PREVALENCE AND RISK FACTORS OF HEPATITIS B VIRUS INFECTION AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINIC AT LIRA REGIONAL REFERRAL HOSPITAL.

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NOVEMBER 2021.

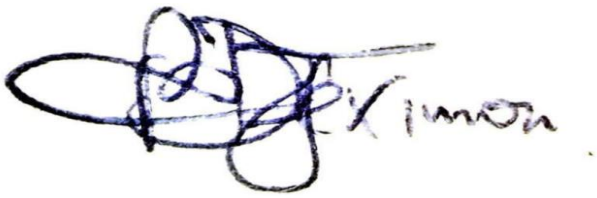
DECLARATION

I, Angom Doris Brandina do declare that this research Report is my original piece of work and has never been submitted to any other institution for an academic award.

Signature: …… Date ……

APPROVAL

This is to certify that this research Report by Angom Doris Brandina is submitted with my approval as the University Supervisor.



Date; 23rd. 02. 2022

MR. WEBBO FRED.
SUPERVISOR

DEDICATION

It is my sincere pleasure to dedicate this book to the Lord Almighty for bestowing upon me good health, intelligence, inspiration, and all manner of blessings that have enabled me to complete this research process.

I would also like to express my gratitude to the Lira Regional Referral hospital. I would not have arrived at this glorious point in my life if it hadn't been for their generous and timely assistance. Only the Lord Almighty will be able to repay them. May the Lord Almighty bless you all Amen!

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I am extremely grateful to my parents for their love, prayers, caring and sacrifices for educating and preparing me for my future.

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DEFINATION OF OPERATIONAL TERMS.

Acute hepatitis B infection; a sudden infection occurring newly with a person's first exposure to the hepatitis B virus.

Antibody; in response to a foreign body such as the HBV as an infection or even to a vaccine, the body produces protein molecules i.e. antibodies that circulate in blood protecting the body against future infections

Antigen; a protein found on the surface of a virus such as HBV which stimulates the host's immune system to produce antibodies against the antigen.

Asymptomatism; Is a condition when a person infected chronically or acutely does not show any signs and symptoms in relation to the infection one is suffering from and is said to asymptomatic.

Carcinoma; is a malignant tumor or cancerous growth. I.e. Hepatocellular carcinoma which is cancer of the liver.

Chronic HBV infection; persistence of HbsAg for six months or more after acute infection of HBV.

Cirrhosis; extensive liver scarring secondary to prolonged inflammation of the liver.

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Hepatitis b core antibodies

Hepatitis B core antigen; is a protein found in the hepatitis virus that when detected by analyzing an infected liver cell as it does not circulate in blood indicates an active viral replication as a person is infected with virus and is infectious to others.

Hepatitis B enveloped Antibody; these are proteins produced by the body's immune system in response to HBV enveloped antigen. Once these are produced it is a marker of declining replication of virus and is one of goals of hepatitis b treatment.

Hepatitis B enveloped Antigen; Is a protein produced from the region near the core gene of the hepatitis b virus and is a marker of active viral replication in the liver cells and thus virus circulating in blood and as a result the person becomes highly infectious to others

Hepatitis B infection; is a type of viral hepatitis caused by hepatitis B virus that affects the liver and can cause both acute and chronic infections to the person infected

Hepatitis B Surface antibody; these are proteins produced by the body's immune system. A positive HbsAg test indicates that one is protected against infections from hepatitis B. These are present in blood due to either having received a vaccine or complete recovery from a past infection.

Hepatitis B Surface Antigen; is a protein on the surface of hepatitis B virus that when detected in blood, the person is infected with hepatitis b however further testing is required to ascertain whether infection is acute or chronic.

Hepatitis; is when the liver becomes inflamed as a result of viral, bacterial infections, drug reactions, and trauma among others. That which is caused by a virus is referred to as viral hepatitis which includes many types such as A, B, C, D, E, F, G.

IgG antiHBc; these are antibodies produced by the body's immune system against the HBV core antigen and may remain in blood indefinitely as a marker of a past HBV infection

IgM antiHBc; these are antibodies produced by the body's immune system against the HBV core antigen and are detectable at the time signs and symptoms appear and declines to sub detectable levels within weeks and are indicative of a new acute hepatitis b infection.

Tenofovir prophylaxis; use of TenoforvirDisoproxilFumerate(TDF) to prevent mother to child transmission of HBV.

Vaccine; is a drug prepared from the causative agent of the disease, its products treated to act as an antigen without causing disease to stimulate the production of antibodies and provide immunity against the disease from which it is made.

Vertical transmission; this is the passage of a disease causing agent from mother to baby during the period immediately before and after birth either through breast milk or direct contact during or after birth.

Virus; is an infective agent consisting a nucleic acid and a protein coat and is too small to be seen by a light microscope and multiply in cells of the host.

LIST OF ABBREVIATIONS AND ACRONYMS

AIDs	Acquired Immune Deficiency syndrome
ANC	Antenatal Care
CDC	Center for Disease Control
CIU	Clarke International University
HbcAg	Hepatitis B Core Antigen
HbeAg	Hepatitis B enveloped Antigen
HbsAg	Hepatitis B Surface Antigen
HBV	Hepatitis B
HIV	Human Immune Deficiency Virus
LRRH	Lira Regional Referral Hospital
RRH	Regional Referral Hospital
STD	Sexually Transmitted Diseases
UNEPI	Uganda National Expanded Programme on Immunization
WHO	World Health Organization

ABSTRACT

Background: the most common cause of serious liver infection is hepatitis B. Contact with an infected person during childbirth and various horizontal modes of transmission, such as sexual exposure with an infected person or direct contact with an infected person's blood, are all factors that raise the chance of HBV infection.

Objectives: the major aim of the study is to determine the prevalence of HBV infection, associated and other risk factors among pregnant women attending antenatal clinic at Lira regional referral hospital.

Methods: A cross sectional study was conducted on pregnant women in lira regional referral hospital between the month of October and November 2021. Study participants were selected using simple random sampling particularly systematic sampling technique and a total of 160 pregnant women were included. Socio-demographic data and exposure to associated and other factors (number of Sexual partners, history of hospital admission and hepatitis B positive family member history. inability to vaccinate against HBV, inadequate health education on HBV and lack of HBV screening services.) were collected through a structured questionnaire. Two milliliters of blood were collected from each study participant. Serum level hepatitis B surface antigen (HbsAg) were detected using HbsAg rapid diagnostic test kit. Data was entered and analyzed using SPSS version 20.To declare the presence of association odds ratio with 95% confidence interval and P value <0.05 were considered statistically significant.

