OPEN ACCESS International Journal of Applied Biology

ISSN : 2580-2410
eISSN : 2580-2119

Sero-Prevalence of Transfusion Transmissible Hepatitis Viruses Among Blood Donors in Ilorin, Kwara State

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Abstract

The burden of hepatocellular carcinoma as well as other health complications associated with infections due to Hepatis B and C Viruses are significant around the world. A number of research suggests that assumed healthy living individuals and potential blood donors are the major reservoirs of the Viruses in the community. During the course of this study, a total of 300 apparently healthy blood donors who presented to the blood group serology unit for blood donation across Ilorin, Kwara State, Nigeria, were screened to determine the Sero-prevalence of Transfusion Transmissible Hepatitis Viruses (Hepatitis B and C Viruses). Blood samples obtained from consented potential blood donors were collected and tested for Hepatitis B surface antigen (HBsAg) and Anti-HCV using immunochromatographic methods. The positive samples after the initial qualitative screening were subjected to Enzyme Linked Immunosorbent assay (ELISA) for confirmation of HBV and HCV Immunoglobulin G (IgG) following standard best practices. The results showed that 10% and 0.7% of the blood samples tested positive for HBV and HCV respectively. The male donors had more HBV infection 24 (8.0%) than the females 6 (2.0%). Donors with O Rhesus D positive blood type had more HBV infection 12 (4.0), while blood groups AB Negative, B Negative and O negative showed the least prevalence of 0 (0.0%). The age group of donors above 30 years of age had more HBV prevalence with 37.3% while the age group of 26 to 30 years showed the least prevalence of 28.7%. Data obtained from the piloted structured questionnaires designed to study the socio-demography of the participants showed that HBV was more prevalent among single blood donors, Civil servant/professional workers, and among blood donors that have successfully completed their tertiary education. The data from this research however, showed a negative correlation between the spread of the transfusion transmissible hepatitis viruses and the educational/ occupational standards of the test subjects who were included in this research. The highest rates of viremia were recorded among blood donors residing in urban areas however, the prevalence was not statistically different ($p \geq 0.05$).

Article History
Received November 7, 2021
Accepted December 14, 2022

Keyword
Hepatitis C (HCV);
Hepatitis B (HBV);
Viruses;
Blood;
Prevalence

Introduction

Blood donation is an important procedure that saves millions of lives; it involves a person donating blood for the purpose of transfusion. However, unsafe transfusion practices also put millions of people at risk of transfusion-transmissible infections (TTIs) (Nada and Atwa 2013). Blood transfusion is the process of transferring blood or blood products into one's circulation intravenously; transfusion refers to therapeutic infusion of blood, blood components and blood products into an individual in order to meet a specific physiologic need (Adewoyin and Oyewale, 2015).

Blood transfusion is a cornerstone of modern medical practice essential in almost every field of clinical practice either in emergency situations or as a necessary adjunct to modern and emerging Medicare (Orkuma *et al.,* 2014).

Nigeria utilizes about 1.5 million units of blood annually, this requirement cuts across the three levels of healthcare delivery in the country; primary, secondary, and tertiary (Okocha *et al.,*2015). Transmission of infectious diseases including Hepatitis B (HBV) and Hepatitis C (HCV) through donated blood is a significant challenge to blood safety. HBV and HCV infections are common serious complications of blood transfusion. Prevention of TTVs in developed countries has been achieved by reducing unnecessary transfusions, using only regular voluntary donors, excluding donors with specific risk factors and systematic screening of all donated blood for infection (Nada and, Atwa, 2013).

Globally, hepatitis B virus (HBV) and hepatitis C virus (HCV) infection are major causes of acute and chronic liver disease (e.g., cirrhosis and hepatocellular carcinoma [HCC]), resulting in an estimated 1.4 million deaths annually (GBD, 2013). It is estimated that 248 million people are living with chronic HBV infection (CHB) (Schweitzer *et al.,* 2015), and that 110 million persons are HCV-antibody positive and 80 million have chronic viraemic HCV infection (Gower *et al.,* 2014).

