

## Low level of Hepatitis B knowledge and awareness among pregnant women in the Kintampo North Municipality: implications for effective disease control

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### SUMMARY

**Background:** Over 2 billion people are infected with Hepatitis B virus (HBV) and about 240 million are chronic carriers of the virus. Chronic HBV infection is an important cause of liver cancer. The infectivity of HBV is hundred times higher than the HIV virus yet it receives comparatively little attention in public health. The study assessed knowledge and awareness of HBV among pregnant women in the Kintampo Municipality of Ghana.

**Methods:** A cross-sectional survey was conducted among pregnant women attending antenatal clinic in two facilities between September 2010 and November 2010. We performed analysis to determine factors associated with hepatitis B awareness.

**Results:** Forty-one percent of the 504 women were aware of hepatitis B viral infection, 33.5% of the women were able to correctly mention the transmission routes of Hepatitis B. The radio was the most (42%) mentioned source of information on HBV and the least source of information were places of worship (2.7%). After adjusting for other factors, level of education; SSS/SHS and above OR=4.2, P<0.01, 95% CI (2.5, 7.0) and occupation (Civil servant/Student); OR= 3.8, P<0.01, 95% CI (1.7, 8.5) were the important predictors of Hepatitis B awareness.

**Conclusion:** There is a low level of knowledge and awareness of HBV among pregnant women in this municipality. This could potentially hamper effective HBV prevention and control in Ghana. Education on hepatitis B need to be included in health promotion activities.

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**Keywords:** Hepatitis B, knowledge, awareness, women, Ghana

### INTRODUCTION

Hepatitis B is one of the major global health infectious diseases affecting the liver. It is estimated that, globally, over 2 billion people have been infected with Hepatitis B virus and an estimated 240 million people are chronic carriers of the virus. Sub-Saharan Africa remains one of the regions with the highest prevalence of HBV.<sup>1, 2, 3</sup> Chronic hepatitis B infection is a leading cause of cirrhosis, liver cancer and its related deaths. It is estimated that close to one million people die due to cirrhosis and liver cancer every year.<sup>4,5,6</sup> About 80-90% of infants who are infected during their first birthday develop chronic infections.<sup>6</sup> The main modes of transmission of the hepatitis B virus are through exposure to body fluids like blood, semen or vaginal discharge. Sexual contact, sharing contaminated needles, razors, shared tooth brushes and exposure through non-intact skin or mucous membranes can also transmit HBV<sup>7,8,9</sup>. The infectivity of HBV is hundred times higher than the HIV virus.<sup>7</sup>

HBV is rarely congenitally acquired, less than 3% of all mother-to-newborn infections; but it is mostly acquired during delivery, i.e. perinatally acquired.<sup>6,8,10,11</sup> At least 50% of all HBV infections are asymptomatic, it is often found during routine prenatal screening. Maternal hepatitis B infection during pregnancy does not increase maternal morbidity and mortality, however, it increases the risk of perinatal transmission.<sup>12</sup> Clinical signs and symptoms occur more often in adults than in infants or children, who usually have an asymptomatic acute course. The signs and symptoms of HBV infection are nonspecific and are characterized by stealthy onset of malaise, anorexia, nausea, vomiting, right upper quadrant abdominal pain, fever, headache, myalgia, skin rashes, arthralgia and arthritis, and dark urine.<sup>12</sup>

Immunoprophylaxis with hepatitis B immune globulin (HBIG) and hepatitis B vaccine is known to be safe and effective.<sup>10</sup>

Vaccination is the most effective method in preventing HBV infection and thus, decreasing the incidence. Countries in sub-Saharan Africa are at various stages of introducing hepatitis B vaccines into primary health care.<sup>8</sup> Vaccination programmes for neonates born to mothers with chronic HBV infection have demonstrated a reduction in the prevalence of childhood HBV infection and hepatocellular carcinoma in a number of endemic areas.<sup>13,14,15</sup> Awareness of pregnant women about hepatitis B and the knowledge that it can be prevented through vaccination is important for the effective control of the disease.

