Associated Factors of Hepatitis B Infection among Pregnant Women attending Antenatal Clinic in Kitagata Hospital, Sheema District. A Cross-sectional Study.

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Abstract

Introduction:
The study assessed the associated factors of hepatitis B infection among pregnant women attending antenatal clinic in Kitagata hospital, Sheema district, and specifically sought to find out the prevalence, the knowledge, and the risk factors of hepatitis B infection among pregnant women attending antenatal clinic in Kitagata hospital, Sheema district.

Methodology:
The study used a cross-sectional study design while employing a quantitative data collection approach where a pretested questionnaire designed based on the specific objectives was used to collect data from 100 respondents following the informed consent of the participant.

Results:
The prevalence of Hepatitis B among Pregnant Women attending Antenatal Clinic in Kitagata Hospital, Sheema District is 4.0%. The majority (51%) of the respondents were between 20-25 years, (53%) were cohabiting, (42%) had attained secondary education, (50%) were Catholic, (52%) were unemployed, (90%) had a gestation period of 7-9 months,(40%) were Banyankole and (4.0%) were positive of hepatitis B virus. Majority (63%) had ever heard about Hepatitis B infection (57.1%) heard about it from a health worker, (55%) knew Hepatitis B could be found in the blood, (60%) understood Hepatitis B, (55%) knew the transmission routes of Hepatitis B, (80%) knew that Hepatitis B vaccine exists, (93%) had not been vaccinated and (75%) did not know the symptoms.

Conclusion:
The prevalence of hepatitis B infection among pregnant women was high whereas the knowledge regarding hepatitis B infection was moderate and the predisposing factors to hepatitis B infection were majorly having two sexual partners and having a tooth extraction.

Recommendation:
The provision of mandatory free screening and vaccination services by the government to the pregnant mothers since it will help in discovering the number of cases hence scaling up the type of care and treatment needed.

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1 Background:

Hepatitis B infection is caused by the hepatitis B virus. It's an enveloped DNA virus that infects the liver and causes hepatocellular necrosis and inflammation (WHO, 2020).

Viral hepatitis B causes significant morbidity and mortality affecting more people worldwide than even HIV. Hepatitis B virus is a major causative agent of liver inflammation. About 350 million people reported globally are being infected with hepati-

tis B. It is one of the 10 causes of death in the world and 1 million death occur due to hepatitis B viral infection per annum particularly in economically less developed or developing countries (Lemoine, Eholié, and Lacombe, 2016).

Prevalence of hepatitis B virus surface antigen (HBsAg) among pregnant women varies from place to place globally with 5.49% in China (Ding Y et.al, 2019), 0.9% in India, 32% in South Korea (Kim JH et al, 2019), 10.8% in Sana's Yemen and 2.1 % in Northern Turkey (Murad, *et al.,* 2018).

In Africa, the prevalence of hepatitis B virus infection among pregnant women ranges from 3.67 - to 16.5% (Yakasai *et al.,* 2018). In Sub Saharan, the prevalence of Hepatitis B infection among adult people varies between 5-10% (Ofori-Asenso, and Agyeman, 2016).

In Uganda, the overall prevalence rate is 10% with a high rate of 11.8 % among pregnant women in the Sheema district in Western Uganda. This is due to associated risk factors of Hepatitis B infection and limited knowledge of symptoms of hepatitis B which usually appear after 1-4 months of infection. Most patients do not possess symptoms of acute infection. The symptoms may include; abdominal pain, the patient has dark urine, joint pain, and fever. The patient may also suffer from weakness, nausea, vomiting, and loss of appetite. The color of the skin and the white eyes also turn yellow (WHO, 2019).

The majority of these individuals acquire the infection during the perinatal periods and early childhood. The untreated condition may lead to complications such as acute and chronic hepatitis, and hepatocellular carcinoma (HCC) (Ott *et al,* 2020).

