Research Article

Sero-prevalence of HBV serological markers among pregnant women attending the antenatal care unit of the Bamenda Regional Hospital

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Abstract

Although hepatitis B virus infection is preventable through available, safe and effective vaccines, globally it caused approximately 820,000 deaths from a total estimate of 296 million chronic infections, in 2019. Considering the strategy to eradicate viral hepatitis as a public health risk by the year 2030, this study was designed to evaluate the sero-prevalence of HBV serological markers among pregnant women attending the antenatal care unit of the Bamenda Regional Hospital. This was a hospital based cross-sectional study carried out from March to May, 2021. Data were collected using a well-structured questionnaire and the *OnSite* HBV-5 Rapid Test. Both descriptive statistics and Chi-square (and Fisher's exact) test were used for data analysis. Among the 300 pregnant women who were enrolled into the study, the sero-prevalence of HBsAg was 13.33%, HBsAb (26%), HBeAg (11.33%), HBeAb (06%) and total HBcAb (15.33%). While the percentage of vaccination coverage was 13.33%, those without knowledge on HBV were 7.34 times more likely to test HBsAg positive and 3.33 times more likely to test HBeAg positive. Considering the high percentage and the repercussion of HBeAg, in order to eradicate viral hepatitis as a public health risk treatment should be given to all HBsAg positive cases in conjunction with the augmentation of vaccination coverage, especially among the pregnant women attending the Bamenda Regional Hospital.

Keywords: HBV infection; HBV serological markers; Sero prevalence; Pregnant women; Bamenda Regional Hospital.

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Résumé

Bien que l'infection par le virus de l'hépatite B soit évitable grâce à des vaccins disponibles, sûrs et efficaces, elle a causé environ 820 000 décès à l'échelle mondiale sur un total estimé à 296 million d'infections chroniques en 2019. Compte tenu de la stratégie visant à éradiquer l'hépatite virale en tant que risque de santé publique d'ici 2030, cette étude a été conçue pour évaluer la séroprévalence des marqueurs sérologiques du VHB chez les femmes enceintes fréquentant l'unité de soins prénatals de l'hôpital régional de Bamenda. Il s'agissait d'une étude transversale en milieu hospitalier réalisée de mars à mai 2021. Les données ont été collectées à l'aide d'un questionnaire bien structuré et du test rapide OnSite HBV-5. Des statistiques descriptives et le test du Chi carré (et le test exact de Fisher) ont été utilisés pour l'analyse des données. Parmi les 300 femmes enceintes enrôlées dans l'étude, la

séroprévalence de l'HBsAg était de 13,33 %, celle de l'HBsAb (26 %), de l'HBeAg (11,33 %), de l'HBeAb (06 %) et de l'HBcAb total (15,33 %). Alors que le pourcentage de couverture vaccinale était de 13,33 %, les personnes sans connaissances sur le VHB étaient 7,34 fois plus susceptibles d'être testées positives à l'HBsAg et 3,33 fois plus susceptibles d'être testées positives à l'HBeAg. Compte tenu du pourcentage élevé et des répercussions de l'HBeAg, afin d'éradiquer l'hépatite virale en tant que risque pour la santé publique, un traitement devrait être administré à tous les cas positifs à l'HBsAg en conjonction avec l'augmentation de la couverture vaccinale, en particulier chez les femmes enceintes fréquentant l'hôpital régional de Bamenda.

Mots-clés : infection par le VHB ; marqueurs sérologiques du VHB ; prévalence sérique ; femmes enceintes ; hôpital régional de Bamenda.

Note : This abstract was translated into French by Google Translate and proofread by the Editor.

Introduction

Although hepatitis B virus infection is preventable through available, safe and effective vaccines, in 2019 it caused about 820,000 deaths from a total estimate of 296 million chronic infections, globally (Cao et al., 2022). In fact approximately 1.5 million new infections were reported annually (Cao et al., 2022). The first global health sector strategy on viral hepatitis, 2016–2020 was adopted by the World Health Assembly in May 2016. The proposed strategy was to eradicate viral hepatitis as a public health risk, by the year 2030 (WHO, 2017). In their support to attaining the target of global hepatitis elimination by 2030, the World Health Organization (WHO) is working at preventing the transmission of HBV infection which is most frequently spread through perinatal transmission (from mother to child at birth), in highly endemic areas (WHO, 2017). Although perinatal transmission is reportedly the most common in areas with high prevalence of HBV, other methods of transmission of HBV are sexual and parenteral transmission (Than et al., 2019; Lavanchy, 2008; Borgia et al., 2012). The implementation of key preventive and diagnostic strategies to enhance elimination of HBV is therefore urgently required.