A study in Nigeria that assessed the knowledge of 643 pregnant women about Hepatitis B infection found that seventy six percent (76%) of women had inadequate knowledge of HBV infection.<sup>16</sup> Another study in rural Cameroon that used a hepatitis B basic knowledge summary score found out that 84% of interviewed women had low knowledge of HBV.<sup>17</sup>

Studies in Ghana have estimated HBV prevalence to be between 6.7% and 11% among blood donors<sup>18,19</sup>, 6.4% among pregnant women<sup>20</sup> and 15.6% among children in the general population.<sup>21</sup> A three-year hospital based retrospective study conducted in Kintampo Municipal Hospital among 3402 blood donors reported an overall sero-prevalence of hepatitis B surface antigen of 9.6%.<sup>19</sup> This prevalence is an indication of high prevalence in the general population of Kintampo. We therefore aimed to assess knowledge and awareness of pregnant women attending antenatal clinics at two facilities in Kintampo North Municipality.

## METHODS

### Study design and setting

We conducted a cross-sectional study in the Kintampo North Municipality of the Brong Ahafo Region of Ghana to assess the level knowledge of pregnant women about HBV infection. The municipality covers a land area of 5108 square kilometers.<sup>22</sup> The population of Kintampo in 2014 is estimated at 88,832, forty nine (49%) of whom are women of child-bearing age. About 65% of the municipality is rural and the predominant occupation is subsistence farming.<sup>23</sup> Kintampo is mainly multiethnic, with Akans and Mo's predominantly occupying the area. There are a number of tribes; Frafra, Dagarti, Builsa, Konkomba, Bimoba, Kassena etc who have migrated from northern Ghana. Pregnant women attending antenatal clinic at the Kintampo Municipal

Hospital (public) and the Prince of Peace Maternity Home (private) were targeted for this inclusion. .

### Data collection

We used a questionnaire in the survey among women attending antenatal clinic at these two facilities between September 2010 and November 2010. Most of the questions were closed-ended. The questionnaire was finalised after pre-testing at the Kintampo Municipal Hospital and the Prince of Peace maternity home in the week before the actual study was carried out. The questionnaire explored the socio-demographic background of respondents, knowledge of hepatitis B status, their awareness of hepatitis B (this was described as liver infection) and sources of information on Hepatitis B. The questionnaires were administered verbally by trained research assistants in Twi or Mo (the dominant local languages mostly spoken in the area). The research assistants were trained to present hepatitis B as a viral infection that infects the liver.

### Data management and Analysis

Data was double entered, verified and cleaned using Microsoft Access software. The cleaned data was imported into STATA version 12 for analysis. The demographic characteristics and responses to the questions asked were described using proportions. Logistic regression was performed to measure association between the main outcome variable (Awareness of Hepatitis B) and the explanatory variables (demographic variables and other variables). We performed bivariate analysis to identify predictors of HBV awareness. Factors significant at a P-value of less than 0.05 were entered into a logistic regression model that was used to identify independent predictors of HBV awareness.

### Sample Size and Sampling procedures

The data used in the analysis was part of data collected in a study that assessed the acceptability of microbicide among pregnant women in the Kintampo North municipality.<sup>24</sup> We aimed to interview 500 pregnant women and expected that this sample will afford the estimation of the level of knowledge and awareness of hepatitis B with a margin of error of 4% (at 95% confidence level). We assumed that 50% of respondents were knowledgeable and aware of hepatitis B. A non-response rate of 5% was factored in the sample size calculation. The two health facilities that were involved in the study have an annual antenatal registration of about 2600. These two health facilities were purposively selected because they are mainly visited by pregnant women in the study area. Pregnant women who consented were enrolled when they visited the facility from September 2010 to November 2010.

**Ethical considerations**

Scientific and ethical approvals for the conduct of the study were obtained from the Kintampo Health Research Centre (KHRC) Scientific Review Committee and KHRC Institutional Ethics Committee respectively. Approval was also obtained from the management of all the selected health facilities. Written Informed consent was sought from each respondent after the objectives of the study had been explained using approved consent forms. Participants were assured of confidentiality at all times and that they were free to decline participation at any time or to withdraw from the study. Completed questionnaires were safely kept under lock and key and they were accessed by only the study investigators. Pregnant women were interviewed as and when they came for antenatal care.