To prevent TTVs, mandatory screening tests are performed on the blood before transfusion for HIV and HBV by blood transfusion center and blood banks. Quality-guaranteed screening of all donated blood for TTIs for both HBV, and HCV, is recommended by the WHO for the provision of safe and efficacious blood and blood components (Biadgo *et al.,*2017). This includes the selection of eligible blood donors, the collection of blood, the processing and testing of the donated blood, the issuing of compatible blood, and safe administration of the blood to recipients. In response to this strategy, starting with identifying donor characteristics such as occupation, test seeking behavior, family history and type of donor. About a third of the world population has been infected with HBV and HCV at one point in their life (WHO, 2009). The World Health Organization (WHO) has estimated that more than 2 billion people in the world have been infected with HBV at some time in their lives and about 350 million people suffering from chronic infection worldwide, also estimated a worldwide prevalence of about 3% with HCV virus affecting 200 million people worldwide and 3 to 4 million new infections each year (Augustine *et al.,* 2014) stating clearly that the disease has caused epidemics in parts of Asia and Africa, and it is endemic status in China. In Nigeria, the prevalence rate of HBV is 10% and HCV is 2.1% (Lavanchy, 2004).

Estimating the prevalence of TTVs, namely HBV and HCV among blood donors can reveal the problem of unnoticeable infections in healthy-looking members of the general population and also provide data that is important in formulating the strategies for improving the management of a safe blood supply.

The aim of this study is to estimate the prevalence and associated socio-demographic factors of serological markers of Transfusion Transmissible Hepatitis Viruses (Hepatitis B (HBV) and Hepatitis C (HCV)) among blood donors attending University of Ilorin Teaching Hospital Ilorin, Kwara State.

Materials and Methods

Specimen Collection

About 5mls of fresh whole blood was aseptically collected from the participants and dispensed into ethylene diamine tetra-acetic acid (EDTA) anticoagulated sample bottles following standard operating procedures for venipuncture. The blood samples were then transported to the hematology laboratory in UITH, Kwara State for analysis.

Sample preparation and Screening for HBV and HCV

HBV and HCV screening was performed using the HBsAg and anti-HCV Rapid diagnostic test strips respectively. (BIO-INTECO), UK To qualitatively demonstrate the presence of HBsAg and anti-HCV in human whole blood, serum or plasma specimens. The whole blood samples were centrifuged at 3000rpm for 2mins with the plasma extracted and dispensed into appropriately labelled plain screw capped bottles. About 50ul of plasma according to the manufacturer's prescription was dispensed on the absorbent pad on the immunochromatographic strips using sterile automatic pipettes and disposable tips. one drop of buffer solution (phosphate buffered saline and preservative) provided was also added onto the absorbent pad with the sample. Capillary action brought about the upward movement of the sample on the test strips and the results were read after 10 min according to manufacturer's instruction. Double red lines were visible for positive samples (control and test line). Negative samples showed single line (control line). The Samples that were reactive and give positive result were further confirmed using enzyme linked immunosorbent assay (ELISA).

ELISA for HBsAg and anti-HCV

Positive samples obtained after the preliminary screening were further confirmed using ELISA (BIO-INTECO), UK. Technique. Following the manufacturer's instructions.

Result and Discussion

Results

Table 1. Shows the frequency distribution of socio-demographic factors of the selected blood donors is presented below, 34% of the blood donors were between 20-25 years, 28.7% were between 26-30 years and 37.3% were above 30 years. Majority of the blood donor were above 30, however, the mean age was 29.46 years. Male were more than female in the study with 57.3% and 42.7% respectively. Blood donors with A+, B+ and O+ blood group dominated the study with a joint percentage of 83.3%. 68.7% of the blood donors were living in urban area while 31.3% were living in rural area. Majority were single (48%), 42% were married while 10% were divorced/separated. Few of the blood donors had primary education (5.3%), 26.7% have secondary education while majority, 68% had post-secondary education. 14.7% were unemployed, 20.7% were student/apprentice, 21.3% were artisan/trader and 43.3% were civil servant/ professional workers.

Table 2 shows the prevalence of Hepatitis B and Hepatitis C among blood donors in Ilorin. 270 blood donors were HBV negative and 30 were positive. While for HCV, only 2 blood donors were positive. Generally, majority of the blood donors were negative for both HBV and HCV and no co-infection was recorded in this study.

