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Predictors of Knowledge and Attitude towards Hepatitis B Infection Prevention among Women of Reproductive Age

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Abstract The infection of the Hepatitis B virus is a major issue of public health importance in Ghana, with a prevalence of 12.3%. Knowledge and attitude toward hepatitis B infection prevention among women of reproductive age are crucial in its prevention. The study identified predictors of knowledge and attitude toward hepatitis B virus among women of reproductive age. The study employed a community-based cross-sectional study design. The study selected 420 participants using a simple random sampling technique. The tool for the data collection was a questionnaire while STAT was used in the analysis. About 88% had knowledge with 73% positive attitude toward Hepatitis B virus infection. Couples with Tertiary education were 5.3 times more likely to know about the virus. Pregnant women aged 28-40 weeks were 10.3 times more likely to have good knowledge about the virus. Being a dressmaker or hairdresser was associated with 3.4 times more likelihood of exhibiting a positive attitude towards the virus. A household with 1-4 people was 5.7 times more likely to undertake a preventive practice towards the virus. Based on these revelations, the study concludes that tertiary partner educational attainment and gestational age of 28-40 weeks predict participants' knowledge. The study recommends that stakeholders in health should increase funding for sensitization using the media and health facilities to create awareness of hepatitis B infection and preventive measures.

Keywords Knowledge, Attitude, Hepatitis B, Reproductive Age, Prevention

1. Introduction

Globally, it has been observed that Hepatitis B is a problem of public health importance. The Hepatitis B virus has the potential to cause liver infection [1], indicating that it is spread through sexual contact, sharing needles, syringes, or other drug-injection equipment, or from mother to baby at birth. Some symptoms of the virus include fatigue, poor appetite, stomach pain, nausea, and jaundice [2]. Reports from the Global Burden of Disease indicate that 68,600 people died due to complications from HBV infection in 2013 and the prevalence of carriers of the disease is approximately 240 million [3-4]. Fast forward to 2019, WHO estimates show that 296 million people were living with chronic HBV infection, with 1.5 million new infections each year. The resultant deaths due to HBV in 2019, were estimated at 820 000, mostly from cirrhosis and hepatocellular carcinoma [5]. The Centre for Disease Control also indicated that the virus is a leading cause of chronic hepatitis, liver cirrhosis, and hepatocellular carcinoma worldwide, resulting in an estimated 887,000 deaths per year [2]. The estimated global, all-age

prevalence of chronic HBV infection is 4.1%, corresponding to 316 million infected people. There was a 31.3% decline in all-age prevalence between 1990 and 2019, with a more marked decline of 76.8% in prevalence in children younger than 5 years. HBV-related diseases resulted in 555,000 global deaths in 2019. The number of HBV-related deaths increased between 1990 and 2019 by 5 9% and between 2015 and 2019 by 2 9% [6].

Hepatitis B virus infections mostly lead to higher abortion and miscarriage rates [7]. Reports show that maternal HBV has been associated with adverse pregnancy and delivery complications such as premature deliveries, premature rupture of membranes, placental abruption, and caesarean deliveries [8]. Others contend that knowledge of HBV infection is associated with residential status, educational level, occupation, gestational period, and the health facility from which pregnant women receive antenatal care [9]. That being said, women with a history of multiple sexual partners and being HIV positive were significantly associated with HBsAg positivity [10]. In other studies, it was observed that the prevalence of hepatitis B virus infections was significantly higher among patients having a history of poly-sexual practices, history of abortion, home delivery by traditional birth attendants, and blood transfusion [11-12].

In Ghana, the hepatitis B virus prevalence is 12.3% among the general population and 13.1% among pregnant women [13-14]. A prevalence of 9.59% of asymptomatic viral hepatitis B infections was reported in the Saboba District of Northern Ghana, among blood donors [15]. Similarly, Helegbe et al. [16] reported a seroprevalence of the hepatitis B virus of 15.6% among market women in the Bolgatanga Municipality in the Upper East region of Ghana. This study thus assessed the predictors of knowledge and attitude toward Hepatitis B virus infection among women of reproductive age.