Result: A total of 160 pregnant women with the mean age of 25 years were enrolled. The prevalence of HbsAg among the participants was 8.7% with 95% confidence interval (6.52, 10.98). Statistically significant association for HbsAg infection was observed for Hepatitis B positive family history p=0.032, COR- 3.771(1.045-13.615), AOR- 1.962 (0.472-8.159) and hospital admission history p=0.001, COR- 7.259 (1.935-27.226), AOR- 6.436 (1.567-26.433).

Conclusion and recommendations: an intermediate prevalence of HbsAg infection, which was an important public health problem was detected. Therefore implementing strategies for routine mandatory screening and care of pregnant women for hepatitis B would be important. Further, health education modes of transmission and precautions such as immunization of HBV has to be strengthened.

Keywords: hepatitis B virus, Risk factors, HbsAg, pregnant women.

CHAPTER ONE: INTRODUCTION

This chapter consists of the background to study, problem statement, general objective, specific objectives and research questions, significance of the study and conceptual framework.

1.1 Background to the study

Hepatitis B is a liver infection that is caused by hepatitis B virus (HBV) which damages the liver thus causing chronic and acute liver disease WHO (2017). Hepatitis B virus belongs to the hepadnaviridae family. Schweitzer *et al*. (2015). It is a highly infectious agent with 50-100 times more virulence than Human immune deficiency Virus.(Lozano *et al* ,2012). HBV can survive outside the body for approximately 7 days and can still cause infections if it gains entry in the body of a person who is not infected. (Stanaway *et al* 2016).

The virus is transmitted through direct contact with blood and other body fluids like semen, amniotic fluid, saliva, vaginal fluid and secretions from mucous membranes of an infected person. (Gedefaw*et al*, 2015). It can be through vertically transmission from an infected mother to the child during childbirth, sexual contact with an infected person or sharing of sharp instruments such as needles, razors, and pins. (Maucort-Boulch *et al*, 2018).

Mother to child transmission is liable for one half of all hepatitis b infections that end up being chronic. (Navabkshs*et al*, 2011). Pregnant women who are positive for HBV surface antigen (HbsAg) and hepatitis B envelope antigen (HbeAg) are 70 to 90% at risk of transmitting it to their unborn babies (Asrie, 2017) if it is not diagnosed earlier and baby treated at birth. And so it is crucial that these pregnant women get to know their hepatitis b status through testing as soon as possible during pregnancy. (Kayondo *et al*, 2020).

Globally, HBV affects about 2 billion people with more than 350 million people diagnosed with chronic liver infections. WHO. (2015). the epidemiologic burden varies from one continent to another. The infection rates are relatively high in Africa (42.7%) followed by Asia (33.6%). Schweitzer *et al*. (2015). HBV affects about 80 -100 million people in Africa and accounts for about 650,000 deaths each year. (Ssemakula *et al*, 2019). North African countries including Egypt, Libya, Tunisia, Algeria, and Morocco have an intermediate rate of

HBV infection ranging from 2 to 8% with early childhood and contaminated medical equipment being the main mode of transmission. Centre for Disease Control. (2018).

In East Africa, Kenya has prevalence rates of 5-30% of its general population and 9.4% among pregnant women. Ngaira*et al*. (2016) and Tanzania 7.0 %.(Mueller *et al*, 2015).
In Uganda, HBV infection is highly endemic, with a prevalence among adults aged 15 to 64 standing at 4.1% (5.4% among women and 3.0% among men) according to UPHIA (2016-2017). The vaccines against HBV which were introduced in 1982 got integrated into Uganda National Expanded Program on Immunizations (UNEPI) with expectation of giving protection of 90-100% on HBV infection. (Dunford*et al*, 2012). Besides the availability of these vaccines, the prevalence rate of HBV is still high especially in the mid northern region of the country with the prevalence of 4.6%, northeast region with a prevalence of 4.4% and west Nile region with a prevalence of 3.8%. UPHIA (2016-2017)
However, the Midwestern region of Uganda has a prevalence of 1.8%, south western region with prevalence of 0.8%, Kampala at 1.9%, central 1 region at 1.6%. UPHIA (2016-2017) although the reason for this variation is not yet established.
In view of this background, this study was conducted among pregnant women attending antenatal clinic at Lira regional referral hospital with the aim of determining the prevalence and risk factors for HBV infection.

1.2 Problem statement

Whereas STD/ HIV Aids control is very crucial in ensuring safe motherhood, HIV/STD testing is obligatory for all pregnant women attending antenatal clinic at lira regional referral hospital. Despite the fact that the hepatitis B testing kits are being availed by ministry of health to all regional referrals, hepatitis B virus testing is not mandatory at Lira RRH and so creates a possible risk for vertical transmission to the unborn baby.
However, the immunization schedule for hepatitis B virus in Uganda are given at 6weeks for first dose and 10 weeks for second dose. By this time, if pregnant women are not tested, many positive mothers could have infected their babies and the vaccine received after will be of no benefit and yet if detected early, the child would have received a hepatitis B vaccine at birth and as well as mother put on Tenoforvir prophylaxis as medication.
No study has been carried out at Lira RRH thus the burden of infection is not clear and yet it is important because of its high infectivity via both vertical and horizontal routes and this

motivates the researcher to determine the prevalence and risk factors for HBV among pregnant women attending antenatal clinic at Lira regional referral hospital.

1.3 Objectives of the study

1.3.1 General objective

To determine the prevalence and risk factors for hepatitis B virus infection among pregnant women attending antenatal clinic at Lira regional referral hospital.

1.3.2 Specific objectives

i. To determine the prevalence of hepatitis B virus infection among pregnant women attending antenatal clinic at Lira regional referral hospital.
ii. To establish the socio-demographic risk factors for hepatitis B virus infection among pregnant women attending antenatal clinic at Lira regional referral hospital.
iii. To identify the associated and other risk factors of hepatitis B virus infection among pregnant women attending antenatal clinic at Lira regional referral hospital.

1.4 Research questions

i. What is the prevalence of hepatitis B virus infection among pregnant women attending antenatal clinic at Lira regional referral hospital?
ii. What are the socio-demographic risk factors for hepatitis B virus infection among pregnant women attending antenatal clinic at Lira regional referral hospital?
iii. What are the associated and other risk factors of hepatitis B virus infection among pregnant women attending antenatal clinic at Lira regional referral hospital?

