

Prevalence of HBsAg among Attendees of ARFH Centre in Ibadan, Southwestern Nigeria

¹I.O. Okonko, ¹P.O. Okerentugba and ²A.O. Akinpelu

¹Medical Microbiology and Virology Unit, Department of Microbiology, University of Port Harcourt, East-West Road, P.M.B. 5323, Choba, Port Harcourt, Rivers State, Nigeria

²Department of Microbiology, Lead City University, Ibadan, Nigeria

Abstract: In a cross-sectional study, 200 subjects attending the Association for Reproductive Family and Health (AFRH) Centre in Ibadan, Nigeria were screened randomly to determine the prevalence of HbsAg among them, using conventional methods. The study showed that the prevalence of HBsAg was 7.0% (n=14). The seroprevalence of HBsAg was higher in males [5(10.2%)] than in their female counterparts [9(5.9%)]. The age specific distribution of HBsAg among subjects in the study showed that those in the age group of 16-29 years had a higher prevalence rate of 7(7.1%) compared to those in age group 30 years and above which had a lower prevalence rate of 7(6.9%). HBsAg seropositivity was higher among the singles 7(11.9%) than the married 7(4.9%). Risk factors associated with significant ($P<0.05$) HBsAg seropositivity were sex and marital status. There was no significant association ($P>0.05$) between age groups and HBsAg seropositivity. The importance of routine HBsAg screening in sexually active subjects especially among the young and singles is advocated. It is recommended that routine screening for HBsAg should be incorporated into hospital care.

Key words: HbsAg • Seropositivity • Sexually Active • Nigeria

INTRODUCTION

Detection of hepatitis B surface antigen (HbsAg) in blood is diagnostic for infection with HBV and in the blood banks screening for HbsAg is carried out routinely to detect HBV infection [1-3]. HBV shares similar routes of transmission with HIV [4], namely through blood and blood products, intravenous drug abuse, unsafe injections and sexual activity, shared needle, other body fluids such as semen, vaginal fluid and breast milk; from mother to child, needle stick injury, ear piercing, tattooing and other tribal ceremonies (scarification), barbers razors etc. [5-11].

The prevalence of HBV varies between 2% in developed countries where the prevalence is low to about 8% in developing countries where infection is endemic with sex, age and socio-economic status as

important risk factors for infection [3, 12-13]. The prevalence of HBV infection also varies markedly from one region of the world to another [3]. Racial differences between populations, cultural and economic differences in developing countries like Nigeria are factors considered responsible for the differences [3]. The global burden of hepatitis B remains enormous, due largely to lack of universal HBV vaccination [3, 14]. In Nigeria, several reports have established the endemic nature of HBV by the presence of HBsAg in different population groups from different parts of the country [3]. HBV has relatively higher prevalence in the tropics and an estimated 12% of the Nigeria total population being chronic carriers of HBsAg [3, 15,16].

In Nigeria, various studies have been carried out to determine the dynamics of the infection in different subpopulations including; intending blood donors in

Corresponding Author: Iheanyi O. Okonko, Medical Microbiology and Virology Unit, Department of Microbiology, University of Port Harcourt, East-West Road, P.M.B. 5323, Choba, Port Harcourt, Rivers State, Nigeria, Tel:+234803 538 0891.

Benin City [6], in Jos [17], in UCH, Ibadan [3, 18], blood donors attending Ahmadu Bello University Teaching Hospital (ABUTH) Zaria [19], hepatocellular carcinoma patients in north eastern Nigeria [16], farming and non-farming Individuals in Anyigba, Kogi State [20], patients in Ankpa, Kogi State [21] pregnant women in Ibadan [22], in Keffi, Nasarawa State [23] and fresh students in Ilorin [24]. The aim of this study was to determine the prevalence of HBsAg among ARFH attendees in Ibadan, Southwestern Nigeria.

MATERIALS AND METHODS

Study Area: The study was carried out among attendees of Association for Reproductive Family and Health (AFRH) centre in Ibadan. Ibadan city lies 3°5' E and 7°23' N. The city is characterized by low level of environmental sanitation, poor housing and lack of potable water and improper management of wastes especially in the indigenous core areas characterized by high density and low income populations.

