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Prevalence and Awareness of Hepatitis B Infection Among Blood Donors in Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH), Bauchi, Nigeria

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Abstract

Blood screening exercise was performed with one hundred (100) blood samples donated by blood donors at Abubakar Tafawa Balewa University Teaching (ATBUTH) Hospital, Bauchi to investigate the prevalence of Hepatitis B infection among them as well as their awareness about the risk factors of the disease. Results from this study showed that 18% of the blood donors examined were reactive to Hepatitis B surface antigen; while 17% of the blood donors have never heard of Hepatitis B and 88% have never ever been vaccinated with Hepatitis B vaccine. Having an infected family member and being a trader by occupation were found to be the major risk factors of having the disease. In conclusion, the general public should be properly educated on Hepatitis B infection and all susceptible individuals especially those with infected family members and traders should be vaccinated.

Keywords: *Hepatitis B, Blood Donor, Prevalence, Awareness, ABTUTH*

1. Introduction

Hepatitis B Virus (HBV) is one of the most important causes of chronic liver disease in the world and the second most important carcinogen after tobacco (Slide share, 2013). It continues to be a global public health problem despite large-scale efforts to eliminate this chronic viral disease via education, screening, and vaccination programs (Alexander and Knowdley, 2006). An estimated 2 billion persons worldwide have been infected with Hepatitis B virus and more than 350 million have chronic lifelong infections. The virus is an established cause of acute and chronic hepatitis and Cirrhosis. It is the cause of up to 80% of hepatocellular carcinomas (CDC, 2012).The disease has caused epidemics in parts of Asia, Africa and it is endemic in parts of China (Barker *et al*., 1996). According to WHO, an estimated 600,000 people die every year in relation to the infection (CDC, 2012).About 5-10% of infected adults become chronic carriers. Over time, approximately 15-25% of people with chronic hepatitis B develop serious liver problem (CDC, 2012). Emechebe *et al.,*(2009) reported that Hepatitis B virus carriage rate in Nigeria ranges from 9-39%, and a carrier rate above 7% in a population is classified as hyper endemic.

Hepatitis B is a contagious disease. Blood transfusion has become a major mode or route of transmission of HBV in high prevalence areas such as sub Saharan Africa. Transfusion of infected blood or blood products and unprotected sex are two key transmission routes of HBV. Indeed, the WHO has documented that between 5 and 10% of Human Immune Deficiency Virus (HIV) infections worldwide are transmitted through the transfusion of contaminated blood and blood products. Thus, indicating that many more recipients of blood products are infected by HBV, Hepatitis C Virus (HCV), Syphilis and many other infectious agents. The WHO has estimated that ≤50% of blood supply in sub-Saharan Africa is screened for HBsAg due to lack of perceived utility and/or lack of funds (Dongdem, 2009).

Since detecting Hepatitis B Surface Antigen (HBsAg) in Serum is indicative of either acute or chronic phase of HBV infection (Hollinger and Dienstag, 1990). This study was aimed at detecting the prevalence and awareness of Hepatitis B surface antigen in the sera of blood donors in Abubakar Tafawa Balewa University Teaching Hospital Bauchi.

2. Materials and Methods

2.1. Study area

Bauchi State is located in the North Eastern part of Nigeria with a population of 5,751,429 people (2006 census- Projected). It has a surface area of 49,259 sq. km The State shares border with seven other states: Yobe State to the North - East, Jigawa State to the North – West, Kano and Kaduna States to the West, Gombe State to the East, Taraba and Plateau States to the South. Bauchi State is made up of twenty (20) Local Government Areas (LGAs) with 323 Political Wards. Bauchi city is the

State capital and it houses Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH) which serves as a referral center for lower level health facilities from the entire Bauchi State and some neighboring states. However, the hospital attends to primary and secondary health concerns of large proportion of residents of Bauchi town. ATBUTH has a blood bank where blood is donated and kept for emergency situations.

2.2. Sampling size

Blood donors at ATBUTH Bauchi who consented to participate were recruited for the study. One hundred (100) blood samples were collected over a period of 2 months and analyzed.