Table 3 shows gender distribution of HBV among blood donors in Ilorin, Out of 30 blood donors found to be HBV positive, 24 were male while 6 were female. The distribution tends to be higher among the male with (57.3%) than the female with (42.7%). The $p - value = 0.061$, Since the p-value > 0.05, The result indicates that, there is no significant association between blood donors' gender and HBV positivity.

Table 4 shows the result of blood donors based on blood group type. Out of 30 blood donors found to be HBV positive, 8 were A+, 2 were A-, 2 were AB+, 6 were B+, 12 were O+ while no positive result was recorded for AB-, O- and B-. HBV had a highest distribution among blood group O + (4.0%), then followed by blood donor group A+ (2.7%), and blood group B+ (2.0%). The distribution among blood groups A- and AB+ both showed (1.0%) each.

Table 5 shows the result of blood donors based on age group. Out of 30 blood donors found to be HBV positive, 10 donors were found to be positive across the three age groups in this study. The Blood donors between the age range of 20-25 year had a prevalence of (3.3%), age range between 26-30 had a prevalence of (3.3%) and age range above 30 had a prevalence of (3.3%).

Table 6 show the results of blood donors based on their location of residence. Out of 30 blood donors found to be HBV positive, 26 donors from urban areas were found to be positive while 4 donors from rural arears were found to be positive. Resulting in a prevalence of 8.7% and 1.3% respectivly.

Table 7 shows the HBV distribution among blood donors based on marital status. Out of 30 blood donors found to be HBV positive, 14(47%), donors were single, 12(40%) were married and 4(13%). were divorced/separated.

Table 8 shows the HBV distribution among blood donors based on educational status. Out of 30 blood donors found to be HBV positive, 2 had primary education, 6 had secondary education and 22 had tertiary education. The distribution is higher among blood donors that attained tertiary education (73%) and lowest among donors with primary education (7%).

Table 9 Shows the result of HBV distribution among blood donors based on occupational status. Out of 30 blood donors found to be HBV positive, 6 were unemployed, 2 were students, 4 were artisan/traders and 18 were civil servant/professional worker. The distribution was higher among civil servant/ professional workers (60.5), and unemployed showing the prevalence of (20%), artisan showing a prevalence of (13%) and lowest among student/apprentice (7%).

Table 1. Distribution of HBV and HCV Among Blood Donors in Ilorin based on Socio Demographic Factors.

Factors	Frequency	Percentage
Age		
20-25	102	34.0%
26-30	86	28.7%
Above 30	112	37.3%

Mean age	*29.46*	
Gender		
Male	172	57.3%
Female	128	42.7%
Blood Group Type		
A+	94	31.3%
A-	10	3.3%
AB+	22	7.3%
AB-	2	0.7%
B+	94	31.3%
B-	6	2.0%
O+	62	20.7%
O-	10	3.3%
Location		
Urban	206	68.7%
Rural	94	31.3%
Marital Status		
Single	144	48.0%
Married	126	42.0%
Divorced/Separated	30	10.0%
Educational status		
Primary	16	5.3%
Secondary	80	26.7%
Tertiary	204	68.0%
Occupation		
Unemployed	44	14.7%
Student	62	20.7%
Artisan/Trader	64	21.3%
Civil servant/Professional	130	43.3%

Table 2. Prevalence of HBV and HCV among Blood Donors in Ilorin.

	Negative	Positive	Total
HBV	270(90%)	30 (10%)	300 (100%)
HCV	298 (99.3%)	2 (0.7%)	300 (100%)

Table 3. Gender distribution of HBV Among Blood Donors in Ilorin.

Gender	Negative	Positive	Total
Male	148 (49.3%)	24(8.0%)	172 (57.3%)
Female	122 (40.7%)	6 (2.0%)	128(42.7%)
Total	**270 (90.0%)**	**30 (10.0%)**	**300 (100%)**

Table 4. Distribution of HBV among Blood Donors in Ilorin based on Blood Group.