Study Population: Two hundred consecutive patients from January 2011 to September 2011, who attended the STI clinic of a secondary health care centre (ARFH) were included as subjects. All were screened for HBsAg by standard methods. Table 1 shows demographic profiles of the attendees of AFRH Clinic in Ibadan, Southwestern Nigeria.

Sample Collections: Samples of blood were collected from males and females, respectively. Five milliliters of venous blood (without anticoagulant) was collected aseptically from all patients. Sera were separated and stored at -20°C in screw-capped glass tubes.

Detection of HBsAg: Sera were tested for hepatitis B virus by ELISA (HBV; 0003463 Hepalisa kit), in a stepwise order for the detection of HBsAg in the blood. These methods which are immunochromatographic and qualitative in nature, detect the presence of HBsAg in human blood and can be read in-vitro having more than 99.9% sensitivity and 99.75% specificity. The interpretation of test results was performed according to the manufacturer's specifications.

Data Analysis: The prevalence for HBsAg was calculated by using patients with positive samples as numerator and the total numbers of patients enrolled in this study as denominator. The data generated from this study were

Table 1: Demographic profiles of the attendees of AFRH Clinic in Ibadan, Southwestern Nigeria

Profiles	No. Tested (%)	No. Males (%)	No. Females (%)
Age Group (years)			
16-29	98(49.0)	18(18.4)	80(81.6)
30 and above	102(51.0)	31(30.4)	71(69.6)
Sex			
Males	49(24.5)	49(100.0)	0(0.0)
Females	151(75.5)	0(0.0)	151(100.0)
Marital status			
Married	141(70.5)	15(10.6)	126(89.4)
Single	59(29.5)	34(57.6)	25(42.4)
Total	200(100.0)	49(24.5)	151(75.5)

presented using descriptive statistics. The data was subjected to statistical analysis using SPSS computer software version 19.0 for Windows to determine any significant relationship between infection rate, age and gender.

RESULTS

Of the two hundred (200) patients, 151 females and 49 males 14(7.0%) were infected with HBV. Table 2 showed the prevalence of HBsAg among the subjects.

Prevalence of HBsAg in Relation to Sex: The seroprevalence of HBsAg was higher in males [5(10.2%)] than in their female counterparts [9(5.9%)]. There was a significant association ($P < 0.05$) between sex and infection acquisition (Table 2).

Prevalence of HBsAg in Relation to Age of Subjects: Table 3 showed the prevalence of HBsAg in relation to the ages of the AFRH attendees in Ibadan, Southwestern Nigeria. The age specific distribution of HBsAg among subjects in the study showed that those in the age group of 16-29 years had a higher prevalence rate of 7(7.1%) compared to those in age group 30 years and above which had a lower prevalence rate of 7(6.9%). There was no significant association ($P > 0.05$) between age groups and HBsAg seropositivity.

Prevalence of HBsAg in Relation to Marital Status of Subjects: Table 4 showed the prevalence of HBsAg in relation to the marital status of AFRH clinic attendees in Ibadan, Southwestern Nigeria. Seroprevalence of HBsAg was higher among the singles 7(11.9%) than the married 7(4.9%). Statistically, marital status was significantly associated with HBsAg seropositivity ($P < 0.05$).

Table 2: Prevalence of HBsAg in relation to sex of patients

Sex	No. Tested (%)	No. Positive for HBsAg (%)
Males	49(27.0)	5(10.2)
Females	151(10.5)	9(5.9)
Total	200(100.0)	14(7.0)

Table 3: Prevalence of HBsAg in relation to ages of subjects

Age group (year)	No. Tested (%)	No. Positive for HBsAg (%)
16-29	98(49.0)	7(7.1)
30 and above	102(51.0)	7(6.9)
Total	200(100.0)	14(7.0)

Table 4: Prevalence of HBsAg in relation to marital status of subjects

Marital status	No. Tested (%)	No. Positive for HBsAg (%)
Singles	59(29.5)	7(11.9)
Married	141(70.5)	7(4.9)
Total	200(100.0)	54(38.3)

DISCUSSION

Demographic data is shown in Table 1. It showed that 151(75.5%) subjects were females and 49(24.5%) were males, 141(70.5%) were married and 59(29.5%) were single, 102(51.0%) were within age group 30 years and above while 98(49.0%) were in age group 16-39 years of age. This observation collaborates that of Uneke *et al.* [17] who earlier reported that more females than males visit hospitals for medical attention in Nigeria.