2. Material and Methods

2.1. Study Setting

This study was conducted in the Savelugu Municipality of the Northern region of Ghana. Savelugu shares boundaries with West Mamprusi to the North, Karaga to the East, Tolon/Kumbungu to the West, and Sagnarigu Municipality to the South. The 2021 Population and Housing Census indicates that the Municipality has a total population of 122,888 with a male population of 60,390 constituting (49.1%) and a female population of 62,49 representing (50.9%). The Municipality is predominantly rural (60.3%). Many of the communities are concentrated in the southern part. The total land area of the Municipality is 2022.6 sq. km. The Municipality has a population density of 68.9 persons per sq. km [17].

2.2. Study Design and Population

The study was a community-based cross-sectional design, conducted from 20th February to 20th December 2022. The study population was women of reproductive age residing within the Savelugu Municipality.

2.3. Inclusion and Exclusion Criteria

The inclusion criteria were women of reproductive age 15-49 years; residents of the Savelugu Municipality and consented to partake in the study. Participants who were excluded were those aged 50 years and above; not residents of the Savelugu Municipality and those who did not endorse the consent form.

2.4. Sample Size Determination

The Cochran formula was used to calculate the sample size. About 62% of market women did not have adequate knowledge of the hepatitis B virus from a study conducted in Bolgatanga in the Upper East region of Ghana [16]. Therefore, 62% of the study population was considered in calculating the sample size. The confidence interval was 95% and the precision was set at 1.96, using standard tables. The sample size was calculated as follows:

$$n = \frac{(1.96)^2 * 0.62 * (1 - 0.62)}{(0.05)^2}$$

$$n = 365$$

A 15% was added to the total sample to cater to the attrition rate. Thus 15% of 365 is 55. Therefore, the total number of women of reproductive age selected for this study was 420.

2.5. Sampling Method

The study used a two-stage sampling procedure. The first stage involved selecting census enumeration areas (EAs) using probability proportionate to size. The second stage involved selecting households within each selected EA using simple random sampling. Following the random selection of households, the study recruited all women of reproductive age and administered the questionnaire to eligible study participants. Two enumeration areas were selected and a systematic sampling technique was used to select the participants.

2.6. Data Collection Procedure and Tools

Community health nurses were given training on the questionnaire for the data collection. Data collectors first conducted household listing exercises, and demarcated enumeration areas (EAs). They performed a random selection of households in each EA after which they visited each selected household and administered the questionnaires to women of reproductive age who agreed

to take part in the research. The questionnaire was administered in English using Android mobile phone devices. The questionnaires were explained to the participants and they provided their answers. The data collectors provided explanations to the questionnaires in Dagbani for the understanding of women who did not speak English. Eligible women of reproductive age were selected for the study. All women aged 15-49 years were eligible for recruitment.

2.7. Pre-testing of the Data Collection Tools

The tools for data collection were pre-tested by randomly sampling 25 women of reproductive age in the Nanton District. Nanton District was selected because it is located within the same geographical zone as Savelugu Municipality and shares common characteristics. Data collected from the 25 women were analyzed. The pre-test was carried out to check the appropriateness of the questions for the participants. The necessary corrections and modifications were made to the questionnaire for the data collection after the pre-test.

2.8. Data Quality Controls

After the questionnaire was revised and standardized, it was uploaded onto the koBocollect application software for Android phones for administration. Training was provided for all those hired to do the data collection on the use of the KoBocollect App. The KoBocollect App was designed to detect and reject double entries.

2.9. Data Analysis and Interpretation

STATA version 32 was used to analyze the data collected. Using descriptive statistics, data was analyzed, and results were shown in percentages and frequency distribution tables. Additionally, the study used a binary logistic regression model to determine the factors influencing women's knowledge, and attitudes. Variables with a p-value of <0.05 at a 95% confidence interval (CI) were used to declare statistical significance. The Odds ratios (OR) were calculated to identify the statistically significant associations at the 95% confidence interval and a P-value <0.05. An $OR>1$ indicates a positive association, $OR<1$ indicates an inverse association and $OR=1$ indicates no association.

2.10. Ethical Consideration

This research was conducted in accordance with the Declaration of Helsinki on human subjects. Ethical approval was obtained from the Ethical and Protocol Review Committee of the University for Development Studies, Tamale Ghana, with reference number UDS/RB/089/23.