Occupation	Negative	Positive	Total
A+	86 (28.7%)	8 (2.7%)	94 (31.3%).
A-	8 (2.7%)	2 (0.7%)	10 (3.3%)
AB+	20 (6.7%)	2 (0.7%)	22 (7.3%)
AB-	2 (0.7%)	0 (0.0%)	2 (0.7%)
B+	88 (29.3%)	6 (2.0%)	94 (31.3%)
B-	6 (2.0%)	0 (0.0%)	6 (2.0%)
O+	50 (16.7%)	12 (4.0%)	62 (20.7%)
O-	10 (3.3%)	0 (0.0%)	10 (3.3%)
Total	**270 (90.0%)**	**30 (10.0%)**	**300 (100%)**

Table 5. Distribution of HBV Among Blood Donors in Ilorin Based on Age Group.

Age group	Negative	Positive	Total
20-25	92 (30.7%)	10 (3.3%)	102 (34.0%)
26-30	76 (25.3%)	10 (3.3%)	86 (28.7%)
Above 30	102 (34.0%)	10 (3.3%)	112 (37.3%)
Total	**270 (90.0%)**	**30 (10.0%)**	**300 (100%)**

Table 6. Distribution of HBV among Blood Donors Based on Location.

Location	Negative	Positive	Total
Urban	180 (60.0%)	26 (8.7%)	206 (68.7%)
Rural	90 (30.0%)	4 (1.3%)	94 (31.3%)
Total	**270 (90.0%)**	**30 (10.0%)**	**300 (100%)**

KEY
Urban: Participants residing within Ilorin metropolis
Rural: participants residing outside Ilorin metropolis.

Table 7. Distribution OF HBV Among Blood Donors in Ilorin Based on Marital Status.

Marital Status	Negative	Positive	Total
Single	130 (43.3%)	14 (47%)	144 (48.0 %)
Married	114 (38.0%)	12 (40%)	126 (42.0%)
Divorced/Separated	26 (8.7%)	4 (13%)	30 (10.0%)
Total	**270 (90.0%)**	**30 (10.0%)**	**300 (100%)**

Table 8. Distribution of HBV among Blood Donors Based on Educational Status.

Educational Attainment	Negative	Positive	Total
Primary	14 (4.7%)	2 (7%)	16 (5.3%)
Secondary	74 (24.7%)	6 (20%)	80 (26.7%)
Tertiary	182 (60.7%)	22 (7.3%)	204 (68.0%)
Total	**270 (90.0%)**	**30 (10.0%)**	**300 (100%)**

Table 9. Distribution of HBV among Blood Donors Based on Occupational status.

Occupation	Negative	Positive	Total
Unemployed	38 (12.7%)	6 (2.0%)	44 (14.7%).
Student/Apprentice	60 (20.0%)	2 (0.7%)	62 (20.7%)
Artisan/Trader	60 (20.0%)	4 (1.3%)	64 (21.3%)
Civil Servant/ Professional worker	112 (37.3%)	18 (6.0%)	130 (43.3%)
Total	**270 (90.0%)**	**30 (10.0%)**	**300 (100%)**

Discussion

In this present study, the prevalence of HBV among blood donors in Ilorin is (10%). The study results were higher than those reported (3%) occult hepatitis B infection among blood donors in Lagos, Nigeria (Akinbami *et al.*, 2019), (5.9%) Transfusion Transmissible Viral Infections among potential Blood donors in Ibadan, Nigeria (Afolabi *et al.*, 2013), (6.16%) Hepatitis B Virus and Hepatitis C Virus Co-Infections among Ekiti People in South-Western Nigeria (Akinbolaji *et al.*, 2015), (9.8%) hepatitis C virus (HCV) antibody and hepatitis B virus surface antigen (HBsAg) in blood donors in a Southwestern Nigerian city (Motayo *et al.*, 2015), (8.3%) among commercial blood donors in Sokoto, Nigeria (Augustine *et al.,* 2014), Benin, Nigeria (Umolu *et al.*, 2005), (5.0%) Hepatitis B Surface Antigen and Antibodies to Hepatitis C in the General Population of Benue State, Central Nigeria (Malu *et al.*, 2020) and the blood transfusion unit of Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State, Nigeria (Muktar *et al.*, 2005), (1.4%) among blood donors in Alexandria, Egypt (Wasfi and Sadek, 2011) and (4.2%) among blood donors in Nairobi, Kenya (Abdalla *et al.*, 2005).While the results shows a distribution lower than the prevalence of, (10.1%) reported in Bida, North Central, Nigeria (Omosigho *et al.,* 2012) found among the commercial blood donors in Nigeria, (12.2%) A National survey of Hepatitis B Infection in Nigeria (Adebola *et al.*, 2016), and (14.0%) among Eligible Blood Donors in a Tertiary Healthcare Facility in Nasarawa State, Nigeria (Akpu *et al.*, 2017).

