

A Survey Study of Pregnant Women and Healthcare Practitioners Assessing the Knowledge of Attitudes and Practices of Hepatitis B Management at a Teaching Hospital in Kumasi, Ghana, West Africa

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Hepatitis B virus (HBV) infection is a major global health problem, with sub-Saharan Africa (SSA), including West Africa, bearing a large proportion of cases. Mother-to-child and early childhood horizontal transmission, the most common mechanisms of disease spread in West Africa, lead to a high rate of chronic infection. Although these transmission mechanisms are preventable through vaccine and hepatitis B immunoglobulin, they are not routinely used due to limited resources. Antiviral therapy in pregnant women who are HBV positive is another option to reduce transmission. We conducted a survey study of pregnant women and clinicians at a teaching hospital in West Africa to determine the knowledge base about HBV and willingness to implement measures to reduce HBV transmission. Pregnant women had limited knowledge about HBV and the common transmission mechanisms. Clinicians identified cost and time as the major barriers to implementation of HBV prevention measures. Both pregnant women and clinicians were largely willing to implement and use measures, including antivirals, to help reduce HBV transmission.

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Hepatitis B virus (HBV) infection, when untreated, can lead to cirrhosis, hepatocellular carcinoma, and/or liver failure [1]. It is a major global health problem, with sub-Saharan Africa (SSA), including West Africa, bearing a large proportion of cases [2]. Mother-to-child transmission (MTCT), along with early childhood horizontal transmission, are the most common mechanisms of disease spread in West Africa [2]. Unfortunately, MTCT and early life exposure leads to a high rate of chronic infection [3].

Mother-to-child transmission is preventable through vaccine and hepatitis B immunoglobulin (HBIG) [1], but due to limited resources, it is not widely done. Antiviral therapy in pregnant women who are HBV positive is another option to reduce transmission, with recent studies suggesting that it can lower viral load and reduce transmission [4–6]. However, more studies are needed to clarify the effectiveness of this approach as well as to determine the acceptability and willingness of pregnant women and caregivers to consider this option. Hepatitis B virus MTCT is more likely to occur when the mother has high levels of detectable virus during pregnancy; antiviral therapy works by reducing the viral load in pregnant women, thus reducing the likelihood of transmission. Antiviral therapy has been highly effective at reducing human immunodeficiency virus transmission, and the drugs that could be used in HBV-infected pregnant women are both safe in pregnancy and affordable [5, 7]. Furthermore, providing antiviral therapy to viremic women may be more feasible than the follow-up and administration of HBIG to newborns, especially in limited-resource environments. The effective introduction of antiviral therapy as a method to reduce HBV MTCT will require knowledge of HBV infection and transmission pathways as well as acceptability among both practitioners and pregnant women. This study was conducted to assess the (1) knowledge of pregnant women about HBV and (2) willingness of the women and healthcare providers to engage in relevant clinical and preventative strategies. One survey was developed to identify the willingness of obstetrician/gynecologists in Ghana to test for and to implement preventative therapies against HBV among mothers and infants. A second survey was developed to determine the extent of HBV knowledge among Ghanaian pregnant women and their willingness to participate in preventative and interventional care.

METHODS

This study was conducted at Komfo Anokye Teaching Hospital (KATH), a large teaching hospital in Kumasi, Ghana, between 2013 and 2014. Kumasi is the largest city and capital of the Ashanti Region of Ghana. Komfo Anokye Teaching Hospital is the second largest hospital in Ghana with 1200 beds. It is the only teaching hospital in the Ashanti Region, and it is affiliated with the Kwame Nkrumah University of Science and Technology University Medical School. Pregnant women come from all over the Ashanti Region to receive care in the antenatal clinics and give birth. Surveys were administered in the antenatal clinic at KATH. Obstetrician/gynecologists were approached in the clinic by research staff and provided a written copy to fill out and return. For the pregnant women, the survey was administered orally in their native language. Pregnant women were approached randomly for consent while waiting to be seen in the clinic; participating women were taken into a separate, private room to allow privacy during administration of the survey. The same individual administered the survey to all participating women. The survey was completely anonymous with no identifying information collected. Study data were then entered into Microsoft excel after all surveys were completed. The study was approved by the ethics committee at KATH, and all women participated with informed consent. The data were analyzed in Microsoft Excel version 13.4.6 and Stata version 12.

RESULTS

Physician Willingness

Thirty-six physicians took part in the physician survey. Some 97.2% (35 of 36) of physicians were willing to discuss the

consequences of HBV infection with mothers and 91.4% (32 of 35) were willing to discuss the risks and benefits of HBV vaccination. One hundred percent (36 of 36) of surveyed physicians were willing to provide hepatitis B (HBIG) to infants that were hepatitis B surface antigen (HBsAg) positive, a dose of HBV vaccine at birth if the mother was known to be HBV infected, or 3 doses of vaccine at 1, 2, and 6 months (current vaccine strategy in Ghana) if the interventions were free. When asked about the willingness to test for further markers of disease state in HBsAg-positive women, the percentage of physicians willing to always test for HBV DNA and hepatitis e antigen was 63.9% (23 of 36) and 77.1% (27 of 35), respectively. Among those who did not recommend or were unwilling to perform additional testing in HBsAg-positive women, the 2 most common reasons were costs and time constraints.