Pregnant women who test positive for both hepatitis B surface antigen (HBsAg) and hepatitis B antigen (HBeAg) have a 70-90% risk of transmitting the infection to their unborn infants and about 10-40% risk if they test positive for only HBsAg (Alter MJ, 2017). Thus pregnant women should be routinely screened for HBsAg and hepatitis B vaccine administered at birth to the infants whose mothers test positive (WHO, 2018). According to Ochola E, *et al*, 2013, there is a high prevalence of Hepatitis B infection in the Sheema district.

Therefore, this study intends to determine the factors associated with the high prevalence of Hepatitis B infection among pregnant women attending antenatal clinics in Kitagata hospital, Sheema district. The study assessed the associated factors of hepatitis B infection among pregnant women attending antenatal clinic in Kitagata hospital, Sheema district, and specifically sought to find out the prevalence, the knowledge, and the risk factors of hepatitis B infection among pregnant women attending antenatal clinic in Kitagata hospital, Sheema district.

2 Methodology

Study area

This study was conducted at the antenatal clinic of Kitagata hospital located in the central business district of the town of Kitagata in Sheema district in the Ankole sub-region, western Uganda. Kitagata hospital is a 150-bed government-owned facility whose antenatal clinic is visited by about 60-100 pregnant women every working day.

Study design.

The study employed a cross-sectional study employing quantitative approaches to collect data. This was chosen because it allowed the researcher to collect data within the shortest time possible.

Study population

This study included all pregnant women attending antenatal clinics at Kitagata hospital ready to consent to the study, Sheema district from December 2021- to January 2022.

Selection criteria

Inclusion criteria

The study included all pregnant women attending antenatal clinics at Kitagata hospital, Sheema district at the time of study, and those who had consented.

Exclusion criteria

Pregnant women who were not in sound mind, who were too sick, and those who were asking for enumeration were not considered in the study.

Sample size determination

The sample size was determined using the Kish Leslie formula of sample size determination.

$N = Z^2 PQ / d^2$

Where, N=Sample size is required,

d = Sample error/ degree of research will be able to accept (desired precision) - 10%

P=prevalence of hepatitis B infection among pregnant women which were not known, therefore 50% was considered.

Z^2 = A standard normal deviation, the value set at 95% confidence interval/limit (CL) that corresponds to the level of statistical significance (1.96)

Q = 1-P (score value).

= 1- 0.5

= 0.5

N = (1.962 × 0.5 × 0.5)

(0.1)2

= 96.04 (96 respondents)

The calculated sample size was 96. However, 4 respondents were added to make 100 respondents.

Study Variables

Dependent Variables

The dependent variable in this study was the Prevalence of hepatitis B infection among pregnant women

Independent Variables

The independent variables were;

Knowledge of hepatitis B infection among pregnant women

Risk factors that expose pregnant women to hepatitis B infection

Sampling technique

A simple random sampling technique was employed to provide equal opportunities for every individual to be selected.

Sampling procedure

The study participants were selected using a simple random sampling technique where the numbers 1 to 20 were written on a small paper and then paper pieces were folded and put in a box, the box was thoroughly shaken and one piece of paper after another was randomly picked to select study participants, pregnant women who picked 1 to 10 were selected in the study for that day, a total number of 100 pregnant women were considered.

Data collection method

Data was collected using a standard structured questionnaire and laboratory diagnosis.

Data collection tools

Questionnaire

Researchers administered questionnaires were used in data collection. It was designed based on the study objectives, available information on demographic characteristics, knowledge of hepatitis B virus infection, and risk associated factors that expose pregnant women to infection.

Laboratory diagnosis

Rapid HBsAg detection was done using an SD Violins HBsAg one-step hepatitis B virus test strip (Abbott, China) following the manufacturer's instructions. The test had a sensitivity and specificity of greater than 99%.

A pretest counseling on HBV was administered to the participants. Four milliliters of blood sample were drawn by venipuncture from the cubital fossa under aseptic techniques and immediately those samples were analyzed in the laboratory for HBsAg using the screening test strip for HBsAg. In the meantime, those women were helped to obtain ANC.

The 100ul of the serum was added to the test device and left at room temperature for 20 minutes. The serum sample reacted with the coated dye (mouse anti-HBsAg antibody colloidal gold conjugate) that was coated on the test strip. Then the mixture reacted by capillary action with anti-HBsAg antibodies on the membrane. The presence of a red band indicated a positive result while its absence indicated negative results.

