Prevalence and Factors Associated with Hepatitis B Virus Infection among Women of Reproductive Age (WRA) in Nigeria

UTHealth Houston

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Introduction

Nigeria is in the sub-Saharan African region, credited with one of the highest prevalence rates of HBV infection globally. The main culprit route of transmission is perinatal with infected infants at more than 90% risk for chronic infection. In the absence of prophylaxis with potent antivirals before and during pregnancy, the risk of perinatal transmission to the infant can be as high as 40% if the mother is positive for the HBV surface antigen (HBsAg) but negative for the HBV envelope antigen (HBeAg); and as high as 90% transmission risk if positive for both antigens. The risk is higher when accompanied by high maternal hepatitis B viral load titers.

Opportunities for maternal antigenic testing during pregnancy and identification of mothers at risk of mother-to-child transmission are wanting due to low ante natal care (ANC) attendance and hospital delivery in Nigeria. This has a double dilemma of also diminishing the chances of identifying exposed babies who should receive the birth dose of HBV vaccine and the immunoglobulin (HBIG) within stipulated timelines. Information on the HBV infection status of women who are entering their reproductive life or are already having children is an important opportunity to identify exposed infants at birth and therefore require interventions aimed at preventing infection. Research accessing HBV prevalence and associated factors among WRA at the national and sub-national levels in Nigeria are lacking. Existing studies are limited to pregnant women and clinic based in a pocket of states. We examined the prevalence and associated factors of HBV infection among WRA in Nigeria.
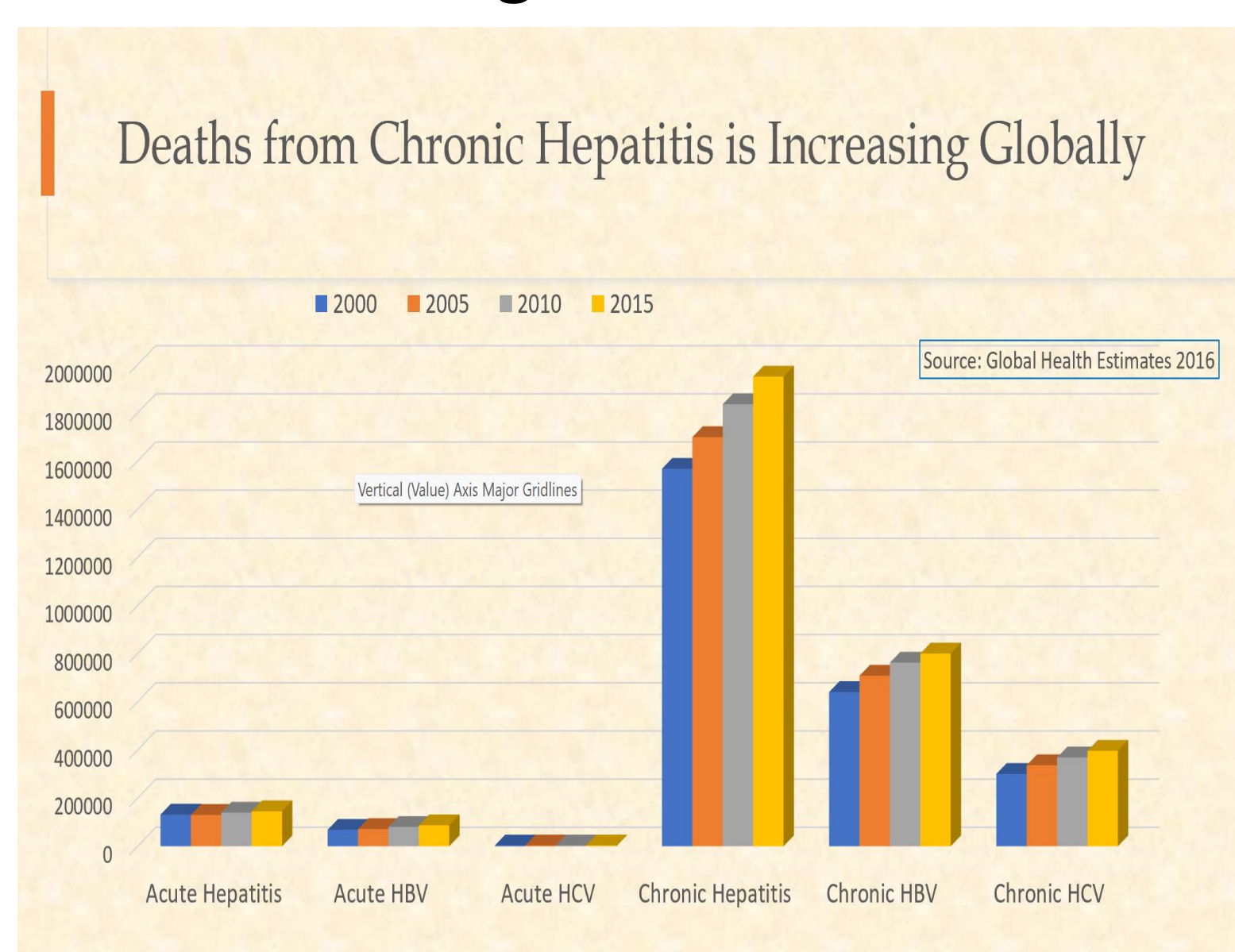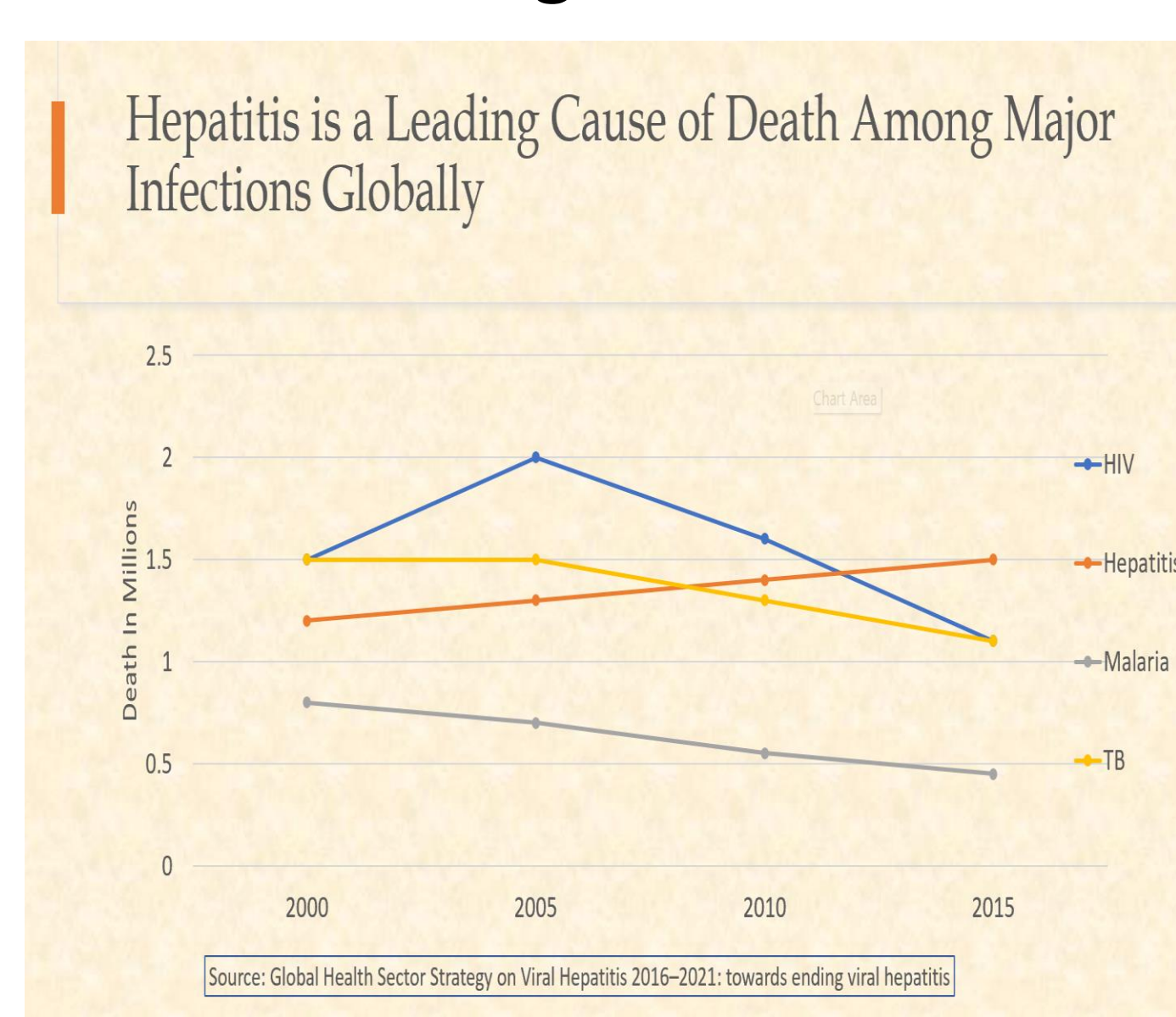
Figure 1.