3. Results

3.1. Socio-demographic Characteristics of the Women of Reproductive Age

From the results, 52.8% of the participants were between the ages of 26-35 years **(Table 1).** On religious affiliation, 73.8% were Moslems, and on ethnicity, 60.7% were of the Dagomba ethnic group. The study revealed that 51.9% were married. On educational attainment, 28.3% had no formal education. On the educational attainment of their partners, 14.5% of partners had Basic education and 44.5% had no formal education. Most participants (49.7%) had not given birth before. Furthermore, the majority of the pregnant women among the participants (16.4%) were within 13-27 weeks of gestation.

3.2. Knowledge of HBV Transmission

There were varying views concerning the transmission routes of HBV. From the study, 83.6% believed the virus is transmitted through contaminated water, 9% indicated unprotected sex, and 48% believed transmission is through sneezing or coughing. Those who indicated some people do not show symptoms of HBV were 42%. Some of the symptoms mentioned were: 47% mentioned nausea, vomiting, and loss of appetite as some of the common symptoms of the Hepatitis B Virus **(Table 2)**. Moreover, knowledge about HBV prevention was assessed among women of reproductive age. The results indicate that 24% did not know that clean and thoroughly cooked food prevents HBV transmission. When the participants were asked about the use of condoms during sexual intercourse and the prevention of HBV, 13% did not know and 5% indicated ‘no’ to the statement.

3.3. Knowledge about Mother-to-child Prevention against HBV

From **Table 3,** there was near unanimity on the need for pregnant women to be tested for HBV. On vaccination, 60% indicated that infants must be vaccinated as a preventive measure against HBV. Even though 55% chose vaccination against HBV, more than 50% did not know the best time for the child to be given the first dose of the HBV vaccine. For those who attempted, 9% believe the vaccine should be given between 24-48 hours, while 40.7% indicated it should be provided within 24 hours after birth.

Table 1. Sociodemographic characteristics of respondents

Variables	Frequency (n=420)	Percentage (%)
Age (Yrs)		
15-25	89	21.2
26-35	222	52.8
36-49	109	26.0
Religion		
Christian	107	25.5
Moslem	310	73.8
Other	3	0.7
Ethnicity		
Dagomba	255	60.7
Konkomba	21	5.0
Mamprusi	77	18.3
Other	67	16.0
Marital status		
Single	182	43.3
Married	218	51.9
Other	20	4.8
Level of education		
No formal education	119	28.3
Basic level education	96	22.9
Secondary level education	141	33.6
Tertiary level education	64	15.2
Level of education of spouse		
Basic level education	61	14.5
No formal education	187	44.5
Secondary level education	70	16.7
Tertiary level education	102	24.3
Number of people in the household		
1-4 people	176	41.9
5-6 people	114	27.1
7+	130	31.0
Number of times given birth		
0	209	49.7
1.2 times	91	21.7
3-4 times	76	18.1
5+	44	10.5
Gestation age in weeks		
0-12	19	4.5
13-27	69	16.4
28-40	64	15.2
N/A	268	63.8
Gravida		
Multi-gravida	110	26.19
Primigravida	41	9.76
N/A	269	64.05

Table 2. Knowledge of HBV transmission and prevention

	Responses		
Variables	No	Yes	Do not know
Knowledge about HBV Transmission (n=225)			
HBV could be transmitted through contaminated water	20 (8.9)	188 (83.6)	17 (7.5)
HBV could be transmitted through unprotected sex	20 (8.9)	184 (81.8)	21 (9.3)
HBV could be transmitted through blood transfusion	8 (3.6)	206 (91.6)	11 (4.9)
One could contract HBV through cough or sneezing	109 (48.4)	78 (34.7)	38 (16.9)
Mothers could transmit HBV to their Children	10 (4.4)	197 (87.6)	18 (8.0)
One could be infected by eating or sharing utensils with infected persons	24 (10.7)	176 (78.2)	25 (11.1)
No symptoms of HBV in some people	94 (41.8)	92 (40.9)	39 (17.3)
Nausea, vomiting, and loss of appetite are common symptoms of hepatitis B	105 (46.7)	120 (53.3)	0 (0.0)
Knowledge about HBV prevention (N=420)			
Clean and thoroughly cooked food prevents HBV transmission	44 (10.5)	275 (65.5)	101 (24.0)
HBV transmission could be prevented through vaccination	10 (2.4)	377 (89.8)	33 (7.8)
HBV could be prevented by not sharing food, utensils, or eating with an infected person	48 (11.4)	306 (72.9)	66 (15.7)
Use a condom during sexual intercourse	21 (5.0)	346 (82.4)	53 (12.6)
Not reusing or sharing needles/syringes	40 (9.5)	380 (90.5)	0 (0.0)