Blood samples were found positive for HBsAg using a screening test strip and were confirmed using infectious disease ELISA kits. The test results were released to the participants on the same visit day.

Data collection procedures

A standard semi-structured questionnaire was used; the questionnaire included both closed-ended and open-ended questions. The pregnant women who we not able to read and write, questions were interpreted in Lunyankole, and they were able to understand and then were recorded by a researcher.

Quality control

The questionnaire was pretested in the Sheema district and if found that, the language used was not clear and understandable, the time to complete the questionnaire was recorded and pregnant women who were involved in the pretesting were not allowed to participate in the study.

The questionnaires were pretested before the actual data collection to ensure that the data collected was of quality.

The questionnaire was translated into their own local language Lunyankole for easy understanding and data was edited immediately at the end of the exercise each day. This helped to eliminate the possibility of errors. The data collection (questionnaire) was checked for completeness and consistency before data entry by the principal investigator.

Research assistants were not required, the researcher distributed a questionnaire to the selected respondents, who filled them, and later the

researcher collected the filled questionnaires and then analyzed them.

Standard operating procedures were strictly followed during blood specimen collection, transportation, and storage conditions, and expired dates of reagents were checked before use.

Data analysis and presentation

After data collection, it was entered into Microsoft Excel and analyzed by STATA version 13.0.

Ethical Considerations

An introductory letter was obtained from Medicare health Professionals College to the medical Superintendent of Kitagata hospital, who introduced me to in charge and the in-charge introduced me to the clients. Respondents did not write their names on the questionnaires as a means of ensuring confidentiality. Respondents were informed that no immediate or direct benefits shall be obtained from the study as individuals and they were allowed to consent before participating in the study.

Study limitations

Some of the study limitations were inadequate resources like funds, those respondents who did not know how to read and write since questionnaires were used to collect data, and some interviewees who were coming from far places.

Dissemination of results

The complied results were distributed to Medicare Health Professionals College, Medical director Kitagata hospital for implementation of the outcome and the Uganda allied health Examination board for partial fulfillment of the award of diploma in medical laboratory technology.

3 Study Findings

4 Socio-demographic characteristics of the respondents.

Findings showed that the majority 51 (51%) of the respondents were between 20-25 years while the least 23 (23%) were those aged between 31-35 years.

The majority 53 (53%) of the respondents were cohabiting while the minority 03 (03%) were divorced.

Most 42 (42%) of the respondents had attained secondary education while those who never attained any formal education were the least representing 11 (11%) of the total respondents.

Half 50 (50%) of the respondents were Catholic by religion while the minority 07 (07%) were Muslims.

Regarding the occupational status, the unemployed dominated 52 (52%) followed by those who were self-employed 25 (25%0 while students were the least 05 (5.0%).

Almost all 90 (90%) of the respondents had a gestation period of 7-9 months while none had a gestation period of 1- 3 months.

In this study, most 40 (40%) of the respondents were Banyankole, followed by the Bakiga 32 (32%) while the Bahima were the least 12 (12%)

Prevalence of hepatitis among pregnant mothers

The diagnosis as indicated in the figure above revealed that almost 96 (96%) of the respondents were negative for hepatitis B infection while 04 (4.0%) were positive.

Knowledge of pregnant mothers on hepatitis B infection

The majority 63 (63%) of the respondents had ever heard about Hepatitis B infection in pregnancy while the minority 37 (37%) of the respondents had not heard.

Majority 36 (57.1%) of the respondents who ever heard about Hepatitis B infection in pregnancy listed the health worker as the source they learned about it from, another 24 (38.1%) listed radio and the least listed source was a friend while no respondent listed newspaper

More than half 55 (55%) of the respondents said that Hepatitis B Virus could be found in the blood while the least 05 (5.0%) of the respondents listed water.

The majority 60 (60%) of the respondents understood Hepatitis B infection in pregnancy as a disease caused by Hepatitis B Virus while the least 15 (15%) understood it as low oxygen-carrying capacity of the blood.