2.3. Data Collection

Data was collected by conducting interview to blood donors using a structured questionnaire containing three sections .Section I assessed the prevalence of Hepatitis B by among blood donors; Section II assessed the knowledge and awareness of the subjects about HBV while Section III assessed the risk factors in onward transmission of the virus.

2.4. Laboratory Analysis

Blood samples collected from consented blood donors were analyzed for HBsAg using One step Hepatitis B surface antigen test strip manufactured by Bundi International Diagnostics Ltd. The test kit is a qualitative, lateral flow immunoassay for detecting of HBsAg. The screening was carried out according to the manufacturer's instructions. The interpretation of test results was performed according to the manufacturer's specification.

3. Results

Out of the 100 blood donors, 2 (2%) were female while 98%were male. 20%of the donors were in the age range below 20 years, 41% were between age 20-29 years, 31% were between age 30-39 years while the remaining 8% were above 40 years as shown in Table 1.51% of those recruited for the study were married, 48% singles and 1% widowed. None of the respondents was divorced. Based on educational status, blood donors with secondary education were highest with 48%; 29% had post-secondary education; 13% had no formal education while 10% had primary education. Occupation of the donors showed that 29% are civil servants; 24% were traders;19% artisans,17% students and 13% farmers as shown in Table 5.

Results of Hepatitis B screening among blood donors over the period under review are as shown in Figure 1. Out of the 100 samples screened, 18 were reactive to HBsAg, representing an overall prevalence rate of 18%. None of the 2 female donors was reactive, all the 18 reactive cases were males, representing18.3%of the males recruited as shown in Table 2.Table 2 also showed the distribution of HBV carriers according age, those within the age group 40 years and above (even though only 2 in number but because those within that age group recruited were only 8) have the highest percentage of 25% positivity followed by those between the age range of less than 20 years who were 20 in number and had 4 positive cases giving a percentage of 20% among that age group. The age group 20-29 years had 19% positivity while 30-39 years had 16.1% prevalence rate. Table 3 shows Hepatitis B positivity by marital status. The singles had 9 positive cases and the married had 9 positive cases, but because the number recruited for married was 51 and 48 for singles , the prevalence rate for married was 17.6% while it was 18..7 % for singles. It was further observed with regard to level of education, in Table 4 that the highest prevalence rate was with those without formal education, 4/13 (30.7%), followed by those with secondary education 11/48 (22.9%) , those with primary education 2/10 (20%)and least in those with post-secondary education 1/29 (3.4%). Table 5 showed the distribution of Hepatitis B virus in relation to occupational type as an index of socio-economic status. This revealed that highest reactors are Traders 10/24 (41.6%) followed by farmers 3/13(23%), artisans 3/19(15.7%), students 1/17(5.7%) and the least among civil servants 1/ 27 (3.7%).Figure 2 shows that 83% of Respondents recruited have heard about Hepatitis B while 17 % have not. It was also observed that 33.7% of those that have heard of Hepatitis B heard it through Information, Education and Communication (IEC) Materials, 30.1% heard about it in Hospitals, 28.9% in the Community and 7.2% heard during sensitization talk by Ministry of Health as represented in Figure 5. 79% of Blood donors who have ever heard of Hepatitis B know that the infection is caused by a Germ while 83 of them (100%) know at least one sign or symptom of Hepatitis B and 90% of respondents know at least one route of transmission of the infection as shown in Figure 3.Table 6 shows risk factors for Hepatitis B among respondents. 88% have never ever been vaccinated with Hepatitis B vaccine while 12% have ever received the vaccine. 28 % of respondents have a member of their family infected with Hepatitis B, 66% still share sharp objects e.g. razor blade with others and 38% have multiple sex partners. Respondents who had a family with hepatitis were 6 times more likely to react to HBsAg compared to those who did not give history of having a family member with hepatitis, furthermore, respondents who engage in trading as means of livelihood were more than 4 times more likely to react to the HBsAg compared to respondents who were engaged in other occupations. Age, having multiple sexual partners, use of sharp objects, educational level, knowledge about hepatitis, vaccination against hepatitis and marital status were not statistically associated with being positive to HBsAg among the respondents as shown in Table 7.