This Study is reporting HBV prevalence among other groups besides blood donors in Nigeria include, (7.0%) among attendees of Association of Reproductive and Family Health Centre in Ibadan, Nigeria (Okonko *et al.*, 2012), (6%) among pregnant women attending the antenatal clinic at Nnewi, Anambra State, Nigeria (Oluboyo *et al.*, 2014) and (3.9%) among adolescents in Abakalaki, Nigeria (Ugwuja and Ugwu, 2010).

The prevalence of HCV reported as 0.7% from this study is lower than the (1.3%,) hepatitis C virus (HCV) antibody and hepatitis B virus surface antigen (HBsAg) in blood donors in a Southwestern Nigerian city (Motayo *et al.*, 2015), (1.4%) Transfusion Transmissible Viral Infections among potential Blood donors in Ibadan, Nigeria (Afolabi *et al.*, 2013), (1.71%) Hepatitis B Virus and Hepatitis C Virus Co-Infections among Ekiti People in South-Western Nigeria (Akinbolaji *et al.*, 2015), (4.0%) among commercial blood donors in Sokoto, Nigeria (Augustine *et al.,* 2014), (2.1%) Risk factors and seroprevalence of hepatitis

C virus antibody among blood donors in Lagos, Nigeria (Balogun *et al.*, 2012), (3.0%) among blood donors from a teaching hospital in the South Western Nigeria (Opaleye *et al.*, 2010), (4.4%) among HIV negative patients at Kenyatta National Hospital, Kenya (Karuru *et al.*2005) and (7.0%) among Eligible Blood Donors in a Tertiary Healthcare Facility in Nasarawa State, Nigeria (Akpu *et al.*, 2017). However, it is higher compared to (0.4%) among blood donors in Kano, Nigeria (Imoru *et al.*, 2003).

Reports from different parts of the world vary, with prevalence of HBV and HCV among blood donors being (0.66%-25%) and (1.0%) -(13.3%) respectively (Butashirili *et al.*2001; Gupta *et al.*, 2004; Matee and Mages, 2006).

In Nigeria prevalence figures of (1.3%-1.49%) and (6%-8.4%) have been reported for HCV and HBV respectively (Ejele *et al.*,2005; Chikwem *et al.*1997; Egah *et al.*, 2004; Ayolabi *et al.*, 2006; Muktar *et al.*, 2005; Uneke *et al.*, 2005). In developed countries, HBV and HCV infection risk was estimated at 1 in 3000 transfusions, which is very low. The reasons for this most likely are low prevalence in the general population, awareness among the general public and adequate health care facilities (Moradpour *et al.*, 2001). However, in comparison with the developed countries, emerging countries experience higher prevalence rates for HBV and HCV due to inadequate screening of the blood and blood products, improper injection safety practices, high risk sexual behaviors, socio-cultural practices like tattooing, scarification and circumcision practices through the use of unsterilized instruments. Differences in prevalence can be most likely associated with variations in the geographic locations and the differences in the diagnostic kits or markers used in detection of HBV and HCV antibodies. Also, as there are the differences in the prevalence of HBV and HCV are reported among different population in the same town (Karmochkire *et al.*, 2006; Fasola *et al.*, 2009; Buseri *et al.*, 2009). Population selection is also a factor contributing to the variations in prevalence.