Three quarters 75 (75%) of the respondents did not know the symptoms of Hepatitis B infection in pregnancy while a quarter of 25 (25%) of the respondents knew.

The majority 60 (60%) of the respondents who knew the symptoms of Hepatitis B infection in pregnancy listed swollen stomach as the main symptom they knew while the least 02 (2.0%) number of respondents listed high fever.

More than half 55 (55%) of the respondents knew how Hepatitis B infection can be transmitted while less than half 45 (45%) did not know.

Table 1. Distribution of the respondents by socio-demographic characteristic (n=100)

Variable	Category	Frequency (n)	Percentage (%)
Age	20-25 years	51	51
	26-30 years	26	26
	31-35	23	23
	Total	100	100
Marital status	Married	27	27
	Single	17	17
	Divorced	03	03
	Cohabiting	53	53
	Total	100	100
Level of education	Not gone to school	11	11
	Primary level	29	29
	Secondary level	42	42
	Tertiary level	18	18
	Total	100	100
Religion	Catholic	50	50
	Anglican	31	31
	Born again	12	12
	Muslim	07	07
	Total	100	100
Occupation status	Employed	18	18
	Unemployed	52	52
	Self employed	25	25
	Student	05	05
	Total	100	100
Gestation period	1 - 3 months	00	00
	4 - 6 months	10	10
	7 - 9 months	90	90
	Total	100	100
Tribe	Munyankole	40	40
	Mukiga	32	32
	Muhima	12	12
	Muhororo	16	16
	Total	100	100

Table 2. Distribution of the respondents who ever heard about Hepatitis B infection in pregnancy by the source they learned of it from (n=63)

Source	Frequency (n)	Percentage (%)
Health worker	36	57.1
Newspaper	00	0.0
Friend	03	4.8
Radio	24	38.1
Total	**63**	**100**

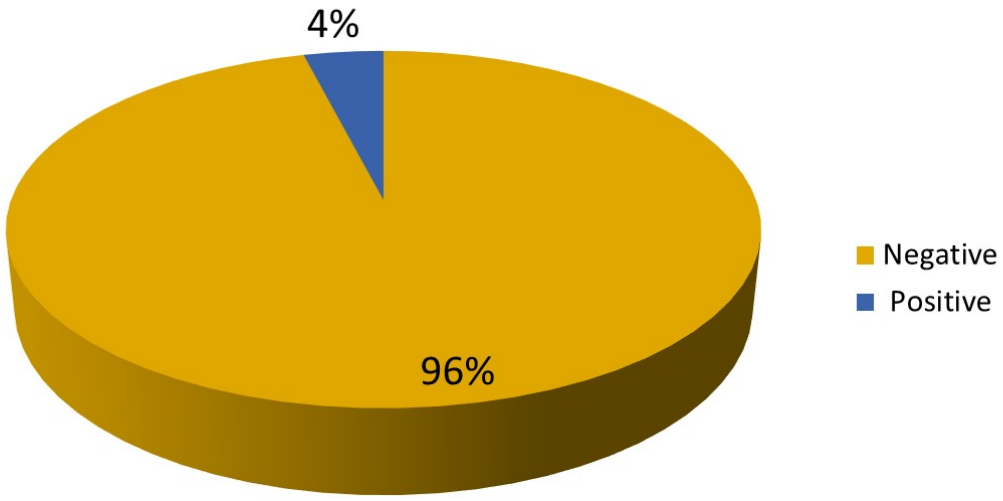

Figure 1. Shows the laboratory diagnosis results of hepatitis B infection among pregnant mothers (n=100)

Table 3. Distribution of the respondents by where the Hepatitis B Virus could be found (n=100)

Where Hepatitis B can be found	Frequency (n)	Percentage (%)
Blood	55	55
Vaginal fluid	40	40
Water	05	05
Total	**100**	**100**

Table 4. Distribution of the respondents by what they understood of Hepatitis B infection in pregnancy (n=100)