To investigate HBV serological patterns among hospitalized children and adolescents in China, seventeen serological patterns were found with the most frequent being "HBsAb-alone" (62.03%). Age was associated with the distribution of serological patterns (Chen et al., 2011) and the prevalence of HBsAg among inpatients aged 1-70years was 7.43% meanwhile, the highest prevalence of HBsAg was among the age group 41-50 years (10.05%) and among males (8.94%). Of all the HBsAg positive cases, 33.33% had no co-positivity while, 41.64% of the patients were negative for all the HBV serological markers (Meng et al., 2019). Consequently chronically infected middle aged males and females of child bearing age were found to be potential sources of HBV transmission. The prevalence of HBsAg was 0.7% among the pregnant women in West Iran (Mohebbi et al., 2011). And among pregnant women randomly selected from provinces in Spain, HBV sero-prevalence were HBsAg (0.1%), HBcAg (5%) and co-positivity of "HBsAb and HBcAb" (16.4%). The prevalence of HBcAb was found to be significantly higher in women born in Africa and Asia than those born in Europe, Spain and America (Salleras et al., 2009).

Also, the prevalence of HBsAg and HBsAb among the pregnant women in North East Egypt were 5.0%, and 30.7% respectively. While 36.4% had isolated HBcAb, all those who tested HBsAg positive were negative for HBeAg, but positive for HBeAb and HBV-DNA (Kishk et al., 2020). The sero-prevalence of immune antibodies were

relatively higher, with the sero-prevalence of HBsAg among the pregnant women in Northwest Ethiopia being 3.8% (Zenebe et al., 2014). More over in Southern Ethiopia 7.8% of pregnant women tested positive for HBsAg with no significantly associated risk factors to HBV infections (Metaferia et al., 2016). Hence the recommendation to screen pregnant women irrespective of risk factors. Other studies in different areas have reported relatively low prevalence of HBsAg. Among a subsection of young people in central Nigeria the sero-prevalence of HBV was HBsAg (9.7%), HBsAb (38.3%), HBcAb (28.0%), hepatitis B e-antigen (HBeAg) (3.7%) and HBeAb (4.6%). Nonetheless among females the sero-prevalences were HBsAg (7.3%), HBsAb (29.0%), HBcAb (20.2%), HBeAg (2.1%) and HBeAb (2.6%). Like other findings males were significantly more predisposed to infections with HBV (Mohammed et al., 2019). In a hospital based study in Warri in Nigeria the prevalence of HBsAg among pregnant women was 1.4%. Although HBsAg had no co-positivity with HBeAg, there were co-positivity between HBsAg, HBeAb and HBcAb (Omote et al., 2020), depicting higher levels of immunity. These women were poorly knowledgeable and highly exposed to risk factors of HBV infection. In another study the prevalence of HBsAg and HBeAg among pregnant women in Sokoto Nigeria was 12.8% and 0.9% respectively. While 5.1% tested positive for HbsAb, 12% tested positive for HBeAb and 12% tested positive for HBcAb (Erhabor et al., 2020).

Among hepatitis B surface antigen (HBsAg) negative individuals in eastern Uganda, HBV serological pattern was found to be hepatitis B surface antibody (HBsAb) (11.3%), hepatitis B e-antibody (HBeAb) (17.2%) and hepatitis B core antibody (HBcAb) (10.6%). While up to 77.1% did not present with any serological marker, being married was significantly associated with reduced HBsAb and the 19-29 years age group was associated with increased chances of HBsAb sero positivity (Kafeero et al., 2022). In the Far North region of Cameroon the prevalence of HBsAg among pregnant women was 10.2% while 1.23% of the women tested positive for both "HBsAg and HBeAg" (Noubiap et al., 2015). Due to the low prevalence of "HBsAg and HBeAg" co-positivity, perinatal transmission may not have been the common mode of transmission in this area. Moreover the percentage of vaccination coverage among these women was low 1.2% (Noubiap et al., 2015). In a previous study carried out in the current study area, the prevalence of HBsAg among pregnant women was 4.98%, and the women who lacked knowledge on HBV had higher chance of poor practice and attitude toward the disease (Nlinwe et al., 2021). Considering the scarcity of data on the sero-prevalence of HBV serological markers and the vaccination coverage among pregnant women in the North West region of Cameroon, this study was designed to assess sero-prevalence of HBV serological markers among pregnant women attending the antenatal care unit of the Bamenda Regional Hospital.

