HBsAg = Hepatitis Bsurface antigen; HBeAg = Hepatitis B enzyme antigen; HBsAb = Hepatitis B antibody; HBeAg = Hepatitis B enzyme antibody; HBcAb Hepatitis B core antibody; CS = Civil servants; BS= Business; APP = Applicants; ST= Student; OS = Occupational status, N= Negative, P= Positive

Conclusion

Based on the analysis carried out from this study, it was concluded that Hepatis B virus infection rate was low among the highly educated and highest among businessmen with respect to occupational status. HBV can be transmitted from infected to uninfected individuals, therefore people from all works of life should be vaccinated.

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