Where Hepatitis B can be found	Frequency (n)	Percentage (%)
A problem of blood in pregnancy	25	25
A disease caused by Hepatitis B Virus	60	60
Low oxygen carrying capacity of blood	15	15
Total	**100**	**100**

Table 5. Distribution of the respondents who knew the symptoms of Hepatitis B infection in pregnancy by the symptoms of Hepatitis B infection they knew (n=25)

symptoms of Hepatitis B	Frequency (n)	Percentage (%)
Swollen stomach	15	60
High fever	02	8.0
Sweating all the time	08	32
Total	**25**	**100**

Distribution of the respondents who knew how Hepatitis B infection can be transmitted by the ways it is transmitted (n=55).

Among those who knew how Hepatitis B infection can be transmitted, about half 28 (50.1%) of them listed through sex while the least 02 (11%) listed through kissing.

More than three quarters 80 (80%) of the respondents said that there is vaccine for Hepatitis B while the minority 20 (20%) said no.

Almost all 93 (93%) of the respondents had not been vaccinated while a few numbers 07 (7.0%) of the respondents were vaccinated.

Risk factors that expose pregnant women to hepatitis B infection

Most 79 (79%) of the respondents had never undergone surgery while the least 21 (21%) had ever undergone surgery.

The majority 60 (60%) of the respondents had never had an abortion while the least 40 (40%) of the respondents ever had an abortion.

More than half 67 (67%) of the respondents' families never had a history of hepatitis B infection while the least 33 (33%) had a history of hepatitis B infection in their family.

The majority 56 (56%) of the respondents had two sexual partners, another 24 (24%) had one partner while the least 08 (8.0%) had 4 and above sexual partners.

The majority 80 (80%) of the respondents had never attended any dental services while the least 20 (20%) ever attended.

Three quarters 15 (75%) of the respondents who ever attended dental services did so while going for tooth extraction while 01 (5.0%) of the respondents went for a dental checkup and to put on braces respectively.

5 Discussion, Conclusions, and Recommendations

6 Discussion:

Prevalence of hepatitis B among pregnant mothers

The study indicated that 04 (4.0%) of the respondents were positive for hepatitis B virus whereas 96 (96%) were negative for hepatitis B virus. The findings of this study indicate an increase in the prevalence of hepatitis B infection. This is probably because of unsafe sexual practices where individuals have unprotected sex with more than one sexual partner without first screening for hepatitis B, it could also be because of less attention given to hepatitis B resulting in it being considered a non-serious infection hence people do not bother to screen for hepatitis B and end up being exposed to it. The prevalence of hepatitis B infection in this study is higher than the one reported by Noubiap *et al.,* (2016) in the North region of Cameroon which was at (10.2%), it is also higher than the (9.4%) prevalence reported by Florent *et al.,* (2020) in Yaoundé central hospital Cameroon. Additionally, the hepatitis B prevalence indicated in this study is higher than the prevalence obtained by studies from different countries like Ghana it was (12.3%), and Yemen (10.8%). The possible explanation for the variations in the prevalence of HBV infection within different parts of the world might be due to the differences in socio-cultural practices, geographical area, laboratory techniques used, sample size, and the test kit sensitivity (Bwogi *et al.,* 2019).

Knowledge of pregnant mothers on hepatitis B infection

The study revealed that the majority 63 (63%) of the respondents had ever heard about Hepatitis B infection in pregnancy while the minority 37 (37%) of the respondents had not heard. The findings of this study imply that most of the respondents had information regarding Hepatitis B and this is probably because of the health education regarding Hepatitis B provided by the health workers at the health facility and or radio stations, it could also be due to the existent of a family member who could have suffered from Hepatitis B. The findings of this study contrast with a study by Adeyemi *et al,* (2019) which reported that 76% of all women they studied had never heard about hepatitis B infection and exhibited inadequate knowledge about hepatitis B infection.