Materials and Methods

Study area and study population

This study was done at the maternity unit of the Bamenda Regional Hospital (BRH), located in the Mezam Division of the North West Region of Cameroon. The estimated population of Mezam Division is 575,312 and the BRH serves as a referral hospital for the five health districts in this Division. The study population come from a diverse cultural backgrounds, social statuses, and educational levels. There is a fully functioning labor room and maternity ward in the maternity unit. This unit is taken care of by four obstetricians, three general practitioners, 12 midwives, and nurses. In this unit, the average number of births per month is 320.

Study Design and Study Participants

This was a hospital based cross-sectional study carried out from March to May, 2021. During this period, all pregnant women who registered at the antenatal care unit of the BRH for the first time were eligible for inclusion into the study. It was a cross-sectional design because data collected at a definite period was considered suitable to establish the sero-prevalence of HBV serological markers among the pregnant women who were the target population. Of all the pregnant women who registered for the antenatal care during the study period, 300 of the women accepted to be enrolled into the study by signing the informed consent form. They were consecutively recruited into the study.

The minimum sample size was calculated using the following formula (Charan and Biswas, 2013): N (minimum sample size) = $Z^2 \times P\ (1\text{-}P)/d^2$, Previous prevalence (P) = 9.7% (Frambo et al., 2014).

The error margin (d) used is 0.05, at 95% interval (Z = 1.96)

Therefore the estimated minimum sample size was approximately 135.

Ethical Considerations

The ethical clearance for this study was obtained from the Ethical Review Committee of the University of Bamenda (authorization numbers: 2021/187H/ UBa/IRB; 2021/193H/ UBa/IRB; 2021/197H/ UBa/IRB). All those who accepted to be enrolled into the study also signed the informed consent form.

Laboratory test methods and data analysis

A well-structured questionnaire and laboratory analysis were used to obtain data. The *OnSite* HBV-5 Rapid Test (source: CTK Biotech, Inc. REF: R0049C) was used to determine sero-prevalence of HBV serological markers. It is a lateral flow chromatographic immunoassay used for the qualitative detection of HBsAg, HBsAb, HBeAg, HBeAb, and HBcAb in human serum or plasma (Al-Shalah et al., 2021). The questions in the questionnaire prompted information to answer the research question. Sums and percentages were calculated to get frequencies for the socio-demographic factors and the different knowledge and attitudes toward hepatitis B. A fourfold (2 × 2) contingency table displaying the frequency distribution for the knowledge and attitude toward HBV was entered into Graph Pad Prism version 8.2.1. The contingency table had frequencies for knowledge and attitude by both HBV positive and negative cases, in each of the four cells. Chi-square (and Fisher's exact) test was used to determine the relative risk, attributable risk, odds ratio, and likelihood ratio of HBV occurrence in exposed groups.

HBV serological markers

HBsAg guarantees the presence of infection, indicating positivity from the beginning of acute infection and persists in blood during chronic infection. On the other hand HBsAb is the neutralizing antibody that provides protection from infection with HBsAg. The presence of HBsAb indicates immunization from vaccination or recovery from acute infection when taken together with anti HBcAb (IgG). While HBeAg is typically linked with high infectivity and high viral load, HBeAb usually indicates decrease amount of HBV DNA. The immune marker HBcAb develops close to three months after infection and it is the most persistent marker of infection. Total HBcAb (IgM and IgG) indicates a resolved infection (WHO, 2015).

Results

Socio-demographic parameters and the prevalence of HBV markers.

The total number of study participants were 300 pregnant women. The most represented age group was 27-38 years with 50% of the participants and the least was 39-49 years with 6% of the participants. 87.33% of the women were married

and 78.67% were living in urban areas. While 60% of the women had secondary education as their highest educational level, 69.33% were self-employed and 78.7% had a monthly income of < 30,000 FCFA (see table 1).