1.5 Significance of the study

The results from the study will be used to establish the infection burden and explore the associated risk factors to the acquisition of HBV. This will be used to advocate for strategies to overcome infection burden and risk of transmission.

The study will be useful in providing timely treatment to be given to HBV infected pregnant women before the infection is passed on to the unborn and the health care providers to take extra precautionary measures in the process of conducting childbirths.

The study shall still benefit future researchers by providing reference information to those interested in the similar study.

The findings will also be used for the partial fulfillment of the requirements for the award of a Bachelor's in Medical Laboratory Sciences.

1.6 A conceptual framework

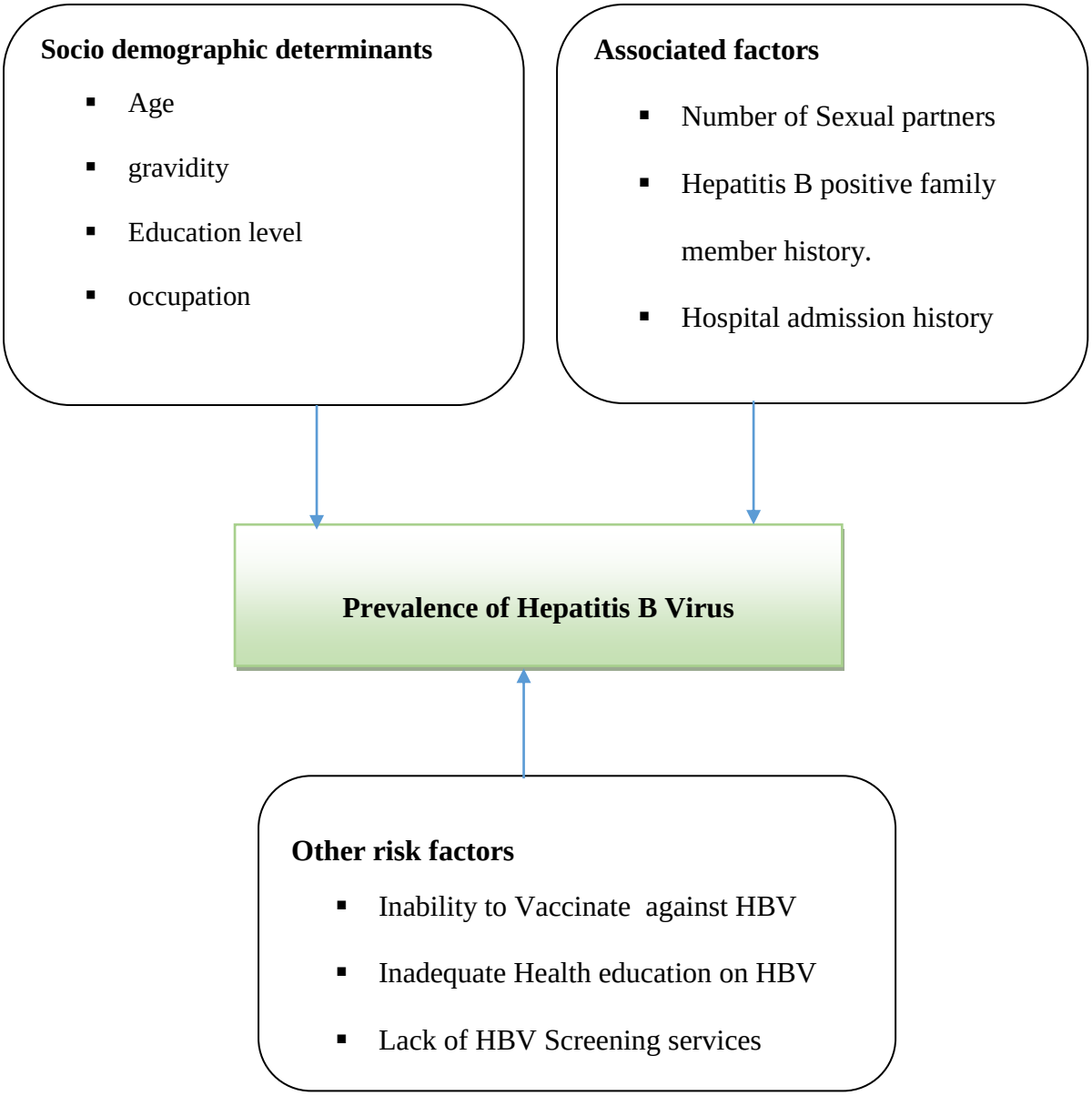


Figure 1: A conceptual frame showing the relationship between dependent variable (prevalence of hepatitis B infection) and the independent variables (socio-demographic factors, associated factors and other risk factors.).

Narrative of conceptual frame work

A conceptual frame showing the relationship between dependent variable (prevalence of hepatitis B infection) and the independent variables (socio-demographic factors, associated factors and other risk factors).

The dependent variable of study is prevalence of hepatitis B infection among pregnant women. The independent variables of the study include;

Socio demographic determinants such as age, sex, gravidity, education level and occupation.

Associated factors with variables such as number of Sexual partners, history of hospital admission and hepatitis B positive family member history.

Other risk factors such as inability to vaccinate against HBV, inadequate health education on HBV and lack of HBV screening services.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter consists of literature collected from text books, previous related research from electronic data base, internet, and journals. This chapter consists of literature review related to the study of hepatitis B infection prevalence. It is discussed under; prevalence of hepatitis B infection, demographic factors, and lifestyle factors associated with hepatitis B infection and hepatitis B preventive strategies use among pregnant women attending ANC clinic.

2.1 Prevalence of hepatitis b among pregnant women.

Globally, it was estimated that 30% of the world's population (2 billion people) have been infected with Hepatitis B, and of these 350 million people are burdened with serious long term complications of chronic HBV infections predominantly liver cirrhosis and cancer (WHO, 2015). In sub-Saharan region of Africa, the prevalence of hepatitis b among pregnant women ranges between 4.7% in Ethiopia (Kindie *et al*., 2018), 11.8% in the northern part of Uganda according to Bayo et al (2014) to 7.9% in middle parts of Ghana (Anobire NG *et al* 2019) and 9.5% in northern parts of Ghana. (Ephraim R *et al*, 2015).

The Studies that have been carried out in Uganda in the different localities show varying prevalences of hepatitis B among pregnant women. According to (Kayondo *et al*, 2020) which was a study done in Mulago hospital (central Uganda), the prevalence was 2.9% hence categorizing it in the intermediate endemicity (WHO2%-8%).