This study reported that males had a higher prevalence (8.0%) of HBV than their female counterparts (2.0%). Our finding is consistent with a previous report among Namibian blood donors in which the prevalence of hepatitis B was significantly higher among male compared to female blood donors (Mavenyengwa *et al.,* 2014) also with hepatitis C virus (HCV) antibody and hepatitis B virus surface antigen (HBsAG) in blood donors in a Southwestern Nigerian city (Motayo *et al.*, 2015), (14.3%) by (Akpu *et al.*, 2017) also with that found in Sierra Leone reported by (Tognon *et al.*, 2020) Seroprevalence of hepatitis B and hepatitis C among blood donors in Sierra Leone, but in contrary with the HCV reported (Akpu *et al.*, 2017) in Nasarawa state which reported high prevalence among the female (11.1%).

The reason for this male gender predisposition may be due to the fact that polygamy and maintenance of multiple sex partners is prevalent in the area. Men are permitted on religious ground to marry up to 4 wives. This increased risk associated with the maintenance of multiple sex partners may play a role in the higher prevalence observed among men compared to women. Therefore, there is no significant association between blood donors' gender and HBV positivity.

This study reported that blood group O+ has the highest prevalence with (4.0%), blood group A+ (2.7%), blood group B+ (2.0%), blood group A- and AB+ both with the lowest prevalence (0.7%) while blood group AB-, B-, and O- has no recorded case at all. This is in agreement with that found in Sokoto State (57.2%) by (Augustine *et al.,* 2014), also in China by Jing (Jing *et al.,* 2020) ABO blood groups and hepatitis B virus infection, in Baghdad (Aljooani *et al.,* 2012) The infection with HBV and HCV and their relationship to ABO blood

group among blood donors. But in contrary with that found in Nasarawa state reported by (Akpu *et al.*, 2017) with high prevalence among blood group O- (50%) and A- (33.3%), also in Turkey reported by Genc (Genc, 2017) Hepatitis B virus infection and ABO/Rh blood group, where blood group A+ has been reported with the highest prevalence rate.

The p-value >0.05, we conclude that there is no significant association between blood donors' blood group type and HBV positivity.

This study also shows that the prevalence of 3.3% HBV occurred across all ages of 18 to 65. It was observed that the prevalence was higher 6.6% between the ages of 18-30 while the only positive case for anti-HCV antibodies occurred between the ages of 26 to 30 years. This is contrast with the findings of the studies that supported that, in developing countries, the prevalence of HBV was higher and distributed more generally through older populations than in the developed settings (Abdalla *et al.*, 2005; Gupta *et al.*, 2004). However, this is consistent with the findings reported in previous studies in Nigeria (Busari, 2011), (Afolabi *et al.*, 2013) this finding is also in agreement with previous results reported by Baba and colleagues (Baba *et al.,* 2000) and Ejele and coworkers (Ejele *et al.,* 2005) in which higher HBV prevalence were observed among youths.

The high prevalence of HBV among the youth could be as a result of the high-risk behavior such as maintenance of multiple sex partners, tattooing, having unprotected sex, intravenous drug abuse and other unhygienic activities involving youths. The economic costs of the failure to control the transmission of infection among young Nigerians include increased requirement for medical care, higher level of dependency and the loss of productive labor force, thereby placing heavy burdens on the already overstretched health and social services and on the natural economy (Kitchen *et al., 2001*). There is no significant association between blood donors' age group and HBV positivity.

This study reported that blood donors residing in an urban settlement has the highest prevalence (8.7%) compared with blood donors from rural areas with prevalence of (1.3%), this may be as a result of the test been carried out in an urban location. The discovery of such a high HBV prevalence of (8.7%) in this study, among an urban population which supposedly should have a low prevalence rate — unlike rural populations where most practices such as poor adherence to vaccination schedules, relatively low vaccination coverage, sharing of drinking cups, and relatively frequent unprotected sex favour transmission—underscores the endemicity of hepatitis B in Nigeria. This is in contrary with that reported in Egypt by (Nada *et al.,* 2013) with high prevalence (2.6%) and (7.6%) for HBV and HCV respectively among the participant in the rural settlement. The p-value > 0.05. We conclude that, there is no significant association between blood donors' location and HBV positivity.