Table 1: Age and Sex Distribution of Blood Donors

Parameters	Variables	Frequency (No)
Sex	Male	98
	Female	2
Age in years	< 20	20
	20 – 29	41
	30 – 39	31
	≥ 40	8

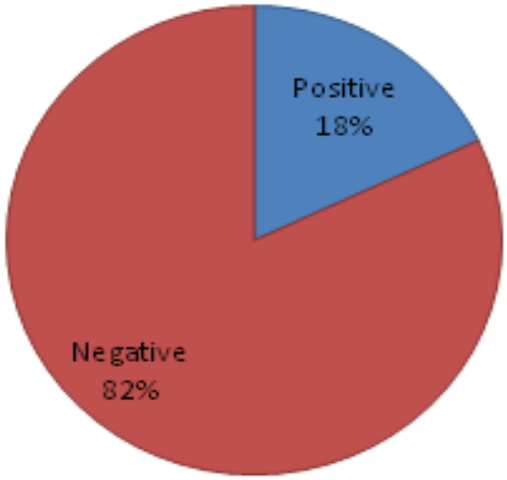

Figure 1: Hepatitis B Status of Respondents

Table 2: Prevalence of Hepatitis B by Sex and Age of Respondents

Parameters	**Variables**	**Hepatitis B**	
		Negative (%)	**Positive (%)**
Sex	Male	80 (97.6)	18 (100)
	Female	2 (2.4)	0 (0)
Age in years	< 20	16 (80)	4 (20)
	20 – 29	34 (83)	7(17)
	30 – 39	26 (83.9)	5 (16.1)
	≥ 40	6 (75)	2 (25)

Table 3: Prevalence of Hepatitis B by Marital Status of Respondents

Marital status	**Hepatitis B**		**Total**
	Negative (%)	**Positive (%)**	
Single	39 (81.3)	9 (18.7)	48
Married	42 (82.4)	9 (17.6)	51
Widow	1 (100)	0 (0)	1
Total	82 (82)	18 (18)	100

Table 4: Prevalence of Hepatitis B by Educational Status of Respondents

Marital status	**Hepatitis B**		**Total**
	Negative (%)	**Positive (%)**	
No formal education	9 (69.3)	4 (30.7)	13
Primary Education	8 (80)	2 (20)	10
Secondary Education	37 (77.1)	11 (22.9)	48
Post-Secondary Education	28 (96.6)	1 (3.4)	29
Total	82 (82)	18 (18)	100

Table 5: Hepatitis B Positivity by Type of Occupation

Occupation	Hepatitis B		Total
	Negative (%)	Positive (%)	
Farming	10 (77)	3 (23)	13
Trading	14 (58.4)	10 (41.6)	24
Artisan	16 (84.3)	3 (15.7)	19
Civil Servant	26 (96.3)	1 (3.7)	27
Student	16 (94.2)	1 (5.8)	17
Total	82 (82)	18 (18)	100