Table 3. Knowledge about Mother-to-child prevention against HBV

Variables	Frequency	Percentage
A pregnant woman needs to be tested for HBV		
No	5	1.2
Yes	391	93.1
Do not know	24	5.7
HBV vaccination necessary for the infant		
No	62	14.8
Yes	259	61.7
Do not know	99	23.5
Measure to protect newborn from HBV infection		
Terminating pregnancy	5	1.2
Vaccination against HBV	229	54.5
Do not know	186	44.3
The best time for a child to be given the first dose of the HBV vaccine		
Do not know	213	50.7
Between 24–48 hours after birth	36	8.6
Within 24 hours after birth	171	40.7

3.4. Factors Associated with the Level of Knowledge of Participants

The analysis **(Table 4)** confirms the significant association between knowledge of HBV according to marital status [$\chi2 = 5.067$, $p = 0.024$], the highest level of education of the woman [$\chi2 = 17.67$, $p = 0.001$], highest education level of the partner [$\chi2 = 9.044$, $p = 0.001$], the number of times given birth [$\chi2 = 9.657$, $p = 0.008$], number of people in the household [$\chi2 = 8.394$, $p = 0.015$], gestational age in weeks [$\chi2 = 14.375$, $p = 0.001$], gravida [$\chi2 = 11.420$, $p = 0.003$], access to news [$\chi2 = 45.127$, $p = 0.000$], access to a health worker in the community [$\chi2 = 42.109$ $p = 0.000$], pregnancy status [$\chi2 = 10.742$, $p = 0.001$], occupation [$\chi2 = 19.777$, $p = 0.000$], occupation of husband [$\chi2 = 17.383$, $p = 0.001$], decision making at the household [$\chi2 = 16.118$, $p = 0.001$].

3.5. Attitudes toward HBV Transmission

On attitude, the majority (85.2%) opinionated that working with HBV patients or having casual contact, whereas 87.4% expressed concern about sharing food or utensils with HBV patients. Also, 85% will be concerned if their children are in the same class as an infected HBV child. More than 90% of the study respondents revealed they will not have sex with an HBV-infected partner. Regarding the isolation of HBV-infected persons, 45% reported they should not be isolated, and 48% indicated they should be isolated. The current vaccination status was assessed among the women. It came out that 30.5% were not vaccinated, about 2% did not know their vaccination status and 67.6% reported being vaccinated against HBV **(Table 5).**

3.6. Factors Associated with the Level of Attitude Respondents

The analysis confirms the significant association between attitude towards HBV according to the highest level of education of the participants [$\chi^2 = 27.784$, $p = 0.000$], highest education level of the partner [$\chi^2 = 9.166$, $p = 0.027$], occupation [$\chi^2 = 9.716$, $p = 0.021$], occupation of husband [$\chi^2 = 16.651$, $p = 0.001$], and decision making at the household level [$\chi^2 = 11.994$, $p = 0.007$]. **See Table 6.**

3.7. Predictors of Attitude towards HBV Infection

Five explanatory variables (education level of the woman; education level of the husband; occupation; occupation of husband and household decision making) were included in the regression model using the enter method. Two predictors (highest level of education of women and occupation of the woman) successfully predicted the attitude towards HBV **(Table 7)**. Women who had attained Tertiary education were more than 15 times more likely to demonstrate a good attitude towards HBV than those with no formal education [(AOR=15.6, p=0.023)]. The results also show that dressmakers/Hairdressers were 3.4 times more likely to have a good attitude towards HBV than those in the other category of professions [(AOR=3.4, p=0.034)].