In the present study, seroprevalence of HBsAg was 7.0% (n=14). Previous studies from different parts of Nigeria and outside Nigeria have reported varying prevalence rates among selected groups [15, 25-29]. The HBV infection rate of 7.0% in this study is however higher than the 4.0% reported by Abdalla *et al.* [27] among Kenyan donors; the 4.3% reported by Akani *et al.* [30] among pregnant women in Port Harcourt, Nigeria; the 5.4% reported by Umolu *et al.* [6] in Benin City; the 4.1% reported Ugwuja and Ugwu [16] among apparently healthy adolescents in Abakaliki, South Eastern Nigeria; the 2.5% reported by Okonko *et al.* [13] among blood donors in Ibadan, Nigeria.

Furthermore, the infection rate of 7.0% reported for HBsAg in this study is lower than the 28.4% reported by Balogun *et al.* [31] among HIV positive subjects in LASUTH, Ikeja, Lagos, Nigeria; the 13.2% by Fasola *et al.* [29] in Ibadan, South-western, Nigeria; the 20.0% reported by Alao *et al.* [15] among prospective blood donors in Otukpo, Benue State; the 14.5% reported by Lawal *et al.* [18] among blood donors in Ibadan; the 18.6% by Buseri *et al.* [32] among blood donors in Osogbo, Nigeria; the 11.0% by Sule *et al.* [20] among farming and non-farming individuals in Anyigba, Kogi State, Nigeria; the 14.0% by

Sule *et al.* [21] among patients attending Universal Hospital, Ankpa, Kogi State, Nigeria; the 9.0% by Udeze *et al.* [11] among apparently healthy students of University of Ilorin, Ilorin-Nigeria; the 10.0% reported by Elfaki *et al.* [28] among Sudanese blood donors; the 12.4% reported by Alikor and Erhabor [13] in children attending tertiary health institution in Niger Delta of Nigeria; the 8.3% by Muktar *et al.* [26]; the 14.5% reported by Agbaji [25] in Jos University Teaching Hospital (JUTH); the 14.3% and 25.0% by Uneke *et al.* [17] in Jos, Nigeria; and the 12.0% reported by Ophori *et al.* [33] among pregnant women in Warri, Delta State. It is far lower than the 42.7% reported by Motta-castro *et al.* [34] among Afro-descendant community of Brazil and the 44.7% reported by Bukbuk *et al.* [35] though among children in Borno state, Nigeria. The differences in prevalence in these studies could be attributed to differences in population selection [3].

Gender distribution showed 10.2% prevalence for the males while the females had prevalence of 5.9%. The difference was significant ($p < 0.05$). This is similar to what was reported by Udeze *et al.* [24] who found HBsAg prevalence to be higher among males (10.9%) than the females (6.2%). It is also comparable to what has been previously reported by other authors. Mehmet *et al.* [36] reported higher prevalence rate of HBsAg in males than females in both rural and urban areas with observation that male sex was an important risk factor for HBsAg positivity. Balogun *et al.* [31] in their study reported higher prevalence of HBsAg among males than females in Lagos, Nigeria. A similar study also reported a higher HBsAg seroprevalence in males than females among patients attending Dental Clinic at the University College Hospital (UCH), Ibadan and this was due to shorter HBsAg carrier rate in females than males [3,18, 37]. Similar finding was also reported by Inyama *et al.* [38] in study among HIV infected patients in Jos, Nigeria in which higher HBV prevalence in males was reported. The reason for the high infection rate among the males may be due to habits such as multiple sexual partnership and polygamy which may be higher among the males [18].