This study reported that unmarried people tend to have the highest prevalence (4.7%) which is higher than the prevalence among married people (4.0%) and lowest in the divorced/separated couples (1.3%), more than 50% of the blood donors were unmarried and this might be the reason for such occurrence of high prevalence among the singles. This study is in agreement with that reported in Ibadan by Afolabi (Afolabi *et al.,* 2013) Transfusion Transmissible Viral Infections among potential Blood donors in Ibadan, Nigeria, and in contrary with (Akpu *et al.*, 2017) in Nasarawa State, that reported high prevalence (14.3%) among the divorced, also with that reported by (Motayo *et al.*, 2015) that reported highest prevalence (7.1%) and (Augustine *et al.,* 2014) that reported (78.6%) among the married in Sokoto State. The p-value > 0.05. We conclude that, there is no significant association between blood donors' marital status and HBV positivity.

This study shows that participant that attained tertiary education has the highest prevalence of (68.0%), while those that attained secondary education came out with (26.7%) and primary education has the lowest prevalence (5.3%). This is in contrary with (Motayo *et al.*, 2015) that reported high prevalence among the illiterate (22.2%) in blood donors in Abeokuta, Nigeria.

This study shows that civil servants/professional workers had the highest prevalence with (6.0%), followed by the unemployed with (2.0%), Artisan/Trader (1.3%) and student/apprentice had the lowest prevalence (0.7%). This study in contrary with that conducted in Nasarawa state reported by (Akpu *et al.*, 2017) with higher prevalence among the Artisan (17.5%), (Augustine *et al.*2014) that reported high prevalence among farmers (28.6%) in Sokoto State, (Okocha, *et al* 2015) that reported high prevalence among traders in Nnewi, South-East Nigeria. Also, with that found in Sierra Leone where informal workers has the highest prevalence (11.0%) reported by (Tognon *et al.*, 2020) Seroprevalence of hepatitis B and hepatitis C among blood donors in Sierra Leone. The p-value > 0.05, we conclude that, there is no significant association between blood donors' occupation and HBV positivity.

Blood borne infections like HBV and HCV infections continue to pose a great challenge to transfusion medicine, most particularly in Africa, because of a high transfusion demand (Fleming, 1997). Transfusion-transmitted infections in developed countries have been reduced by preventing unnecessary transfusions, preferring only regular voluntary donors, thereby avoiding donors with specific risk factors and systematic screening of all donated blood for infection. However, in many emerging countries none of these interventions are applied uniformly and the risk of transfusion-transmitted infections remains high (Gurol, 2006). Hence, strict selection of blood donors, public awareness on HBsAg, HCV infections and prevention strategies is a must for the emerging countries like Nigeria.

Based on the findings of the current study, it is recommended that blood donors should always be screened for HBV and HCV. Appropriate screening programs based on simple assay formats like agglutination should be encouraged. Consequently, international models and standards for organizing blood banks should be adapted to resource poor environments including locally relevant guidelines for counseling and management of HBsAg and HCV positive blood donors (Allain *et al.*, 2004). Overall, there arises a need to create an awareness regarding HBV and HCV not only among the high-risk population but also among the general population. Emphasis should be placed on these aspects through information education communication campaigns. The high disease burden of such blood borne infections demands formulation of government-supported prevention and control strategies for HBV and HCV, not only in blood banks but also in similar hospital settings.

Conclusion

The result of this study brings light to the high prevalence of Hepatitis B (10%) infection among blood donors in Ilorin, of the blood donors found to be sero-positive for HBsAg, 24(8.0%) were male, 6(3.0%) were female. 26(8.7%) were from urban location, 4(1.3%) were from rural location. There was even distribution between the age group distribution with each age group 20-25, 26-30 and above 30 having 10 (3.3%) respectively. The above study shows decreasing prevalence of Hepatitis C infection as antibody to Hepatitis C virus was detected in 2 (0.7%) of the blood donors. There was no HBV and HCV co-infection among the participants in this study. Socio-demographic characteristics like Age

group, Gender, Educational status, Occupation, Blood group type, Marital status and location were not significant different in this study ($p < 0.05$).

The high prevalence of HBV in this study, underscores the importance of emulating global standard practices towards restraining the spread of the infection. If blood donors are left undiagnosed and unmanaged, the future burden of the disease for healthcare resources and society would be fundamental.

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