However, the above prevalence i.e. 2.9% is much lower than the prevalence of 11.8%in the study done by (Bayo et al, 2014) in northern Uganda and thus the region is of a high endemicity. Despite that fact, the level of HBV screening services among pregnant women has remained low i.e. 8% according to a community based study in lira, northern Uganda. (Semakula *et al*. 2019)

Notably, a descriptive cross sectional study to assess the prevalence and risk factors of hepatitis B among pregnant women attending ANC at Kiryandongo General Hospital found the prevalence of HBV among pregnant women was of 12.23% was higher than previous studies conducted within the region and other regions and so urgent interventional measures were recommended. (Abdirizak, 2019)

2.2Hepatitis B Virus Transmission

Hepatitis B Virus (HBV) is known to be transmitted in similar ways as the Human Immunodeficiency Virus (HIV) making the risk factors of both viruses similar. However, HBV has been reported to be more infectious (CDC, 2018) by 50 – 100 more times. WHO Q&A (2015). The virus is transmitted through direct contact with blood and other body fluids like semen, amniotic fluid, vaginal fluid and secretions from mucous membranes of an infected person. Gedefaw *et al*. (2015). It can also be transmitted vertically from infected pregnant women to infants during childbirth, sexual contact with an infected person, sharing of sharp instruments such as needles, razors, and pins. Maucort-Boulch *et al*. (2018).

2.3 Effects of Hepatitis B viral infection during Pregnancy

According to study by Borgia G *et al*. (2012) HBV infection in pregnancy does not increase the mortality and does not yield teratogenic effects. However, a higher incidence of low birth weight and prematurity has been reported during acute infection than in general health population. In addition, gestational diabetes and antepartum hemorrhage are also associated with chronic Hepatitis B infections (Ray, 2017) and emphasis be put on assessing the pregnant women who are found to be infected with the virus.

2.4 Socio-demographic factors for Hepatitis B viral infection.

Age as a socio demographic factor may influence the risk of pregnant women contracting HBV whereby the in a cross sectional study conducted in Cameroon among 260 pregnant women attending antenatal clinic, the findings revealed that out of 260 women recruited to participate in the study, 20(7.7%) turned positive for HbsAg and prevalence of HbsAg was highest among age group of 25-34 years. Lem E Abongwa and Penn Kenneth. (2016). Also, in another study done, the highest prevalence of 4.7% was seen among the ages of 18-26. (Masajjage *et al*, 2018).

Similarly, (Allen *et al,* 2016) showed highest numbers of infection in pregnant women between the ages of less than 20 -29. It is noted that female young adults and adolescents of the above age bracket have high sexual activity (Uganda demographic and health survey 2016) which is a route of HBV transmission although a paper by (Kayondo *et al,* 2020) found that age of the pregnant woman was not significantly associated with prevalence of HBV among pregnant women.

In Nigeria, a study's findings were that 73.34% of the multi gravid pregnant women in respect to the pregnancy number were more likely to be infected by hepatitis B compared to

the prime/ 1st time gravid pregnant women. This may be due to increased exposure to hospital risk factors like blood transfusions, surgeries, prolonged hospital stay due to their previous pregnancies. Chineye*et al*. (2015).

However, a paper by Masajjage*et al*. (2018) does not concur with the previous study as 0.9% of multi gravida pregnant women contracted HBV and 5.9% were prime/1st gravid pregnant women. This study was limited by a small sample size.

2.5 Associated and other risk factors for Hepatitis B viral infection

In a hospital based cross sectional study conducted Ethiopia among 375 pregnant women revealed that having multiple sexual partners was significant with HBV infection as 11.9% pregnant women reported having history of multiple sexual partners and were 6.77 times more likely to be found hepatitis b positive as compared to those with no history of multiple sexual partners.

Similarly, in a study that took place at Mulago national referral hospital, a paper by (Kayondo *et al*, 2020) found out that pregnant women who did not have stable partners were 11 times as likely to hepatitis b positive compared to other women who lived with their partners which was much higher than the likelihood in the previous study.

Likewise, in Nigeria, pregnant women with multiple sexual partners were 4 times at a higher risk of contracting HBV in comparison with those who didn't have many sexual partners though it was a lower likelihood in this study. (Chineye et al 2015)

In Nigeria in 2015, there was a significant association that was found between being single, uneducated, multigravida and in the third trimester, plus having had multiple sexual partners, a previous history of a sexually transmitted infection (STI) &concurrent HIV infection and the prevalence of HBV infection among the pregnant women. Okoye*et al*. (2015). A finding which agrees with a study in Uganda- Kiriyandongo that the significant risk factors for Hepatitis B infection among pregnant women were HIV seropositivity, previous history of STIs, young age at sexual debut and early pregnancy, and history of multiple sexual partners. Abdirizak. (2019).

According to Alemrew*et al.* (2021), pregnant women who had history of many hospital admissions had more than three times likelihood of having contracted hepatitis B compared to those who did not report any and could be attributed to poorly performed infection control

activities done during admissions and in turn become a hospital acquired infection due to its high infectivity. (Ronda G. Hughes, 2008)

Findings of (Kayondo *et al,* 2020) revealed that family history of having HBV positive family member showed that the pregnant women in their study had 50 times a higher risk of contracting HBV than those who didn't have any history. Similarly, data from CDC showed that 3%-20% of close contacts of people with chronic hepatitis B are also infected and so screening and vaccination is recommended. (Weinbaum CM *et al,* 2008).

In addition, a cross sectional study of pregnant women attending the antenatal care clinic, in Mulago Hospital observed that prevalence of Hepatitis B Virus infection among pregnant women attending the antenatal care clinic in Mulago hospital was found to be 2.9%. The factors that were found to be associated with Hepatitis B virus infection were, marital status, history of having had a Hepatitis B positive patient at home, and history of having had a blood or body fluid splash to mucous membranes from a Hepatitis B positive patient, (Kayondo, 2019).