Table 4. Factors associated with the level of Knowledge of participants

	Level of knowledge			
Variables	**Poor (n=51)**	**Good (n=369)**	**Chi-square**	**P-value**
age				
<20	8 (15.7)	81 (21.9)		
20-34	24 (47.1)	198 (53.7)	4.057	0.132
35-49	19 (37.3)	90 (24.4)		
Religion				
Christian	14 (27.5)	93 (25.2)		
Moslem	36 (70.6)	274 (74.3)	1.433	0.488
Traditional	1 (1.9)	2 (0.5)		
Ethnicity				
Dagomba	30 (58.8)	225 (60.9)		
Kokomba	3 (5.9)	18 (4.9)	1.945	0.584
Mamprusi	7 (13.7)	70 (19.0)		
Other	11 (21.6)	56 (15.2)		
Marital status				
Married	34 (66.7)	184 (49.9)	5.067	**0.024**
Single	17 (33.3)	185 (50.1)		
Highest level of education				
No formal education	27 (52.9)	92 (24.9)		
Basic level education	9 (17.7)	87 (23.6)	17.67	**0.001**
Secondary level education	11 (21.6)	130 (35.2)		
Tertiary level education	4 (7.8)	60 (16.3)		
Highest level of education of partner				
No formal education	26 (50.9)	161 (43.6)		
Basic level education	4 (7.8)	57 (15.5)	9.044	**0.029**
Secondary level education	14 (27.5)	56 (15.2)		
Tertiary level education	7 (13.7)	95 (25.8)		
Number of times given birth				
0	15 (29.4)	194 (52.6)		
1-2 times	16 (31.4)	75 (20.3)	9.657	**0.008**
>=3	20 (39.2)	100 (27.1)		
Number of people in the household				
1-4 people	30 (58.8)	146 (39.6)		
5-6 people	13 (25.5)	101 (27.4)	8.394	**0.015**
7+	8 (15.7)	122 (33.0)		
Gestational age in weeks				
<28	22 (43.1)	246 (66.7)		
28-40	13 (25.5)	75 (20.3)	14.375	**0.001**
Not Pregnant	16 (31.4)	48 (13.0)		

Table 4 continued

Gravida				
Primigravida	9 (17.7)	32 (8.7)		
Multigravida	20 (39.2)	90 (24.4)	11.420	**0.003**
Not Pregnant	22 (43.1)	247 (66.9)		
Access to news				
Less than once a week	6 (11.8)	18 (4.9)		
At least twice a week	16 (31.4)	77 (20.9)	45.127	**0.000**
Every week	7 (13.7)	222 (60.2)		
Not at all	22 (43.1)	52 (14.0)		
Distance to a health facility				
Less than 30 minutes' walk	18 (35.3)	112 (30.4)		
Nearer (30-minute walk)	16 (31.4)	114 (30.9)	0.725	0.867
60 minutes' walk (1-hour walk)	10 (19.6)	87 (23.6)		
Above 60minutes	7 (13.7)	56 (15.2)		
Access to health workers in the community				
No	37 (72.6)	100 (27.1)	42.109	**0.000**
Yes	14 (27.4)	269 (72.9)		
Pregnancy status				
Not Pregnant	22 (43.1)	246 (66.7)	10.742	**0.001**
Pregnant	29 (56.9)	123 (33.3)		
Ever experience pregnancy complications				
No	35 (68.6)	287 (77.8)	2.097	0.148
Yes	16 (31.4)	82 (22.2)		
Had active NHIS card				
No	11 (21.6)	61 (16.5)	0.801	0.371
Yes	40 (78.4)	308 (83.5)		
Occupation				
Salary worker	2 (3.9)	43 (11.7)		
Dressmaking/Hairdresser	31 (60.7)	155 (42.0)	19.777	**0.000**
Farming	9 (17.7)	23 (6.2)		
Other	9 (17.7)	148 (40.1)		
Occupation of husband				
Salary worker	7 (20.6)	54 (29.4)		
Tailor	1 (2.9)	22 (11.9)	17.383	**0.001**
Farming	9 (26.5)	75 (40.8)		
Other	17 (50.0)	33 (17.9)		
Decision Maker in house				
Both	17 (58.6)	31 (25.2)		
Husband	4 (13.8)	9 (7.3)	16.118	**0.001**
Self	7 (24.1)	79 (64.2)		
Other	1 (3.5)	4 (3.3)		