**RESULTS**

**Demographic characteristics of respondents**

A total of 504 women were surveyed. The mean age was 26 years (with standard deviation= 5.9 years). Thir-

ty-seven percent (37%) of the women had no formal education, while about eighteen percent (18%) of them had formal education beyond high school. Respondents were predominantly Christians (71%) and petty traders (40%).

**Knowledge and Awareness of Hepatitis B virus infection**

Forty one percent (41%) of respondents were aware of hepatitis B as a disease. Of those who were aware, 42% mentioned radio as the main source of information on Hepatitis B. The least source of information about hepatitis B was places of worship (2.7%). About thirty four percent (33.5%) of women who reported awareness of hepatitis B were able to correctly mention the transmission routes of Hepatitis B. About sixty-six percent (66.5%) incorrectly mentioned air-borne transmission, food contamination, or through vector-borne (most mentioned mosquito) transmission as the route of transmission of hepatitis B. Only 9.2% of the participants knew their hepatitis B status.

**Table 1** Bivariate and Multivariate analysis of the association between socio-demographic characteristics and awareness of hepatitis B

| Characteristics              | Percentage n (%) | Unadjusted 95% CI | OR | P-Value | Adjusted OR(95% CI) | P-Value |
|------------------------------|------------------|-------------------|----|---------|---------------------|---------|
| <b>Age</b>                   |                  |                   |    |         |                     |         |
| 15-19                        | 72(14.3)         | 1                 |    |         |                     |         |
| 20-29                        | 292(57.9)        | 1.1(0.7-1.9)      |    | 0.70    | 0.6(0.3-1.3)        | 0.21    |
| 30+                          | 140(27.8)        | 0.7(0.3-1.3)      |    | 0.25    | 1.2(0.7-1.9)        | 0.57    |
| <b>Education</b>             |                  |                   |    |         |                     |         |
| None                         | 188 (37.3)       | 1                 |    |         | 1                   |         |
| Primary School & above       | 228(45.2)        | 1.7(0.9-3.3)      |    | 0.06    | 1.5(0.8-3.0)        | 0.15    |
| Senior High School and above | 88(17.5)         | 7.1(4.6-11.2)     |    | <0.001  | 4.2(2.5-7.0)        | <0.001  |
| <b>Religion</b>              |                  |                   |    |         |                     |         |
| Moslem                       | 141(28.4)        | 1                 |    |         | 1                   |         |
| Christian                    | 356(71.6)        | 2.1(1.4-3.2)      |    | <0.001  | 1.2(0.8-2.1)        | 0.36    |
| <b>Occupation</b>            |                  |                   |    |         |                     |         |
| Petty trader                 | 202(40.1)        | 1                 |    |         | 1                   |         |
| Civil servant/Student        | 62(12.3)         | 8.5(4.1-17)       |    | <0.001  | 3.8(1.7-8.5)        | 0.001   |
| Farmer/Labourer              | 71(14.1)         | 0.3(0.2-0.74)     |    | 0.005   | 0.7(0.3-1.6)        | 0.45    |
| Other                        | 169(33.5)        | 1.3(0.9-2.1)      |    |         | 1.2(0.7-1.9)        |         |
| <b>Ethnicity</b>             |                  |                   |    |         |                     |         |
| Akan                         | 191(37.9)        | 1                 |    |         | 1                   |         |
| Non-Akans                    | 313(62.1)        | 0.5(0.3-0.7)      |    | <0.001  | 0.8(0.5-1.4)        | 0.49    |
| <b>Place of residence</b>    |                  |                   |    |         |                     |         |
| Kintampo town                | 277(54.9)        | 1                 |    |         | 1                   |         |
| Out of Kintampo              | 227(45.1)        | 2.2(1.5-3.1)      |    | <0.001  | 1.3(0.9-2.1)        | 0.18    |

The majority of respondents (90.8%) had never knowingly tested for HBV. Awareness of HBV was higher among respondents who were less than 26 years of age compared to those who were 26 years and beyond (43.2% versus 38.5%).

In bivariate analysis, at a significance level of 0.05, educational level; SSS/SHS and above; OR= 7.1, P<00.1, 95% CI (4.6, 11.2), religion; OR=2.1, P<00.1, 95% CI (1.4, 3.2), occupation; OR=8.5, P<00.1, 95% CI (4.1,17), ethnicity; OR= 0.5, P<00.1, 95% CI (0.3, 0.7) and place of residence; OR=2.2, P<00.1, 95% CI (1.5, 3.1) were significantly associated with awareness of Hepatitis B (Table 1).