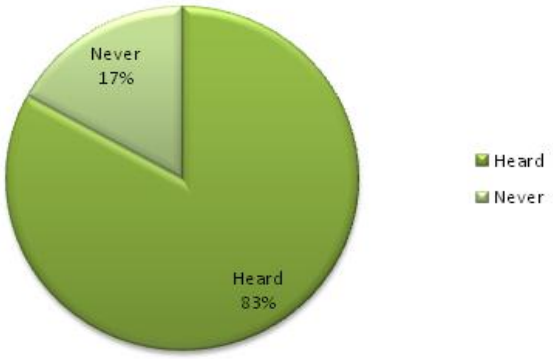

Figure 2: Level of awareness of respondents about HBV Infection

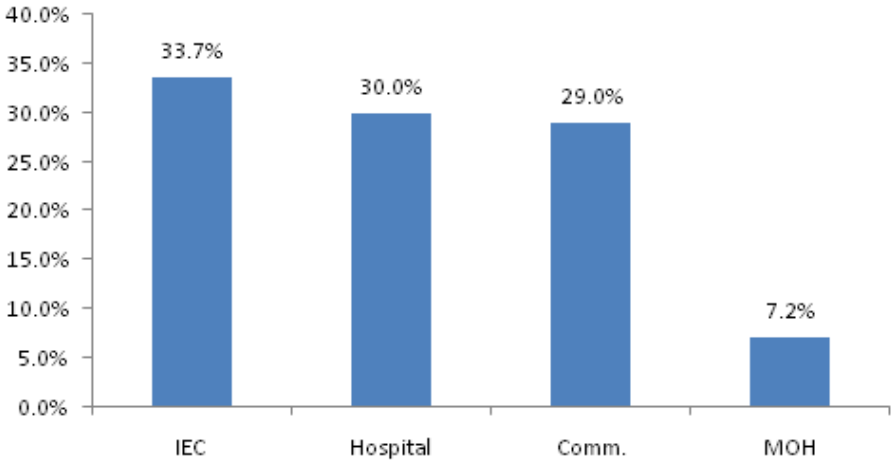

Figure 3: Distribution of Routes through which Respondents heard of Hepatitis B

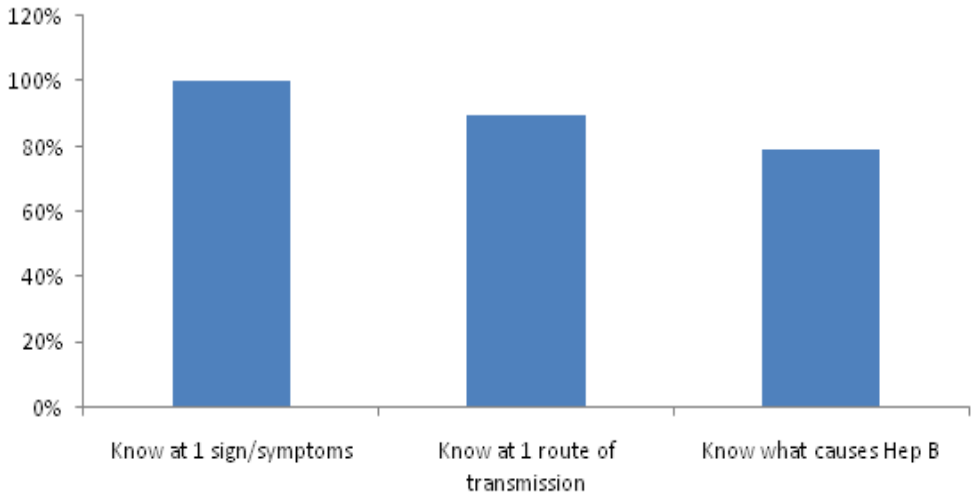

Figure 4: Knowledge of Hepatitis B among Respondents

Table 6: Risk Factors among Respondents

Factors	Yes (%)	No (%)	Total
Ever received Hepatitis B Vaccination	12 (12)	88 (88)	100
Family member infected with Hepatitis B	28 (28)	72 (72)	100
Sharing of Sharp objects with others	66 (66)	34(34)	100
Having multiple Sex partners	38 (38)	62 (62)	100

Table 7: Factors associated with being reactive to HBsAg among the blood donors

Factors		HBsAg		OR	95% CI	P-Value
		Positive	Negative			
Age	< 20 years	4	16	1.72	0.45 – 6.31	0.36
	≥ 20 years	14	66			
Multiple sex partner	Yes	6	32	0.78	0.23 – 2.55	0.65
	No	12	50			
Know Hepatitis B	Yes	14	70	0.61	0.15 – 2.63	0.44
	No	4	12			
Share sharp objects	Yes	12	50	1.28	0.39 -4.30	0.65
	No	6	32			
Education	< Secondary	6	17	0.95	0.23 – 3.62	0.93
	≥ secondary	12	65			
Heard about Hepatitis B	Yes	14	69	0.66	0.16 – 2.82	0.51
	No	4	13			
Received Hepatitis B Vaccine	Yes	3	9	1.62	0.31 – 7.76	0.50
	No	15	73			
Family member with Hepatitis B	Yes	11	17	6.01	1.80 – 20.61	0.0006
	No	7	65			
Marital status	Single	9	40	0.95	0.31 – 2.95	0.93
	Married	9	42			
Occupation	Trader	10	14	5.58	1.67 – 19.07	0.0009
	Non Trader	8	68			