Table 5. Attitudes toward HBV transmission

	Responses		
Variables	No	Yes	Do not know
Concerns with working with/having casual contact with HBV patient	34 (8.4)	344 (85.2)	26 (6.4)
Concerns with eating, and sharing food or utensils with HBV patient	35 (8.3)	367 (87.4)	18 (4.3)
Concerned with a child sharing the same class with an infected HBV child	40 (9.5)	358 (85.2)	22 (5.2)
It is ideal to provide HBV vaccine to a baby within 24 hours after birth	57 (13.6)	235 (55.9)	128 (30.5)
Willingness to vaccinate the child with HBV	4 (0.9)	414 (98.6)	2 (0.5)
I can get Hepatitis B	138 (32.9)	247 (58.8)	35 (8.3)
A healthy person should get vaccinated against HBV	43 (10.2)	360 (85.7)	17 (4.1)
Would have sex with an HBV-infected partner	381 (90.7)	16 (3.8)	23 (5.5)
HBV-infected people should be isolated	189 (45.0)	202 (48.1)	29 (6.9)
Need vaccination currently against HBV	128 (30.5)	284 (67.6)	8 (1.9)

Table 6. Factors associated with the level of attitude respondents

	Level of attitude			
Variables	**Poor (n=114)**	**Good (n=306)**	**Chi-square**	**P-value**
age				
<20	24(21.1)	65 (21.2)		
20-34	52 (45.6)	170 (55.6)	4.839	0.089
35-49	38 (33.3)	71 (23.2)		
Religion				
Christian	24 (21.1)	83 (27.1)		
Moslem	89 (78.1)	221 (72.2)	1.645	0.439
Traditional	1 (0.9)	2 (0.7)		
Ethnicity				
Dagomba	68 (59.7)	187 (61.1)		
Kokomba	6 (5.3)	15 (4.9)	0.102	0.992
Mamprusi	21 (18.4)	56 (18.3)		
Other	19 (16.7)	48 (15.7)		
Marital status				
Married	68 (59.7)	150 (49.0)	3.759	0.053
Single	46 (40.4)	156 (51.0)		
Educational attainment				
No formal education	48 (42.1)	71 (23.2)		
Basic level of education	31 (27.2)	65 (21.2)	27.784	**0.000**
Secondary level of education	31(27.2)	110 (35.9)		
Tertiary level of education	4 (3.5)	60 (16.6)		
Highest Educational attainment of partner				
No formal education	60 (52.6)	127 (41.5)		
Basic level of education	13 (11.4)	48 (15.7)	9.166	**0.027**
Secondary level of education	23 (20.2)	47 (15.4)		
Tertiary level of education	18 (15.8)	84 (27.5)		

Table 6 continued

Number of times given birth				
0	47 (41.2)	162 (52.9)		
1-2 times	28 (24.6)	63 (20.6)	4.637	0.098
>=3	39 (34.2)	81 (26.5)		
Number of people in the household				
1-4 people	39 (34.2)	137 (44.8)		
5-6 people	33 (28.9)	81 (26.5)	4.152	0.125
7+	42 (36.8)	88 (28.8)		
Gestational age in weeks				
<28	69 (60.5)	199 (65.0)		
28-40	23 (20.2)	65 (21.2)	2.002	0.367
Not Pregnant	22 (19.3)	42 ((13.7)		
Gravida				
Primigravida	11 (9.7)	30 (9.8)		
Multigravida	34 (29.8)	76 (24.8)	1.094	0.579
Not Pregnant	69 (60.5)	200 (65.4)		
Access to news				
Less than once a week	6 (5.3)	18 (5.9)		
At least twice a week	25 (21.9)	68 (22.2)	3.037	0.386
Every week	57 (50.0)	172 (56.2)		
Not at all	26 (22.8)	48 (15.7)		
Distance to a health facility				
Less than 30mins walk	36 (31.6)	94 (30.7)		
Nearer (30-minute walk)	35 (30.7)	95 (31.1)	1.166	0.761
60 minutes' walk (1-hour walk)	29 (25.4)	68 (22.2)		
Above 60minutes	14 (12.3)	49 (16.0)		
Access to health workers in the community				
No	41 (36.0)	96 (31.4)	0.797	0.372
Yes	73 (64.0)	210 (68.6)		
Pregnancy status				
Not Pregnant	70 (61.4)	198 (64.7)	0.392	0.531
Pregnant	44 (38.6)	108 (35.3)		
Ever experience pregnancy complications				
No	80 (70.2)	242 (79.1)	3.686	0.055
Yes	34 (29.8)	64 (20.9)		
Had active NHIS card				
No	20 (17.5)	52 (16.9)	0.01	0.894
Yes	94 (82.5)	254 (83.0)		