Table 1: Frequency distribution of the Socio demographic factors

		Frequency, N=300	Percentage
Age	15-26	132	44
	27-38	150	50
	39-49	18	06
Residence:	Rural	64	21.33
	Urban	236	78.67
Marital status	Single	38	12.67
	Married	262	87.33
Religion:	Christian	276	92
	Muslim	14	4.67
	Others	10	3.33
Educational level	Elementary	52	17.33
	Secondary	180	60
	University	68	22.67
Occupation	Self-Employed	208	69.33
	Civil Servant	32	10.67
	Housewife	26	8.67
	Not Employed	34	11.33
Monthly income (fcfa)	< 30000	236	78.67
	30,000-250,000	60	20
	> 250,000	4	1.33

The prevalence of HBsAg was highest (22.22%) among the 39-49 years age group and, the following serological markers were most prevalent among members of this age group; HBsAb (44.44%), HBeAb (22.22%) and total HBcAb (33.33%). See table 2.

Table 2: Sero-prevalence and serologic markers in the various age groups

Age Range	HBsAg Pos	HBsAb Pos	HBeAg Pos	HBeAb Pos	Total HBcAb Pos	Total (%), N=300
15-26 (%)	14 (10.61)	36 (27.27)	14 (10.61)	4 (3.03)	18 (13.64)	132 (44)
27-38 (%)	22 (14.67)	34 (22.67)	20 (13.33)	10 (6.67)	22 (14.67)	150 (50)
39-49 (%)	4 (22.22)	8 (44.44)	0	4 (22.22)	6 (33.33)	18 (06)

HBsAg and total HBcAb were more prevalent among those residing in the rural areas while HBsAb, HBeAg and HBeAb were more prevalent among those in the urban areas (see table 3).

Table 3: Sero-prevalence and serologic markers in rural versus urban

Residence	HBsAg Pos	HBsAb Pos	HBeAg Pos	HBeAb Pos	Total HBcAb Pos	Total (%), N=300
Rural (%)	12 (18.75)	14 (21.88)	6 (09.38)	2 (3.13)	14 (21.88)	64 (21.33)
Urban (%)	28 (11.86)	64 (27.12)	28 (11.86)	16 (6.78)	32 (13.56)	236 (78.67)

Serological markers were generally most prevalent among the singles, except HBeAg which was more prevalent among the married (see table 4).

Table 4: Sero-prevalence and serologic markers in single versus married

Marital status	HBsAg Pos	HBsAb Pos	HBeAg Pos	HBeAb Pos	Total HBcAb Pos	Total (%), N=300
Single (%)	8 (21.05)	10 (26.32)	2 (5.26)	4 (10.53)	8 (21.05)	38 (12.67)
Married (%)	32 (12.21)	68 (25.95)	32 (12.21)	14 (05.34)	38 (14.5)	262 (87.33)

HBsAg, HBeAg, HBeAb and total HBcAb were most prevalent among those with the secondary level of education while HBsAb was most prevalent among the University graduates (see table 5).

Table 5: Sero-prevalence and serologic markers according to Educational Level

Educational level	HBsAg Pos	HBsAb Pos	HBeAg Pos	HBeAb Pos	Total HBcAb Po	Total (%), N=300
Elementary (%)	6 (11.54)	14 (26.92)	4 (7.69)	2 (3.85)	8 (15.38)	52 (17.33)
Secondary (%)	26 (14.44)	44 (24.44)	24 (13.33)	14 (7.78)	30 (16.67)	180 (60)
University (%)	8 (11.76)	20 (29.41)	6 (8.82)	2 (2.94)	8 (11.76)	68 (22.67)

While HBsAg was most prevalent among the self-employed, HBsAb was most prevalent among the civil servants and total HBcAb was most prevalent among those who were not employed (see table 6).