However, after adjusting for other factors, level of education; SSS/SHS and above OR=4.2, P<00.1, 95% CI (2.5, 7.0) and occupation; Civil servant/Student; OR= 3.8, P<00.1, 95% CI (1.7, 8.5.) were the only important predictors of hepatitis B awareness.

### DISCUSSION

This survey sought to document the knowledge and awareness of hepatitis B among pregnant women at the Antenatal Clinics (ANC) in two facilities in the Kintampo North municipality. The study showed that the level of awareness is low among pregnant women. Over fifty percent of the respondents reported that they were not aware of HBV. A study conducted in the Upper West Region of Ghana, which sought to examine perceptions and understandings of HBV reported extremely low levels of knowledge and insidious lay misconceptions about the disease.<sup>25</sup> Similarly, a population-based knowledge, attitudes, beliefs and practices study in France, indicated a low level of knowledge on the modes of transmission of HBV through sex contact or sharing of needles by injecting drug users.<sup>26</sup> The low knowledge documented in this study is similar to the findings of Adeyemi et al and Mkandawire et al in Nigeria and Ghana respectively.<sup>16, 25</sup> The low level of knowledge of HBV among pregnant women remains a missed opportunity to educate women on the effects of HBV complications on the mother and the growing foetus. This is because of the contacts the pregnant women make with the facility during antenatal clinic attendances. This emphasizes the need for a health promotion intervention to raise awareness and increase knowledge of the seriousness of hepatitis B.

According to the Ghana Demographic and Health Survey Report, 2008, knowledge of HIV is almost universal with ninety eight percent and ninety nine percent among women and men respectively albeit some differences in the level of knowledge by the educational level, region and wealth quintile.<sup>27</sup> The contrasting knowledge levels

of the two infections despite the commonality of characteristics may be due to the intensity of publicity given to HIV and AIDS, thus overshadowing any information on Hepatitis B. The low level of knowledge among pregnant women presents a possible threat due to the potential to spread to sexual partners, newborns, the community and the country at large. Despite the availability of hepatitis B vaccine although at varying levels of access, the uptake is considerably low.<sup>25</sup>

The results from this study shows that radio is the most accessed source of information for HBV, with the churches/mosques being the least. (2.74%) The fact that the radio was indicated as the most accessible channel for transmitting information on HBV can be helpful and harmful at the same time. When accurate information on HBV is transmitted, it becomes a helpful tool, however when the women are misinformed on radio, it could lead to laxity in seeking care if they are even able to ascertain their positive status or be stigmatized. Our finding is corroborated by Mkandawire et al who found the radio as the easiest source of information for HBV in the Upper West Region of Ghana. There is a case for exploring other avenues for hepatitis B education and awareness creation. The low level of hepatitis B testing among the pregnant women surveyed is a reflection of a neglect of the disease within the public health system in Ghana. This neglect is inconsistent with the seroprevalence of 9.6% found in the retrospective study in this community, which is deemed very high.

Our study clearly demonstrates that people with higher level of education are more likely to be aware and knowledgeable of HBV. This is not surprising since people who are educated are in a better position to access more sources of information and learn more about HBV. With over thirty percent of the population having no education, inaccurate information that is aired on radio can easily mislead and affect health outcomes. Respondents who had a Senior High School and beyond showed a higher awareness and knowledge level of HBV compared to those who had no formal education.

The educational level often translates into employment opportunities. This population was not different, as civil servants/students who would naturally have a higher level of education appeared to be more knowledgeable and aware of HBV than farmers/labourers. Again by virtue of their employment, civil servants may be exposed to several symposia on hepatitis B.

### Study limitation

The fact that the study was a facility-based study inherently presents some limitations. Nevertheless these results clearly document the knowledge and awareness

levels of pregnant women who attended ANC within a 2-month period of this study.

## CONCLUSION

Knowledge and awareness of HBV among pregnant women in the Kintampo Municipality is low. Generalized across the country, this could have the potential to hamper effective HBV prevention and control in Ghana.

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