The majority 36 (57.1%) of the respondents who ever heard about Hepatitis B infection in pregnancy listed the health worker as the source they learned about it from, another 24 (38.1%) listed radio and the least listed source was a friend while no respondent listed newspaper. The findings of this study indicate that health workers are a source of health information and this could be due to the frequent visits by the respondents to the health facility in which they could have attended a health education session in which health workers talked to them about Hepatitis B infection, it may also

Table 6. Distribution of the respondents who knew how Hepatitis B infection can be transmitted by the ways it is transmitted (n=55)

How Hepatitis B is transmitted	Frequency (n)	Percentage (%)
Through sex	28	50.1
Through blood transfusion	08	8.0
Through sharing sharp things	17	30.9
Through kissing	02	11
Total	**55**	**100**

Table 7. Distribution of the respondents by the number of sexual partners they had (n=100)

How Hepatitis B is transmitted	Frequency (n)	Percentage (%)
One	24	24
Two	56	56
Three	12	12
4 and above	08	08
Total	**100**	**100**

Table 8. Distribution of the respondents who ever attended dental services by the dental services they attended (n=20)

How Hepatitis B is transmitted	Frequency (n)	Percentage (%)
Gum feeling	03	15
Tooth extraction	15	75
Dental checkup	01	5.0
To put braces	01	5.0
Total	**20**	**100**

be during the pre-counseling of the clients by the health worker before they underwent screening. These findings disagree with a study by Abdulai *et al,* (2020) which reported that among those who were aware of Hepatitis B infection, 42% mentioned radio as the main source of information on hepatitis B. while the least source of information about hepatitis B was the place of worship accounting for 2.7%.

More than half 55 (55%) of the respondents said that Hepatitis B Virus could be found in the blood while the least 05 (5.0%) of the respondents listed water. The findings of this study imply that the respondents were aware of where Hepatitis B Virus lives in the body. This is probably due to the availability of sufficient information regarding Hepatitis B Virus to the respondents. The findings of this study agree with a study by Chan *et al,* (2021) which reported that the majority of their respondents could provide a correct response about the common aspects of hepatitis B viral infection where 57% said that the Hepatitis B Virus lives in the blood.

The majority 60 (60%) of the respondents understood Hepatitis B infection in pregnancy as a disease caused by Hepatitis B Virus while the least 15 (15%) understood it as the low oxygen-carrying capacity of the blood. This indicates a good level of knowledge regarding Hepatitis B infection among the respondents. This is probably because of being exposed to Hepatitis B information, it could also be due to the experience of Hepatitis B infection among the respondents or their family members. These study findings correlate with a study by Abdulai et al, (2020) which reported that 61% of their respondents were aware of hepatitis B as a disease caused by the Hepatitis B Virus.

Three quarters 75 (75%) of the respondents did not know the symptoms of Hepatitis B infection in pregnancy while a quarter of 25 (25%) of the re-

spondents knew. This study finding indicates a less likely hood of screening for Hepatitis B since the respondents do not know its signs and symptoms and this is probably because of having insufficient information about hepatitis B which could have resulted due to poor health education provided by the health workers coupled with the silent nature of hepatitis B which may make its symptoms hard to be noticed. These findings are in acceptance with a study by Han *et al,* (2017) which found that 74.3% of their respondents who knew that infection with HBV could be asymptomatic did not know the exact signs and symptoms of HBV.

The majority 60 (60%) of the respondents who knew the symptoms of Hepatitis B infection in pregnancy listed swollen stomach as the main symptom they knew while the least 02 (2.0%) number of respondents listed high fever. This indicates that the respondents had some knowledge of the symptoms of Hepatitis B. This is probably a result of exposure to hepatitis B information which could have been attained through patient education hence leading to the knowledgeability of the respondents regarding some signs and symptoms of Hepatitis B infection. These findings agree with a study by Han *et al,* (2017) which reported that 58.8% of their respondents were aware that HBV could eventually lead to the swelling of the stomach due to severe liver complications in childhood or adulthood. (Han *et al,* 2017).