Although, the study among pregnant women in Bahir Dar found that prevalence of hepatitis B virus infection among pregnant women was 4.7% which was higher than in Kayondo et al (2019), the study also found that having a history of blood transfusion that warranted a hospital stay, having a history of multiple sexual partners were the significant risk factors for hepatitis B virus infection (Gedefaw et al, 2019). This study had the inability to use more sensitive diagnostic methods like polymerase chain reactions, which would have help detecting occult HBV infection

Pregnant women need to be considered a focal sub population for possible viral hepatitis B micro elimination thus strategies like timely hepatitis B detection, treatment and vaccination to prevent mother to child transmission should result in reduced disease incidence and consequently its prevalence among pregnant women. Nankya*et al.* (2019). This is such that pregnant women who are screened and found negative for Hepatitis B virus can be vaccinated to prevent a future HBV infection during the pregnancy. Dionne-Odom *et al*. (2016), Eke *et al*. (2017). The vaccine is effective and safe to administer to pregnant women. Groom HC *et al*. (2018).

Similarly, vaccination provided to the newborn babies reduces the incidence of HBV transmission from the positive mother. And it is the vaccination of these neonates that is the

most important and cost effective step towards eradication of chronic hepatitis B infection. (Behrouz N *et al*, 2011)

In moderate and highly endemic countries like Uganda, specific HBV prevention efforts were strained by barriers including low awareness and knowledge about HBV and its prevention for example some women thought that getting vaccinated while pregnant will cause health challenges to the pregnancy such as miscarriages. (Abdulai M *et al*, 2016). This necessitated the need for health education in which the government of Uganda started a mass screening as a way to prevent and treat as an effective response to the hepatitis B epidemic. (Semakula *et al* 2019)

CHAPTER THREE: METHODOLOGY

3.0 Introduction

This chapter presents the methodology that was used to carry out the study by answering the research questions on the prevalence and risk factors for hepatitis B virus infection among pregnant women attending antenatal clinic at Lira regional referral hospital.

This chapter is structured as follows, the study design, study area, study population, sources of data, sample size determination, sampling procedure, eligibility criteria (inclusion and exclusion) criteria of participants, study variables, techniques of data collection, data analysis, quality control, ethical considerations and dissemination of findings.

3.1 Study design

This study was a cross sectional study in which both qualitative and quantitative data was collected. This study design was used because it includes obtaining data from the respondents at a single point in time with no follow up of the respondents. In addition, this study design did not take up too much time and financial resources

3.2 Study area

This study was done at Lira Regional Referral Hospital located along police road of the city of Lira. It is a public hospital funded by the Uganda Ministry of Health and the services are free of charge. This hospital was selected because it is among the regional hospitals with fully functioning obstetrics and gynecological services, antenatal services in particular of which the intended study focuses on pregnant women attending the antenatal clinic at lira regional referral hospital. Lira RRH was within reach of the researcher to ensure that the predetermined sample size is easily achieved as well as to reduce on the resource constraints that would otherwise limit the completion of the study.

3.3Sources of data

Both primary and secondary data sources were used. Primary data was obtained from patients using a questionnaire as well as results from hepatitis B laboratory tests conducted on the study participants. Secondary data was obtained from literature previously published on prevalence and risk factors of hepatitis among pregnant women.

3.4 Study population

The study population in this study included pregnant women between the ages of 16 and 45 years regardless of the pregnancy trimester attending antenatal clinic at Lira Regional Referral Hospital.

3.5 Eligibility Criteria

3.5.1 Inclusion Criteria

The study included;

Pregnant women between 16 and 45 years of age who attended Lira Regional Referral Hospital antenatal clinic.

Pregnant women between 16 and 45 years of age who were available during the period of study.

Pregnant women between 16 and 45 years of age who consented to take part in the study.

3.5.2 Exclusion Criteria

The study excluded;

Pregnant women between the age of 16 and 45 who refused to consent in order to participate in the study.

Pregnant women who were below the ages of 16 and those above the age of 45 years.

3.6 Sample size calculation.

The sample size was determined using the Kish Leslie formula.

$$n = \frac{z^2 p\,(q)}{e^2}$$

Where n was the sample size;

Z is the standard normal deviation at 95% confidence level which has a constant figure of 1.96

P is the population prevalence of hepatitis B in pregnant women. 11.8%, 0.118. (Estimated from study findings in northern Uganda by Ochola *et al*, 2014)

(1-p) also known sometimes as (q) which is 1- 0.118

e is the standard acceptable error margin of 5% also equivalent to 0.05

Substituting the figures in to the formula n= Z2 p (1-p) / e2

n = 1.96 x 1.96 x 0.118 x 0.882 / 0.05 x 0.05

n = 0.3998/0.0025

n = 160

Sample size = 160 respondents**.**

3.7 Sampling procedures

Simple random sampling particularly systematic sampling was employed to obtain the respondents to participate in the study. I chose the respondents based on a regular interval of 4 such that every fourth pregnant woman was included in the study so long as she met the inclusion criteria of the study. This gave all the respondents an equal chance of being selected without any bias.

3.8 Study variables

3.8.1 Dependent variable

The dependent variable of study was prevalence of hepatitis B infection among pregnant women and was measured using HBV serology techniques and guidelines in the laboratory.

3.8.2 Independent variables

The independent variables of the study included;

Socio demographic determinants such as age, marital status, education level.

Associated factors with variables such as number of Sexual partners, history of HBV positive family member and history of hospital admission.

Other risk factors such as inability to vaccinate against HBV, inadequate health education on HBV and Lack of HBV screening services.

3.9 Data collection tools and methods

During the study, I used a researcher administered structured questionnaire as well as laboratory methods to obtain data from the respondents.

3.9.1 Questionnaires

Data collection from the participants was done using a questionnaire. The questionnaire contained closed ended questions and it was subdivided into three sections in respect to the specific objectives. The literate participants filled their respective questionnaires while the illiterate participants were assisted to complete their questionnaires by the researcher.

3.9.2. Laboratory diagnosis of hepatitis B infection

Sample collection

During phlebotomy procedures, I collected 2ml of venous blood samples from each participant by venipuncture and placed in a plain vacutainer labelled with an assigned number by the researcher different from the hospital/lab number to maintain participant's right to confidentiality.

The samples were then left to clot and then centrifuged at 3000 rpm for 5 minutes to obtain serum. Biosecurity, universal safety precaution as waste segregation and disposal criteria were followed.

Sample analysis

Prior to testing, I followed standard operating procedures as stated by the manufacturers test kit insert. The Vaxpert HbsAg rapid test kit which is a rapid chromatographic immune assay was used to detect hepatitis B surface antigen in the serum obtained from blood sample of pregnant women.

Refer to appendix III for the detailed procedure of the hepatitis B testing technique.

Interpretation of results

If the HbsAg was present in the sample, a colored line would appear at the test region and another colored line at the control region of the strip/cassette and would be reported as positive for hepatitis B virus.