Table 6: Sero-prevalence and serologic markers according to occupation

Occupation	HBsAg Pos	HBsAb Pos	HBeAg Pos	HBeAb Pos	Total HBcAb Pos	Total (%), N=300
Self-Employed (%)	30 (14.42)	44 (21.15)	26 (12.5)	16 (7.69)	32 (15.38)	208 (69.33)
Civil Servant (%)	4 (12.5)	22 (68.75)	4 (12.5)	0	4 (12.5)	32 (10.67)
Housewife (%)	2 (7.69)	4 (15.38)	2 (7.69)	2 (7.69)	2 (7.69)	26 (8.67)
Not Employed (%)	4 (11.76)	8 (23.53)	2 (5.88)	0	8 (23.53)	34 (11.33)

With the exception of HBeAb, the serological markers were most prevalent among those of "other" religion (see table 7).

Table 7: Sero-prevalence and serologic markers according to religion

Religion:	HBsAg Pos	HBsAb Pos	HBeAg Pos	HBeAb Pos	Total HBcAb Pos	Total (%), N=300
Christian (%)	36 (13.04)	72 (26.09)	30 (10.87)	16 (05.8)	40 (14.49)	276 (92)
Muslim (%)	2 (14.29)	2 (14.29)	2 (14.29)	2 (14.29)	2 (14.29)	14 (04.67)
Others (%)	2 (20)	4 (40)	2 (20)	0	4 (40)	10 (3.33)

Although those with monthly income of > 250,000 constituted only 1.33%, sero-prevalence of the serological markers were most prevalent among this group (see table 8).

Table 8: Sero-prevalence and serologic markers according to monthly income

Monthly income (fcfa)	HBsAg Pos	HBsAb Pos	HBeAg Pos	HBeAb Pos	Total HBcAb Pos	Total (%), N=300
< 30000 (%)	28 (11.86)	62 (26.27)	22 (9.32)	10 (4.24)	34 (14.41)	236 (78.67)
30,000-250,000 (%)	10 (16.67)	14 (23.33)	10 (16.67)	6 (10)	10 (16.67)	60 (20)
> 250,000 (%)	2 (50)	2 (50)	2 (50)	2 (50)	2 (50)	4 (1.33)

A total of thirteen serological patterns were detected among the pregnant women with HBsAb (26%) being the most prevalent HBV serological marker while, HBeAb (6%) was the least prevalent. With regards to co-positivity "HBeAb and HBcAb" (5%) was the most prevalent closely followed by "HBsAb and HBcAb" (4.66%) and, the least was "HBeAg and HBcAb" (1%). See figure 1.