More than half 55 (55%) of the respondents knew how Hepatitis B infection can be transmitted while less than half 45 (45%) did not know. The finding of this study indicates that respondents were aware of the routes in which Hepatitis B infection can be transmitted. This is probably attributed to the mass mobilization, health education, and sensitization that were done by the government in the area of study when providing HPV-free screening and vaccination to the people. The findings of this study correspond with a study by Abdulai *et al,* (2020) which found that about 65.5% of women who reported awareness of hepatitis B in their study were able to mention the transmission routes of hepatitis B infection. However, this study's findings contrast with a study by Han *et al,* (2017) which reported that 2.1% of their respondents knew the various modes of HBV transmission.

Among those who knew how Hepatitis B infection can be transmitted, about half 28 (50.1%) of them listed through sex while the least 02 (11%) listed through kissing. The findings of this study indicate that the respondents considered Hepatitis B infection as a sexually transmitted infection. This is probably because of the good level of knowledge regarding how Hepatitis B infection is transmitted from one person to another. These findings disagree with Han *et al,* (2017) who reported that 53.3% did not know that HBV may be transmitted through unprotected sexual intercourse.

More than three quarters 80 (80%) of the respondents said that there is a vaccine for Hepatitis B while the minority 20 (20%) said no hence indicating that the respondents were aware of the existence of Hepatitis B vaccine at the health facilities and this is probably due to the mass health campaigns conducted by the government in a bid to encourage the populations to access and uptake the vaccination services. The findings correlate with a study by Han *et al,* (2017) which reported that the majority of their participants 74.7% knew that the hepatitis B vaccine was available.

Almost all 93 (93%) of the respondents had not been vaccinated while a few numbers 07 (7.0%) of the respondents were vaccinated. The findings of this study indicate low utilization of Hepatitis B services among the respondents and this may be probably due to insufficient information regarding the availability of these services at the health facilities coupled with the insufficiency of resources, supplies, and personnel to provide them to the people, it could also be because of the existence of the Hepatitis B virus in an individual since vaccination is restricted to those who are not positive of the virus. These findings are consistent with a study by Adeyemi *et al,* (2019) which reported that 90.3% of their respondents had not been vaccinated.

Risk factors that expose pregnant women to hepatitis B infection

The study revealed that the majority 62 (62%) of the respondents did not have any previous history of blood transfusion while the least respondents 38 (38%) had. The findings of this study indicated less the likelihood of respondents getting exposed to hepatitis B infection through blood transfusion. This is probably because the respondents did not get exposed to the illnesses or infections or situations that would lead them to require a blood transfusion. The findings of this study are in contrast with a study by Rita *et al.,* (2021) which reported that 66.66% of their respondents had a history of blood transfusion and were hepatitis B positive.

Most 79 (79%) of the respondents had never undergone surgery while the least 21 (21%) had ever undergone surgery. The findings of this study indicate that most of the respondents did not have conditions that needed surgery and that there are few chances of them getting exposed to hepatitis B infection during the surgery. This is probably because of the absence of health conditions that would require surgery among the respondents. These study results disagree with a study by Mohammed H *et al.,* (2016) which reported that 58% of the women they studied had a history of surgery and were positive for hepatitis B. This was further propounded in a study by Noubiap *et al.,* (2015) which also reported that 2.2% of their respondents had a history of surgery.

The majority 60 (60%) of the respondents had never had an abortion while the least 40 (40%) of the respondents ever had an abortion. These findings imply that most of the respondents were not exposed to the risk factors of abortion. This is probably because of early and good attendance to antenatal services where they may be advised on measures to be taken to avoid the occurrence of abortion, it could also be due to good health practices like sleeping under the mosquito net when regnant, seeking for immediate medical attention when feeling ill. The findings of this study contrast with a study by Chernet *et al.,* (2020) which reported that 64.9% of women in their study had a history of abortions and were infected with hepatitis B virus.

More than half 67 (67%) of the respondents' families never had a history of hepatitis B infection while the least 33 (33%) had a history of hepatitis B infection in their family. This indicates a less probability of the respondents acquiring hepatitis B infection from their family members. The lack of history of hepatitis B infection in a family could be a result of good self-care practices which minimized the chances of getting exposed to hepatitis B infection. These findings agree with a study by Noubiap *et al.,* (2016) which reported that 60.5% of their respondents whose families had a known history of HBV infections were also positive for HBV.