If the HbsAg was not present in the sample, no colored line would appear at test region however there would be a colored line at the control region of the strip/cassette and would be reported as negative.

If there is no colored line at the control region but one present at the test region the result is considered and will be reported as invalid.

3.10 Data management

Before the respondents left, the questionnaires were checked to determine whether they were complete or not and the information which was not filled was retrieved and this data was kept under key and lock to protect it from unauthorized persons.

Also, a small mark was put on the respondent's clinic card to avoid repeat inclusion into the study during their subsequent visits.

The laboratory results which were negative for the HbsAg test were returned to the respondents and then for pregnant women whose results were positive for HbsAg were referred to their doctors for posttest counseling and further management.

3.11 Data analysis

After data collection, I check every questionnaire for legibility, mistakes and any missing data to ensure completeness of the data.

Data was entered in SPSS (statistical package for social sciences) version 20.0 where it was analyzed and tables, a pie chart and percentages were generated.

To establish association or no association between the variables under study, bivariate analysis (binary logistic regression) was performed and their respective probability values (p-value) was determined with a 95% confidence interval. Those with the p value of< or = 0.2 were performed on a multivariate logistic regression analysis to control for confounding factors. To show statistical significance of the variables, a p value of < or =0.05 at 95% C.I was used.

3.12 Quality control issues

Data collection tools were checked and verified by the researcher for clarity to avoid collecting mistakes. The HbsAg test kits were stored at room temperature in the sealed pouch away from direct sunlight and heat. Also, all test kits were inspected to avoid using expired ones. Fresh serum samples were used to avoid false results, and the samples that are already tested were removed from the test batch to provide good and reliable results and avoid repetition of the tests. I read understood and followed all the manufacturer's instructions on test kits before carrying out the tests. Quality controls were performed on every box of test kits using both negative and positive control samples to ensure validity of the test kits that were used.

3.13 Ethical consideration

Informed consent was sought from the participants and acknowledged by signing a consent form as well as they still had the right to withdraw from the study at any time of the duration of the study.

Participant's confidentiality was maintained as they took part in the study anonymously without writing their names and their data secured. Also the researcher was fully vaccinated against hepatitis B and used personal protective equipment appropriately to prevent the risk of horizontal transmission. Permission to conduct the study was sought from CIU Research ethics committee and the relevant authorities in Lira Regional Referral Hospital.

3.14. Dissemination of results

The copy of the research was presented to Clarke International University for the award of the bachelor's degree in medical laboratory sciences and for reference by other scholars.

Another copy was presented to Lira Regional Referral Hospital so that the hospital administrators will be able to evaluate the completed and ongoing hospital projects in relation to Hepatitis B infection among pregnant women

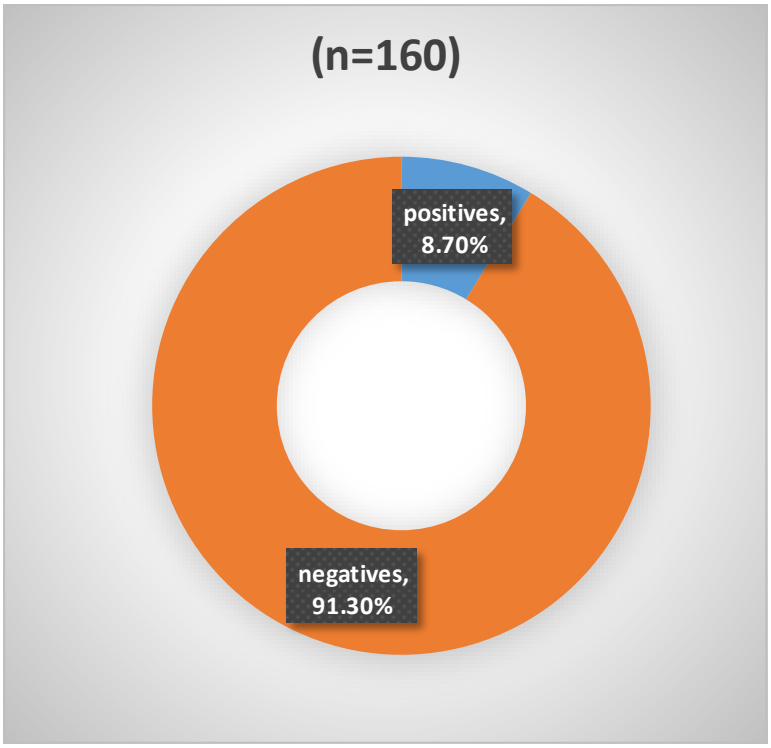
One copy was given to the supervisor and one kept by the researcher.

CHAPTER FOUR: STUDY FINDINGS

4.1 Magnitude of HBV infection

Of the 160 subjects, 14 (8.7%) with 95% confidence interval (6.52, 10.98) were tested positive for HbsAg infection using the Vaxpert HbsAg rapid test kit. (Figure 1.) A total of 10(71.4%) out of the 14 (8.7%) Hepatitis B positive participants were observed in the age group of 16-26 years, 11(78.6%) had two or more children, 11(78.6%) had history of hospital admission in the past year and 9(64.3%) were married. None of the participants found positive for HbsAg had attained up to a tertiary/university education. (Table 3)

Figure 2: showing the prevalence of HbsAg among pregnant women attending the antenatal clinic at Lira regional referral hospital.



4.2 Socio-demographic characteristics

A total of 160 respondents from the antenatal clinic of Lira regional referral hospital consented to participate into the study with a 100% response rate. The pregnant women had a mean age of 25.29 years with ages ranging from 17 to 45. Majority i.e. 109(68.1%) of the pregnant women were between the age group of 16 and 26. Regarding occupation and marital status, 41.3 %(66) were unemployed, whereas 90(56.3%) of the pregnant women were

married. Only 13(8.1%) of the pregnant women in the study attained a tertiary/university education with the majority 86(53.8%) having reached a primary level. (Table 1)

Table 1: Socio demographic characteristics of the pregnant women that attended antenatal clinic at Lira Regional Referral Hospital.