4. Discussion

An overall prevalence rate of 18% for HBV was recorded during this study period. This prevalence rate falls in the category of high endemicity as defined by Uneke (2005), which states high endemicity for HBV infection as HBsAg values greater than 7% in an adult population. The occurrence ratio with regard to sex showed that all positive cases were males. A similar report (Odusanya *et al.,* 2005) accounts for significantly higher HBsAg prevalence in males. This finding of higher seroprevalence in males compared with females is also in keeping with the conclusion drawn by Chui et al that there is a physiologic mechanism for increased vulnerability of men to HBV infection. This may be connected with more sexual activities in males as reported by Ado *et al.,* (2008)

The age distribution ratio indicates high occurrence in Blood donors within the age group above 40 years (25%). This does not conform to findings by Mbaawuaga *et al.,(*2000) which reported high frequency of teenagers 10 to 19 and 30 to 39 age groups. Occupational type which was considered as an index of socio-economic status shows that traders were the highest positive reactors (41.6%). This could be connected with the level of interaction of the people of this occupation with other people leading to risk factors like sharing of sharp objects and having multiple sex partners. Educational background of the blood donors indicates highest HBV reactors amongst those with no formal education (30.7%) and the least amongst those with post-secondary education (3.4%)This implied correlation between HBV occurrences and level of education as observed by Bello *et al.,(*2012) which stated that there is an association between the prevalence of HBV and education. This study showed that majority of respondents (83%) have heard of Hepatitis B. This indicates that there is an appreciable level of knowledge among Respondents. This agrees with Samuel *et al.,* (2009) who reported in their similar study that a majority of the respondents demonstrated a high level of knowledge of HBV infection and its routes of transmission. However, there are still gaps as 17% of respondents have never ever heard of the disease.

Thi**s** cross sectional study of blood donors revealed that respondents who had a family member with hepatitis B were 6 times more likely to react to HBsAg compared to those who did not give history of having a family member with hepatitis B. This is statistically significant **(OR 6.01, CI 1.80-20.61, P Value 0.0006).**Hepatitis B Virus infection has long been

recognized to exhibit familial clustering (Nwokeduiko, 2010). Hong *et al,.(*2011) also found in their studies that HBV is more frequently transmitted in the families with hepatitis B patients;

Furthermore, respondents who engage in trading as means of livelihood were more than 5 times more likely to react to the HBsAg compared to respondents who were engaged in other occupation. (OR 5.58, CI 1.67-19.07, P Value 0.0009) This agrees with Hong *et al.,* (2011) who stated that. HBsAg positivity rates were higher in private small-businessmen. This could be because these categories of people engage in risky social activities or unhygienic living habit and other factors. These factors may increase the risk of contact and rate of infection compared with other occupations. These differences were correlated with a high infection rate, but further investigations are needed for better understanding of the mechanisms of these relationships.
Age, having multiple sexual partners, use of sharp objects, educational level, knowledge about hepatitis B, vaccination against hepatitis B and marital status were not statistically associated with being positive to HBsAg among the respondents.

Conclusion

The prevalence of HBV infection among blood donors in Abubakar Tafawa Balewa University Teaching Hospital was 18%.The rate was high among blood donors who represent a significant part of the population. The factors associated with being HBsAg positive were significant in this study included having a family member infected with Hepatitis B and trading as an occupation. Also knowledge of blood donors about Hepatitis B was good but there were still important gaps which need to be strengthened or filled.

Recommendation

To reduce the aforementioned prevalence, it will be necessary for the Health Authorities and NGOs to:

a. Educate people about risk factors, mode of transmission and prevention of Hepatitis B infection.
b. Provide enough Hepatitis B vaccine and immunize all susceptible individuals especially those with an infected family members and traders.

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