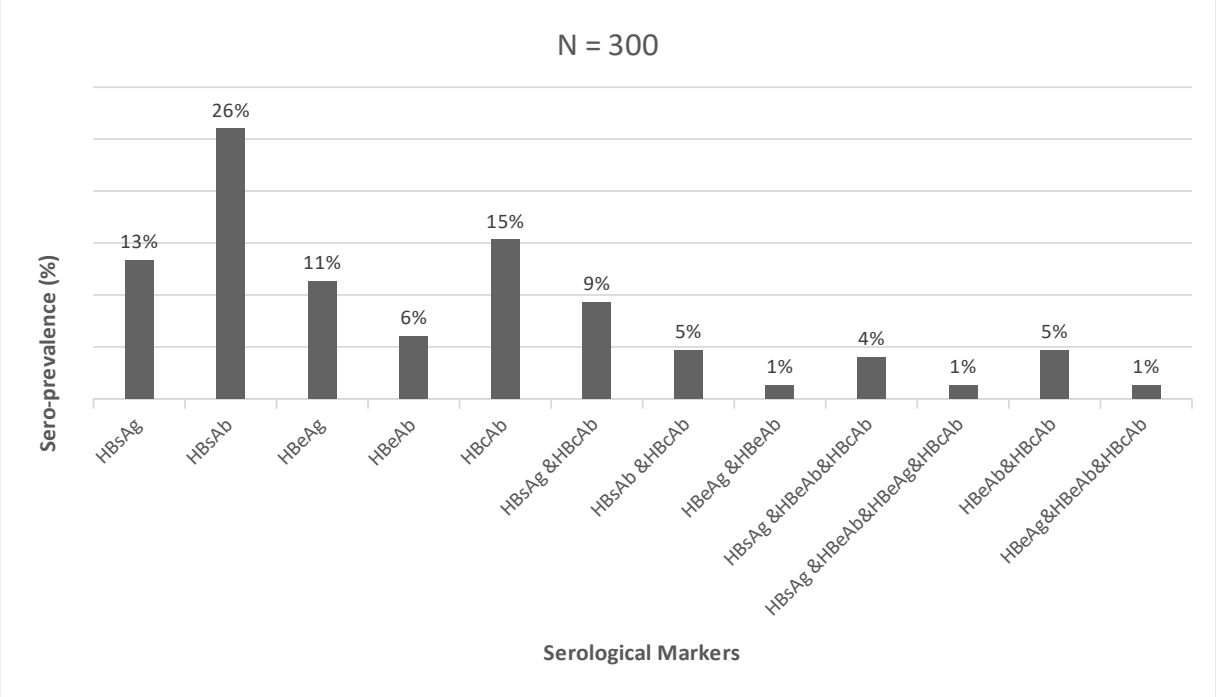

Fig 1: Sero-prevalence of the serological markers

Up to 52% of the women disagreed to have heard of HBV while 11.33% agreed. Also, while 38% disagreed that HBV can affect all age groups, 14% agreed. Furthermore 12% agreed that HBV can be transmitted by unsafe sex and 43.33% disagreed. With regards to perinatal transmission 44% disagreed HBV can be transmitted from mother to child and only 3.33% agreed. Finally 40.67% did not agree to the fact that vaccination against HBV is available while only 5.33% agreed (see table 9).

Knowledge and attitude towards HBV

Table 9: Knowledge on HBV among the pregnant women

Total Examined, 300	SA	A (%)	D (%)	SD (%)	I don't know
Has heard of HBV	02(0.67)	34 (11.33)	156(52)	88(29.33)	20(6.67)
HBV can cause liver cancer	04(1.33)	54(18)	124(41.33)	46((15.33)	72(5.67)
Nausea, vomiting and loss of appetite are common symptoms of hepatitis B	30(10)	82(27.33)	70(23.33)	02(0.67)	116(38.67)
HBV can affect all age groups	04(1.33)	42(14)	114(38)	70(23.33)	70(23.33)
There is no symptom of HBV in some patients	02(0.67)	68(22.67)	64(21.33)	62(20.67)	104(34.67)
HBV can be transmitted through contaminated blood	04(1.33)	26(8.67)	150(50)	66(22)	54(18)
HBV can be transmitted by blades of ear or nose pierces	02(0.67)	30(10)	120(40)	64(21.33)	84(28)
HBV can be transmitted by unsafe sex	06(02)	36(12)	130(43.33)	72(24)	56(18.67)
HBV can be transmitted by mother to child	08(2.67)	10(3.33)	132(44)	96(32)	54(18)
HBV is curable/treatable	0	34(11.33)	144(48)	48(16)	74(24.67)
Vaccination against HBV is available	4(1.33)	16(5.33)	122(40.67)	84(28)	74(24.67)

SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree.

Concerning the women's attitude towards HBV, 54.67% agreed to have been screened for HBV and only 13.33% agreed to have gotten themselves vaccinated against the HBV (see table 10).

Table 10: Attitude towards HBV among the pregnant women

N, 300	**YES (%)**	**NO (%)**
Have you screened for HBV?	164 (54.67)	136 (45.33)
Do you ask your barber to change the blade for safe equipment for ear and nose piercing?	182 (60.67)	118 (39.33)
If diagnosed with hepatitis B, would you go for further investigation and treatment?	280 (83.33)	20 (33.33)
Have you gotten yourself vaccinated against hepatitis B?	40 (13.33)	260 (86.67)
Would you avoid meeting hepatitis B patients?	188 (62.67)	112 (37.33)

Those without knowledge on HBV were 7.34 times more likely to test HBsAg positive and 3.33 times more likely to test HBeAg positive, than those who were more knowledgeable. The attributable risk also show that 56% of the incidence of HBsAg and 12% of the incidence of HBeAg could be attributed to the lack of knowledge on HBV. Moreover the likelihood ratio of 11.4 indicates significant increase in the probability of testing positive for HBsAg among those without knowledge on HBV (see table 11).