(n=160)

characteristic	**category**	**frequency**	**Percentage%**
Age group			
16-26		**109**	**68.1**
27-36		**46**	**28.8**
37-45		**5**	**3.1**
marital status			
single		**59**	**36.9**
married		**90**	**56.3**
divorced		**5**	**3.1**
widowed		**6**	**3.8**
Educational level			
uneducated		**4**	**2.5**
primary		**86**	**53.8**
secondary		**57**	**35.6**
Tertiary/university		**13**	**8.1**
Occupation			
unemployed		**66**	**41.3**
Business woman		**48**	**30**
Civil servant		**5**	**3.1**
farmer		**41**	**25.6**

4.3 Associated and other risk factor characteristics

Of the pregnant women in the study, 94(58.8%) had already given birth to two or more children and the majority i.e. 100(62.5%) had not had any hospital admissions in the past one year. 18(11.3%) of the respondents had a hepatitis B positive family member, 78(48.8%) had not been vaccinated, and 71(44.4%) had never screened for hepatitis B before. (Table 2)

Table 2: Distribution of associated and other risk factors of hepatitis B infection among pregnant women attending antenatal clinic at lira Regional Referral Hospital.

(n=160)

Characteristic category	**frequency**	**Percentage%**
Gravidity		
one	**66**	**41.3**
>2	**94**	**58.8**
Number of sexual partners		
one	**123**	**76.9**
two	**34**	**21.3**
>2	**3**	**1.9**
HepB positive family member		
Yes	**18**	**11.3**
No	**142**	**88.8**
Hospital admission history past year	**60**	**37.5**
Yes		
No	**100**	**62.5**
Hepatitis B vaccination	**82**	**51.3**
Yes		
No	**78**	**48.8**
Hepatitis B vaccine doses	**19**	**12.5**
one		
two	**22**	**13.8**
three	**41**	**25.6**
Health education		
yes	**148**	**92.5**
No	**12**	**7.5**

Hepatitis B screening test		
Yes	**89**	**55.6**
No	**71**	**44.4**

Table 3: Distribution of Hepatitis B among pregnant women attending antenatal clinic at Lira Regional referral hospital.

(N=160)

characteristic	**Status of HBV of the pregnant women**	
	Positive N (%)	**Negative N (%)**
Age(years)		
16-26	**10 (71.4)**	**99(67.8)**
27-36	**4(28.6)**	**42(28.8)**
37-45	**0(0)**	**5(3.4)**
Marital status		
single	**3(21.4)**	**56(38.4)**
married	**9(64.3)**	**81(55.5)**
divorced	**1(7.1)**	**4(2.7)**
widowed	**1(7.1)**	**5(3.4)**
Educational level		
uneducated	**1(7.1)**	**3(2.1**
primary	**6(42.9)**	**79(54.1)**
secondary	**7(50.0)**	**51(34.9)**
Tertiary/university	**0(0)**	**13(8.9)**
occupation		
unemployed	**7(50)**	**59(40.4)**
Business woman	**3(21.4)**	**45(30.8)**
Civil servant	**1(7.1)**	**4(2.7)**
farmer	**3(21.4)**	**38(26.0)**
Number of children		
one	**3(21.4)**	**63(43.2)**
>two	**11(78.6)**	**83(56.8)**
Number of sexual partners		
one	**9(64.3)**	**114(78.1)**
two	**5(35.7)**	**29(19.9)**

>two	**0(0)**	**3(2.1)**
Positive family history		
yes	**4(28.6)**	**14(9.6)**
No	**10(71.4)**	**132(90.4)**
Hospital admission history		
yes	**11(78.6)**	**49(33.6)**
no	**3(21.4)**	**97(66.4)**
Hepatitis B vaccination		
yes	**2(14.3)**	**80(54.8)**
no	**12(85.7)**	**66(45.2)**
Hepatitis B vaccine doses		
one	**2(14.3)**	**80(54.8)**
two	**0(0)**	**22(15.1)**
three	**0(0)**	**41(28.1)**
Health education		
yes	**13(92.9)**	**135(92.5)**
no	**1(7.1)**	**11(7.5)**
Hepatitis B screening		
yes	**3(21.4)**	**86(84.5)**
No	**11(15.5)**	**60(84.5)**

4.4 Risk and other factors associated with hepatitis B surface antigen infection.

Bivariate and multivariable logistic regression analyses were performed to assess the socio demographic, associated and other risk factors in relation to hepatitis B surface antigen infection of the pregnant women. In bivariate analysis, history of HbsAg positive family member, history of hospital admission in the past year, having been vaccinated against HBV, number of hepatitis B vaccine doses received and gravidity were the factors that were associated significantly with HbsAg infection. (Table 4).

The multivariable logistic regression showed that HbsAg positive family history and hospital admission in the past year where statistically significant.

Pregnant women who had a HbsAg positive family member were 1.96 times more likely to be infected by HbsAg than pregnant women who had no history of having a HbsAg positive family member.[AOR=1.962, 95% CI 0.47-8.16. P-value 0.032].

Table 4: Association of socio demographic and other risk factors with hepatitis B surface antigen status.

(N=160)

characteristic	**X^2**	**P value(Fishers exact test)**
Age(years)	**0.504**	**0.777**
Educational level	**3.674**	**0.299**
occupation	**1.558**	**0.669**
Marital status	**2.432**	**0.488**
Number of children	**2.847**	**0.115**
Number of sexual partners	**2.115**	**0.347**
Hepatitis B positive family history	**4.610**	**0.032**
Hospital admission history	**11.042**	**0.001**
Hepatitis B vaccination	**8.391**	**0.004**
Hepatitis B vaccine doses	**10.585**	**0.014**
Hepatitis B heath education	**0.03**	**0.958**
Hepatitis B screening test	**79.26**	**0.07**

Pregnant women who had had a hospital admission in the past one year were about 6.4 times more likely of being infected than those who hadn't been admitted to the hospital in the past one year.[AOR=6.436,95% CI 1.57-26.43. P-value 0.001]. (Table 5**)**

Table 5: multivariable logistic regression showing factors associated with HbsAg among pregnant women attending antenatal clinic at Lira regional referral hospital.

characteristic	**COR [95%CI]**	**AOR [95%CI]**
Hepatitis B positive family history	**3.771 (1.045-13.615)**	**1.962 (0.472-8.159)**
Hospital admission history	**7.259 (1.935-27.226)**	**6.436 (1.567-26.433)**

CHAPTER FIVE: DISCUSSION

5.1 DISCUSSION

In this study to determine the prevalence, associated and other risk factors of hepatitis B among pregnant women, the prevalence was found to be 8.7% CI 95% (6.52, 10.98) Thus being categorized into high endemicity.(WHO, 2015). This finding is comparable with a 12.3% prevalence, a study done in Kiryandongo in central Uganda. (Abdirizak 2019), 10.2% in Cameroon Doubiap JJ eta al (2015), 9.4% a study in Kenya (Ngaira et al 2016) and 8.03% in Tanzania Manyahi et al (2017).