Table 6 continued

Occupation				
Salary worker	4 (3.5)	41 (13.4)		
Dressmaking/Hairdresser	54 (47.4)	132 (43.1)	9.716	**0.021**
Farming	12 (10.5)	20 (6.5)		
Other	44 (28.6)	113 (36.9)		
Occupation of husband				
Salary worker	8 (11.8)	53 (35.3)		
Tailor	5 (7.4)	18 (12.0)	16.651	**0.001**
Farming	36 (52.9)	48 (32.0)		
Other	19 (27.9)	31 (20.7)		
Decision Maker in-house				
Both	10 (22.7)	38 (35.2)		
Husband	7 (15.9)	6 (5.6)	11.994	**0.007**
Self	23 (52.3)	63 (58.3)		
Other	4 (9.1)	1 (0.9)		

Table 7. Predictors of attitude toward HBV infection

	Odd Ratios	
Variables	**Crude Odd ratio (95% CI)P-value**	**adjusted odd ratio (95% CI)P-value**
Highest level of education		
No formal education	Reference	Reference
Basic level education	1.4(0.81-2.49)0.225	1.3(0.44-3.87)0.630
Secondary level education	2.4(1.39-4.12)0.002	2.9(0.73-11.45)0.129
Tertiary level education	10.1(3.46-29.75)00.000	15.6(1.46-166.66)**0.023**
Highest level of partner education		
No formal education	Reference	Reference
Basic level education	1.7(0.88-3.46)0.112	0.67(0.15-2.91)0.590
Secondary level education	0.97(0.54-1.73)0.906	0.55(0.14-2.22)0.401
Tertiary level education	2.2(1.22-3.99)0.009	0.54(0.07-4.17)0.557
Occupation		
Salary worker	3.9(1.35-11.80)0.012	1.0(0.15-7.04)0.977
Dressmaking/Hairdresser	0.95(0.59-1.52)0.837	3.4(1.09-10.30)**0.034**
Farming	0.65(0.29-1.44)0.287	0.74(0.12-4.44)0.745
Other	Reference	Reference
Occupation of husband		
Salary worker	4.1(1.59-10.37)0.003	1.8(0.37-8.39)0.480
Tailor	2.2(0.70-6.92)0.175	1.4(0.32-6.56)0.636
Farming	0.82(0.39-1.67)0.581	0.75(0.21-2.63)0.650
Other	Reference	Reference
Decision Maker in-house		
Both	15.2(1.52-151.51)0.020	3.1(0.19-47.98)0.424
Husband	3.4(0.29-39.64)0.324	0.77(0.04-14.43)0.861
Self	11.0(1.16-103.19)0.036	4.5(0.29-69.07)0.285
Other	Reference	Reference