Finally, the vast majority of surveyed practitioners, 93.9% (31 of 33), were willing to enroll their patients in a clinical trial to study the safety and efficacy of tenofovir in pregnant women to reduce MTCT. However, some expressed concern about their ability to do so, with only 75.9% (25 of 33) reporting confidence in their ability to adequately explain issues related to participation, rules, and procedures associated with randomized controlled trials.

Knowledge and Willingness of Pregnant Women

A total of 209 pregnant women took part in the pregnant women survey portion of this study. All were pregnant women in the second or third trimester being cared for in the antenatal clinic at KATH. Some 96.2% (201 of 209) of pregnant women responded that they had heard of hepatitis B before. However, knowledge about HBV was limited (Table 1). A total of 54.5% (114 of 209) did not know that HBV could cause cancer, and

Table 1. Pregnant Women Responses About HBV Knowledge and Willingness

Knowledge Questions	% Yes	% No	% Don't Know
Have you heard of hepatitis B before?	96.2	3.3	0.5
Do you know what causes hepatitis B?	38.9	32.7	28.4
A person can have HIV and hepatitis B infections at the same time?	51	8.7	40.3
Hepatitis B affects your liver	68	7.8	24.3
You can have hepatitis B and not know until you are tested	77.8	7.2	15
There is an injection that prevents you from getting hepatitis B	71.7	22	6.3
Babies can also be infected by hepatitis B even before they are born or at birth	72.8	5.9	21.3
Hepatitis B can cause cancer	34.2	11.4	54.5
Willingness Questions			
Would you like to be tested for hepatitis B?	98.1	1.9	0
Will you like your baby to get an injection to protect against hepatitis B?	93.3	6.7	0
Will you take medicine that can help prevent you from transferring hepatitis B to your baby?	93.8	6.2	0
If we ask you to, will you bring your baby back to the clinic to test for hepatitis B?	95.2	4.8	0
Will you allow us to draw a little blood (less than a teaspoon) from your child if we want to do more tests to find out better ways to treat hepatitis B?	91.5	8.2	0.5

Abbreviations: HBV, hepatitis B virus; HIV, human immunodeficiency virus.

5.9% (24 of 209) did not think that HBV can cause cancer. Over 20% (44 of 209) of women were uncertain that HBV could be passed to their children, that it affects the liver (51 of 209), or that the infection was preventable (46 of 209). Limited knowledge about the cause and transmission mechanisms was apparent. Almost 23% (47 of 209) of women reported no knowledge of how HBV could be transmitted. Among those who reported knowing, 54.9% (89 of 182) of pregnant women were aware that HBV could be transmitted from mother to child, and only 47.5% (77 of 162) knew it could be transmitted through unprotected sex.

We were encouraged to find that a vast majority of women were receptive to standard preventative measures or interventions that would reduce the risk of HBV MCTC transmission (Table 1). Over 90% of women consistently reported willingness to undergo testing (98.1%): they were also willing to (1) take a medicine to prevent transmission (93.8%), (2) have blood drawn from their baby for testing (91.5%), and (3) have their child receive an injection if necessary (93.3%).

DISCUSSION

This survey study of pregnant women and their practitioners at a teaching hospital in Ghana provides several important findings. Our study findings indicate that although a majority of pregnant women have heard of HBV, almost half of participants were unaware that HBV can be transmitted through unprotected sex, and more than 50% were unaware that HBV can be transmitted from a mother to her unborn child. Limited knowledge regarding HBV among pregnant women is consistent with previous findings [8, 9]. This suggests a level of basic knowledge that functions as a foundation to build upon using public health advertising and patient-centered education at health centers and pharmacies to improve education, especially related to the cause, transmission, and sequelae of infection. On a positive note, the vast majority of women were willing to undergo further testing for themselves or their children as well as take medicine to prevent HBV MCTC. This finding has been reported in other endemic parts of the world [10]; to our knowledge, however, this has not been examined among a West African population.

Two important findings emerged from the physician survey. First, the major constraints to offering and providing HBV testing in pregnant women, as well as administering effective HBV vaccination and HBIG, were cost and time availability. This underscores a critical need to address these barriers to improve testing and treatment implementation. Second, the vast majority of physicians were willing to enroll their patients in a clinical trial aimed to reduce HBV virus levels through the administration of tenofovir in pregnant women. However, some physicians expressed concern about their ability to adequately counsel women on clinical trials. This supports the acceptability of a future antiviral therapeutic clinical trial in pregnant women, but it underscores

the fact that the education and training of physicians would be necessary to implement such a trial. Because an increasing number of studies are illustrating that antivirals in HBV pregnant women can reduce viral loads and transmission [4–6], addressing these hurdles in endemic areas will be of importance.

CONCLUSIONS

As with all studies, this survey had limitations, including the small sample size (especially among physicians) and single-center design. It may not be generalizable to all clinical settings because it was conducted at a major teaching hospital where practices may vary compared with other settings. Overall, however, the results highlight the fact that the introduction of antiviral therapy to HBV-infected pregnant women would be acceptable, to both physicians and pregnant women. However, barriers to be addressed when considering a clinical trial in this setting would be the improvement in education surrounding HBV in pregnant women, addressing cost and time constraint issues, and essential training for participating healthcare practitioners.

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Potential conflicts of interest. All authors: No reported conflicts.

All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest.

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