Table 11: Risk associated with lack of knowledge on HBV by the women

Variable	Relative risk (95% CI)	Attributable risk (95% CI)	Odds ratio (95% CI)	LR	P-value
HBsAg and no knowledge	7.34 (4.49 to 11.56)	0.56 (0.35 to 0.72)	18.75 (7.930 to 46.16)	11.14	<0.0001****
HBs Ag and poor attitude	0.44 (0.22 to 0.84)	0.1 (0.22 to 0.18)	0.39 (0.19 to 0.8)	0.54	0.0157*
HBeAg and no knowledge	3.33 (1.587 to 7.08)	0.12 (0.04 to 0.19)	3.79 (1.72 to 8.18)	1.7	0.0012**
HBeAb and no knowledge	0.31 (0.11 to 0.87)	0.06 (005 to 0.12)	0.29 (0.1 to 0.86)	0.45	0.0283*

Discussion

In this study the sero-prevalence of HBsAg which indicates active infection was 13.3% meanwhile, HBeAg which is typically linked to high infectivity and viral load had a sero-prevalence of 11.3% among the pregnant women. This is quite on the high side with respect to the 4.98% prevalence of HBsAg among pregnant women in the same study area, a year before. The discrepancy among individuals within these study periods and among the two samples of pregnant women tested may have contributed to the difference in the seroprevalence of HBsAg. For example about 26.7% of the women in the previous study were vaccinated against HBV meanwhile only 13.33% of the women in the current study were vaccinated. The prevalence of HBsAg seemed to have increased by 6.35%, with a 13.37% decreased in vaccination coverage, over a period of one year. The seroprevalence of HBsAg was similarly high (12.8%) among pregnant women in Sokoto Nigeria but, with rather low HBeAg (0.9%). Meanwhile 5% of pregnant women in North East Egypt tested positive for HBsAg and 0% tested positive for HBeAg. This indicates higher infectivity and viral load among the pregnant women in this current study, compared to the prevalence in the studies in Sokoto Nigeria and in Northeast Egypt. The prevalence of HBsAg were equally low among pregnant women in; North West Ethiopia (3.8%), Warri, Nigeria (1.4%), West Iran (0.7%) and Spain (0.1%). While these studies reported low HBsAg, the prevalence of HBsAg was rather high the current study. And in line with expectations, the prevalence of HBeAb which indicates reduced amount of HBV DNA was low (6%).

Twenty six percent of the pregnant women tested positive for HBsAb which provides protection against HBsAg. Since HBsAb could also indicate immunization from vaccination, it is expected to correlate with the level of vaccination coverage. However in this study the vaccination coverage was only 13.33%, insinuating that the presence of HBsAb was probably induced by recovery from acute HBV infection. Additionally, recovery from acute infection is indicated by the presence of "HBsAb and HBcAb" co-positivity and only 4.66% of the women tested co-positive for "HBsAb and HBcAb". Since the percentage of those with vaccinated antibodies-HBsAb (26%) is far more than those who claimed to have been vaccinated plus those who have probably recovered from acute infection, some of the women may have wrongly reported their vaccination status.

Finally the odds for those without knowledge on HBV testing positive for HBsAg and HBeAg were 18.75 and 3.79 times the odds of those with knowledge on HBV respectively. Likewise the likelihood ratio of 11.14 and 1.7 also indicated increase in the probability of testing positive for HBsAg and HBeAg, among those without knowledge on HBV. Although the chances of testing positive for HBeAb was significantly higher among those without knowledge, the odds were higher for HBsAg and HBeAg. This indicates that the risk was higher for serological markers of infectivity than for immunity. As reported in previous findings, poor knowledge is highly associated to risk of HBV infection.

Conclusions

Despite the aim to eradicate viral hepatitis as a public health risk by the year 2030 there is scarcity of data on the sero-prevalence of HBV serological markers and vaccination coverage among pregnant women who, are a key source of HBV transmission through perinatal transmission. In this study the sero-prevalence of HBsAg and HBeAg were 13.33% and 11.33%, indicating not just the presence of infection but also high infectivity among the pregnant women. Though the percentage of vaccination coverage was only 13.33%, the prevalence of HBsAb was 26% indicating that some of the women were either

unaware of their vaccination status or had gotten immunized through recovery from acute infection. In order to eradicate viral hepatitis as a public health risk, treatment should be given to all HBsAg positive cases in conjunction with the augmentation of vaccination coverage especially among pregnant women in the Bamenda health area.

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