The majority 56 (56%) of the respondents had two sexual partners, another 24 (24%) had one partner while the least 08 (8.0%) had 4 and above sexual partners. Having more than one partner indicates a high likelihood of getting exposed to hepatitis B infection. Most of the respondents had more than one sexual partner probably because of sexual dissatisfaction with one partner, it could also be due to poverty which makes them look for financial assistance by having many partners who would finance them and provide them with most of the basic needs they lack. The findings of this study agree with a study by Demeke *et al.,* (2021) which reported that most pregnant women had multiple partners and engaged in multi-partner sexual intercourse hence were almost five times more likely to be positive for Hepatitis B infection than those pregnant women who had not.

The majority 80 (80%) of the respondents had never attended any dental services while the least 20 (20%) ever attended. The findings of this study indicate that dental service utilization was low and that getting exposed to hepatitis B infection through a dental procedure was minimal. This is probably because of the widely held perception that one only needs a dentist only when in dental emergencies like dental pain, it could also be because of the perception that dental diseases are not serious and are not life-threatening. This study agrees with a study by Christensen & Helderman (2016) which reported that 61% of their subjects had never visited dental clinics.

Three quarters 15 (75%) of the respondents who ever attended dental services did so while going for tooth extraction while 01 (5.0%) of the respondents went for a dental checkup and to put on braces respectively. This indicates that there is always a delay in accessing and utilizing dental care services. This is probably because of the attachment of less importance to dental health services utilization hence leading to its being sought for in chronic stages or only when the experience of pain sets in. These findings agree with a study by Bancha *et al.,* (2020) which reported that 78% of the women they studied had their teeth extracted and that a statistically significant association was detected between the history of tooth extraction and the presence of hepatitis B viral infection.

Conclusions

The study established that the prevalence of hepatitis B infection among pregnant women was high whereas the knowledge regarding hepatitis B infection was moderate and the predisposing factors to hepatitis B infection were majorly having two sexual partners and having a tooth extraction.

Recommendations

The researcher recommends the government, NGOs, Hospital management, and other stake-

holders, do more notification over the media, schools, and public gathering places to increase the widespread of information about HPV which will help increase awareness among the mothers thereby influencing service utilization.

The provision of mandatory free screening and vaccination services by the government to the pregnant mothers will help in discovering the number of cases hence scaling up the type of care and treatment needed, also taking the services nearer to the reach of those who cannot walk long distances to the health units should be done and it can be achieved through organizing outreach services focused majorly on screening and health education as this will help most people know their status and uptake the services.

The government and other partnering organizations should organize health seminars in public gathering places where dramas and skits about HPV are made with an aim of attitude change. In addition, refresher training on HPV case management should always be provided to the health workers to increase their knowledge about the disease management while ensuring that HPV services, drugs, and supplies are always in stock to suit the need of those who need them as this will bring about satisfaction which will hence increase the utilization and decrease prevalence.

7 Acknowledgement

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8 List of Abbreviations/Acronyms

AIDS : Acquired immunodeficiency syndrome

ANC : Antenatal care

CDC : Centers for disease control and prevention.

DHO : District education officer

GDHS : Ghana demographic health survey

HBsAg : Hepatitis B surface antigen

HBV : Hepatitis B virus

HCC : Hepatocellular carcinoma

HIV : Human immunodeficiency virus

MoH : Ministry of health

MTCT : Mother to child transmission

UAHEB: Uganda allied health examination board

UBOS : Uganda Bureau of statistics.

UDHS : Uganda demographic and health survey

WHO : World health organization

8.1 Operational definitions of Key Terms

Hepatitis B Infection: **is** a DNA virus that is transmitted by percutaneous injuries or per mucosal exposure to infectious blood products or other body fluids.

Hepatitis B infection: Is caused by Hepatitis B Virus.

Hepatitis: Inflammation of the liver.

Knowledge: Refers to level of understanding of people.

Prevalence: The total number of cases of a disease in the given statistical population at a given time.

Risk factors: Is an attribute, characteristic or exposure of an individual that increases the like childhood of developing a disease.

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