The observation of the present study however, contradicts findings of Okonko *et al.* [3] who reported higher HBsAg prevalence in females than males. This suggested that both sexes were equally susceptible to HBV infection and that gender might not necessarily be an important epidemiological determinant of HBV infection among the study patients [3]. It however agrees with the findings of other authors elsewhere [12,13, 38]. It also agrees with that of Inyama *et al.* [38] in their work

on HIV infected patients in Jos, Nigeria in which higher HBsAg prevalence (31.8%) in males was reported compared with the females (22.1%). This finding of the present study is disagrees with that of Ugwuja and Ugwu [16], who reported that males and females did not differ significantly in HBsAg seropositivity. Gender distribution in this study agrees with that of Udeze *et al.* [3] who reported a higher prevalence among males (10.9%) than females (6.2%). It is also in line with an earlier finding by Uneke *et al.* [17] but contradicts the finding of Bwogi *et al.* [39] and Sule *et al.* [21] who reported that females had higher seropositivity for HBsAg (15.6%) than the males (11.7%).

Age distribution showed that 7.1% prevalence for age groups 16-29 (the most sexually active age group) and 6.9% prevalence for 30 years and above. Statistically, this difference observed among these two age groups was not significant ($p > 0.05$). This is similar to the report of Mottacastro *et al.* [34], that age was not significantly associated with HBsAg seropositivity among Afro-descendant community in Brazil. The age of acquiring infection is the major determinant of the incidence and prevalence rates [40]. Also, serological evidence of previous HBV infections varies depending on age [16]. Higher HBsAg prevalences among younger age groups have been previously reported in studies elsewhere in Nigeria and outside Nigeria. Buseri *et al.* [32] reported HBV prevalence to be highest among age group 18 to 27 years of age. This is in disagreement with the findings of previous studies by some authors [3, 15, 21, 23, 41]. Mustapha and Jibribn [42] noted that the highest rate of HBsAg seropositivity was in the 40-49 year-old age group. Luka *et al.* [41] reported higher HBV prevalence among older age group (30-34 years). Alao *et al.* [15] reported higher HBsAg prevalence among age group 41-50 years. Pennap *et al.* [23] reported higher HBV prevalence among older age group (40-44 years), Sule *et al.* [21] reported a higher prevalence of HBsAg seropositivity among older age group 40-80 years of age (20.5%) than those in age group less than 40 years of age (11.3%) and Okonko *et al.* [3] reported higher HBsAg prevalence among older age group 40 years and above (4.2%) compared to that of age groups 18-39 years of age (2.0%).

Distribution in relation to marital status showed higher HBsAg prevalence among the singles (11.9%) than the married 7(4.9%). Statistically, marital status was significantly associated with HBsAg seropositivity ($P < 0.05$). This is similar to the findings of Sule *et al.* [21] who reported a significant ($p = 0.001$) association

between marital status and HBsAg seropositivity and Ezebudu *et al.* [40] who reported that significant infection rate for HBV was associated with marital status. However, it also deviates from findings of Sule *et al.* [21] who reported a higher prevalence of HBsAg (34.9%) among married group than compared to the singles/divorced group (3.2%). Our observation however, agrees with the report by Uneke *et al.* [17] that the risk of acquiring HBV was higher in singles than among the married. Though, the HBsAg serostatus of patients' spouses were not known, this observation might be due to sexual exposures; sexual transmission of HBV had been cited as relevant to adults [21, 36].

In conclusion, this study however confirmed the presence of Hepatitis B surface antigenemia among apparently healthy attendees of AFRH in Ibadan. A high prevalence of HBsAg seropositivity (7.0%) in the study population indicates the close association of STI with HBV. The study shows that risk factors associated with significant HBsAg seropositivity were sex and marital status. It also shows that there was no significant association ($P > 0.05$) between age groups and HBsAg seropositivity. The importance of routine HBsAg screening in sexually active patients especially among the young and singles is advocated.

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