Figure 2.

Methods

This is a secondary analysis of data from the National AIDS Indicator and Impact Survey (NAIIS, 2018). NAIIS used a two-stage cluster sampling method to randomly select a nationally representative sample of 140,974 adults (18-64) and emancipated minors (15-17) from nearly 88,000 households across all 36 states and the Federal capital Territory (FCT) in the 6 geo-political zones in Nigeria. This analysis is based on a sample of 4,771 female participants aged 15-49 who had HBsAg testing records in the dataset. Data collection took place from July to December 2018.

Data were analyzed using Stata statistical software version 16 with significance level of ≤ 0.05 after generating all necessary new variables or recoding of existing variables. Analysis used sample weights specified in the survey design where calculation of weights for individuals 15 years and above were the same as calculated household weight. Logistic regression models were applied to 4,771 samples of WRA with HBsAg results as a marker of HBV infection. National and regional analysis are presented.

Results

The national prevalence of HBV infection among WRA is 8.1% with regional variations ranging from 10.2% in the North-West to 6.6% in the South-West. Rural residents have 73% higher odds of infection compared to urban residents (OR=1.73; P-value=0.007) and multiparous women with ≥4 prior pregnancies have 82% lower odds of infection (p-value=0.031). Similarly, respondents with 2 or more sexual partners in the last 12 months before the survey have 2.65 times the odd of HBV infection compared to those with no sexual partners in the same period (aOR=2.65; p-value=0.041). There were no significant factors in the Northern region. In the South, urban residence (OR=2.31; P-value=0.013) and sexual partnerships of 2 or more (OR=3.94; P-value=0.024) are positively associated with the risk infection while multiparity (OR=0.01; P-value=0.034) has a negative association.

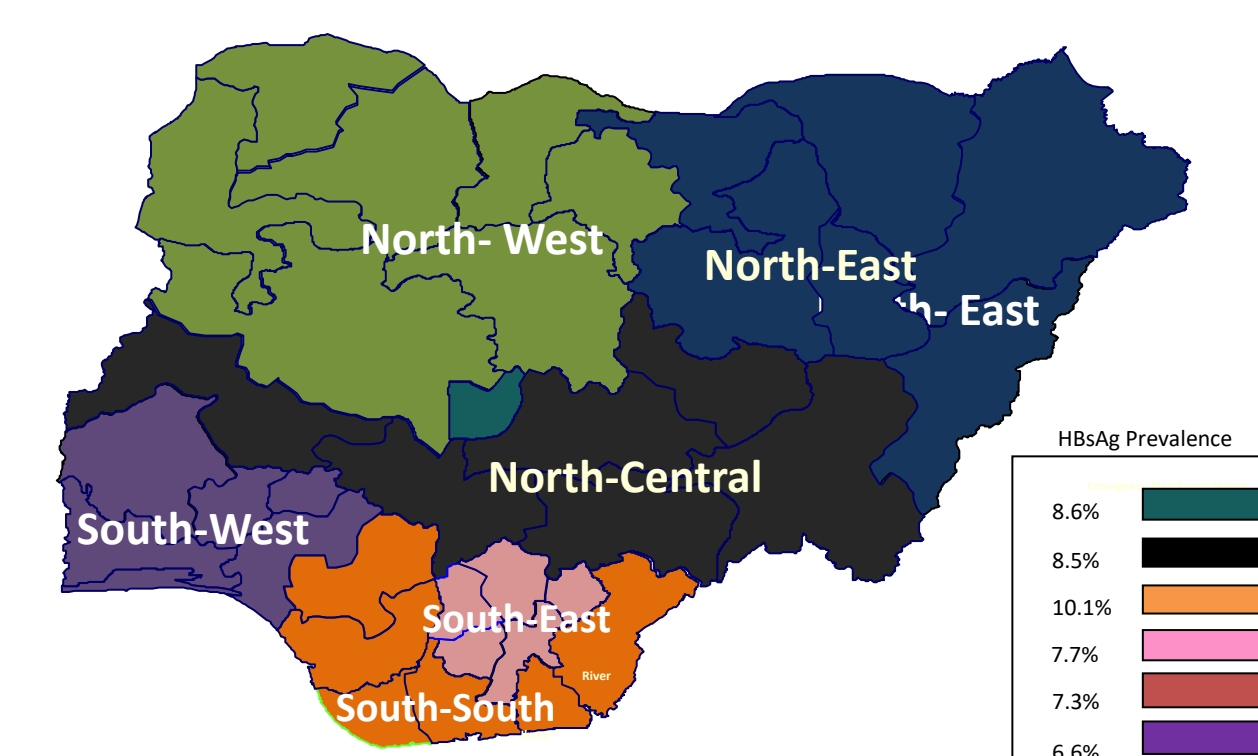**Figure 3:** HBsAg[+] Sero-Prevalence by Geo–Political Zone .