4. Discussion

The knowledge of HBV was 88%, indicating that women of reproductive age have adequate knowledge about HBV. This is similar to the findings of previous studies where knowledge of HBV was high [18-20]. This study is not consistent with findings from Vietnam regarding specific variables on HBV transmission. For instance, 30.2% in the Vietnam study erroneously thought that HBV could be transmitted through sharing food or eating with HBV patients [21], and 78% in the current study believed that assertion to hold. Also, about 40% of the respondents were concerned with sharing food with chronic hepatitis B infection persons or having casual contacts in Vietnam compared to 73% in the current study. The difference in knowledge level could be attributed to the different types of work of the women. The reason is that Vietnam's study involved healthcare workers who possibly have enough exposure to HBV information in the course of their work and from their training. Having received training on HBV in the last two years, they got a better knowledge of HBV **[**21]. In addition, having previous knowledge of HBV could have accounted for the scores in Vietnam than in the current study. Studies have demonstrated that knowledge of testing for HBV and knowledge of an individual with HBV infection predicted HBV infection knowledge in Nigeria [22]. Moreover, the maternal age of the two study participants differed. While the Vietnam study reported the majority of younger women, the current study had fewer younger women of reproductive age. Previous studies have shown that younger maternal age is associated with HBV knowledge [23]. This study results have shown that a significant 28.3% of the respondents did not have formal education which could be the reason for the erroneous belief that HBV could be transmitted through sharing or eating food with chronic hepatitis B patients.

Furthermore, the overall good knowledge of 88% is higher when compared with the 73% fair knowledge among pregnant women accessing health care in a specialized hospital in Ethiopia [24]. The higher knowledge score in the current study could be due to the higher educational status of the participants than those in Ethiopia. Regression analysis of the Ethiopian research revealed a higher level of education is associated with higher knowledge scores about HBV [24]. Women with tertiary education were 5.8 times more likely to have adequate knowledge of HBV [25].

Results of the study revealed that the overall positive attitude toward HBV among women of reproductive age in the study area is high. This highly positive attitude may influence interventions and practices to prevent HBV in the study setting. The current finding showed that 73% of women of reproductive age demonstrated a good attitude towards HBV prevention whereas 65.2% showed positive attitudes towards the HBV disease in Kumasi, Ghana [25]. Even though a higher percentage of study respondents in the current study showed a positive attitude towards HBV prevention, over 85% of respondents were concerned about having casual contact or sharing food with a person with chronic hepatitis B infection. The implication is that of a negative attitude that could be born out of inadequate knowledge about the transmission of the virus. This assertion is corroborated by a previous study that showed that gaps in participants' knowledge about some basic features of HBV infection like transmission and risk factors, and some misperceptions about vaccination most likely influenced their prevention behaviours and predisposed them to the risk of contracting the virus [3]. The plausible explanation for the difference between the current study and that of Vietnam is the sociodemographic characteristics of the respondents. For instance, while the current study sampled eligible women of reproductive age, Vietnam considered only health workers. Education, gravida and vaccination history predicted positive attitudes toward HBV prevention in North Eastern Ethiopia [26]. Furthermore, being a healthcare worker predicts HBV knowledge [27].

Also, the current study revealed inadequate information about the right time to vaccinate newborn babies because more than 30% indicated they were hesitant about the safety of vaccinating newborn babies with the HBV vaccine within 24 hours after birth. This denotes a policy and practice gap in the study area regarding this specific intervention. The Advisory Committee on Immunization Practices of the United States of America recommends the administration of HepB vaccine as well as hepatitis B immune globulin (HBIG) to infants born to HBV-infected women within 12 hours of birth, and the completion of the vaccine series and postvaccination serologic testing, and vaccination of children and adolescents aged <19 years who have not been vaccinated previously [28].

5. Conclusions

The knowledge level of women of reproductive age in the study setting was 88%; the positive attitude towards HBV transmission was 73% and the preventive practices were 84%. Tertiary partner educational attainment, gestational age of 28-40 weeks, and access to news every week successfully predicted knowledge level. The tertiary educational level of respondents and occupation predicted a positive attitude. Household size predicted high preventive practices in the study area. Based on the results, the study concludes that the knowledge level of study participants was predicted by tertiary partner educational attainment, gestational age of 28-40 weeks, and access to news every week. The attitude was predicted by the tertiary educational level of respondents and occupation and level of practice were influenced by household size.

What the Study Adds

- There is high knowledge of the Hepatitis B virus among reproductive-age women.
- There is a positive attitude towards Hepatitis B among women of reproductive age group.

Competing Interests

There is no competing interest.

Author Contribution

The conception of the study and its design were done by L.S.M. and A.Y. The data collection was done by L.S.M. Data analysis and interpretation were done by L.S.M. and A.Y. The manuscript drafting and interpretation were done by L.S.M. and A.Y. The authors, L.S.M. and A.Y. have all read and approved the final manuscript.

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