Table 1: Factors Associated with HBsAg[+] Antigen among WRA.

Variable (N)		Crude Associations			Adjusted Associations (N=2977)		
	N	OR	P-value	95% CI	OR	P-value	95% CI
Age (4280)	15-24	1			1		
	25-34	1.18	0.43	0.78-1.78	1.33	0.28	0.79-2.24
	≥ 35	0.88	0.56	0.59-1.34	1.11	0.70	0.66-1.86
Religion (3892)	Islam	1			1		
	Christianity	0.94	0.70	0.67-1.31	0.50	0.12	0.21-1.19
Residence (3764)	Urban	1			1		
	Rural	1.34	0.09	0.946-1.90	1.73	0.01	1.16-2.57
Ever Married (3914)	No	1			1		
	Yes	0.88	0.48	0.61-1.26	0.72	0.24	0.41-1.25
Parity (2956)	None	1			1		
	1 - 3	1.58	0.04	1.02-2.45	0.67	0.39	0.23-1.68
	≥ 4	1.16	0.43	0.81-1.67	0.18	0.03	0.04-0.86
Region (4280)	Northwest	1			1		
	Northeast	1.06	0.88	0.65-1.73	1.33	0.36	0.72-2.45
	Northcentral	0.78	0.30	0.48-1.25	0.82	0.58	0.41-1.65
	Southeast	0.81	0.41	0.47-1.36	0.91	0.82	0.39-2.09
	South-south	0.65	0.15	0.36-1.18	0.67	0.36	0.28-1.60
	Southwest	0.73	0.28	0.41-1.29	0.68	0.34	0.31-1.87
Sexual partners (3401)	None	1			1		
	1	1.31	0.21	0.86-2.00	1.25	0.37	0.78-2.03
	≥ 2	2.48	0.04	1.05-5.8	2.65	0.04	1.04-6.76
Hep C (4280)	Negative	1			1		
	Positive	0.53	0.40	0.12-2.32	0.64	0.17	0.03-1.87
Aware: HIV Status (1077)	No	1					
	Yes	0.33	0.01	0.14-0.78			
Model Fit (GoF)					F-Test	0.34	
					P-value	0.96	

Discussion

The High prevalence of HBV infection above 8% among WRA in Nigeria and across several socio-demographic factors suggests a highly endemic population by global standards. This portends negative implications for newborns who must now receive necessary doses of HBV vaccine and HBIG to prevent vertical transmission. HBsAg Screening and sexuality education of WRA, particularly when they are pregnant, live in rural settings and/or have multiple sexual partners are recommended. Significant regional differences call for a targeted HBV screening and vaccination strategy during the preconception period and pregnancy. Interventions, in this regard, may vary by regions with widespread program in the North and concentration among rural dwellers, nulliparous women and those with high multiple sexual partnerships in the South.

Conclusions

The high HBV prevalence among WRA has serious consequences for vertical transmission if pregnant women are not tested and treated. Urgent policy is needed for universal HBV screening of pregnant women and treatment if positive. Targeted programming by region and risk factors can reduce infection rates. Integrating HBV testing and interventions within existing mother-to-child HIV prevention programs provides resource efficiency.

Contact

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