(Bayo et al's 2014) findings of 11.8% was a far higher estimate and thus the lower prevalence of 8.7% found is suggestive of the efficacy of the mass hepatitis B vaccination campaigns rolled out in 2015(Mutebi,2018) hence a reduction of hepatitis B in the general population.

However, lower prevalence's than this study were reported in Kampala Mulago 0.9% Allen et al (2016) and 2.9%kayondo et al (2020). This difference may be attributed to the fact that the central region of Uganda is a low prevalence area compared to the northern region (UPHIA (2016-2017) in which this study was carried out.

The prevalence of HbsAg (71.4%) was highest among the pregnant women between the age group of 16 and 26 years. In previous studies it has been consistently been reported that

Educational level of the participants was not linked with the risk of Hepatitis B surface antigen infection and this concurred with earlier studies in Ethiopia (Mhiret Belay et al 2021) but was not in agreement with Magaji Francis et al (2020) in which educational level was statistically significant (p=0.01).

Furthermore the marital status, occupation, number of sexual partners were not significantly associated with the risk of acquiring HBV infection in this study. This finding concurs with results of studies in Eritrea Fessehaye N et al (2018) and in South Sudan.kirbak AL, Nga'ang'a et al (2017). However a study in Nigeria Chineye et al (2015) disagreed with this finding where by the pregnant women with multiple sexual partners were 4 times at a higher risk of contracting HBV in comparison with those who didn't have many sexual partners though it was a lower likelihood in this study. (Chineye et al 2015)

All the socio demographic characteristics of the pregnant women in the study were not statistically significant however, the pregnant women who had a history HbsAg positive family member were 1.962 times more likely to contract the HbsAg than those who didn't. This likelihood was even increased 50 fold in a study conducted in Mulago. (Kayondo et al 2020). Similarly in Ethiopia, pregnant women who had history of contact with positive HbsAg family member were 2.3 times more likely to be infected. (Geta M et al, 2019). Horizontal transmission is likely to occur either sexually or through contact with infectious body fluids of the infected persons they live with and or take care of. (CDC, 2018) viral hepatitis- hepatitis B. Furthermore it is encouraged for close contacts to get screened and vaccinated diligently to minimize infections of HBV. (Weinbaum et al ,2008)

History of admission history was also statistically significant with positive HbsAg status such that pregnant women who had been admitted to the hospital in the past year were 6.43 times at risk of infection with HBV. Similar findings were in North West Ethiopia in which HBV infection was higher significantly (p=0.039) (Geta M et al, 2019) in pregnant women who had previous history of hospitalization than those who didn't. This could be attributed to the numerous breaches in measures of infection control which are related to routine clinical practices which may or may not be risk free in health care facilities. (Lanini et al, 2009)

5.2 Conclusion.

The prevalence of hepatitis B among pregnant women attending antenatal clinic at lira regional referral hospital was 8.7%.History of hepatitis B positive family member and history of hospital admission were the risk factors which were significantly associated with Hepatitis B virus infection. Screening and full timely vaccination is encouraged for all people's especially pregnant women who have or have had history of a positive hepatitis B family member as well as strict adherence to infection control measures for all procedures in health care facilities.

5.3 Limitations

1. Inability to perform HbeAg, confirmatory ELIZA and viral load tests was a short coming which would have determined the needed intervention pregnant women found positive for HbsAg which would have included HBV antiviral treatment and immunization at birth for the unborn to prevent vertical transmission.

2. The small sample size of pregnant women studied due to financial constraints made it challenging to establish associations between other variables and a larger sample size would have sufficed.

5.4 Recommendations.

5.4.1 to the staff of antenatal clinic at lira regional referral hospital.

Mandatory routine testing should be done for all pregnant women attending the ANC clinic and further management for those found and confirmed positive with HBV to control horizontal transmission and mitigate mother to child transmission.

Strict adherence to infection control measures at the ANC facilities to prevent further horizontal transmission of hepatitis B.

I recommend that the next studies to do done at ANC Lira regional referral hospital engage a larger study population to further establish association or no link between more factors that can predispose pregnant women to contracting HBV to as to come up with viable interventions to reduce HBV incidence among pregnant women.

I recommend the investigators of the next studies to be carried out at ANC Lira regional referral hospital to perform HbeAg, Eliza confirmatory and liver profile tests so as to better tailor the interventions and management needed for each pregnant woman found positive for Hepatitis B virus.

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APPENDICES

APPENDIX I; CONSENT FORM

INFORMED CONSCENT TO PARTICIPATE IN RESEARCH

Dear respondent, I am **Angom Doris Brandina,** a student from Clarke international University asking you to take part in a research study called **prevalence and risk factors of hepatitis B among pregnant women attending antenatal clinic at lira regional referral hospital being** conducted in lira district.

Purpose of the study

i. To find out the prevalence of hepatitis b among pregnant women attending antenatal at lira regional referral hospital.
ii. To find out the associated and other risk factors of hepatitis b among pregnant women attending antenatal clinic at lira regional referral hospital.

Study Procedures

If you take part in this study, you will be asked to:

- Take out a few minutes of your time to fill out a one-time, structured questionnaire that will enable me fulfill the purpose of the study.
- Accept to be drawn from a blood sample of 2mls by putting a needle into a vein in your arm and place it in a vacutainer on which a hepatitis B test will be carried out.

Benefits

By participating in this study, you will be able to know your hepatitis B virus status and in addition know more information about how it spreads, signs and symptoms and its control. The pregnant women found to be positive will be able to access timely treatment and management as well as health care providers plan for the unborn to be vaccinated at birth.

Compensation.

No study participant will be compensated either with money or otherwise.

Risks or Discomfort

During the blood sample collection, you may feel a little discomfort with the needle stick. However, it is considered to be of minimal risk as all the standard operating procedures will be followed. There are no known additional risks to those who participate in this study.

Privacy and Confidentiality

I will keep your study records private and confidential. Certain people may need to see your study records. Bylaw, anyone who looks at your records must keep them completely confidential. I may publish results from this study. If I do, I will not include your name or any other information that will lead to discovery of your identity.

Voluntary Participation / Withdrawal

You should only take part in this study if you only want to and you should not feel that there is any pressure to take part in the study. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study.

Inquiries

If you have any questions, concerns or complaints about this study or experience an unanticipated problem, contact the researcher on 0773701201 / 0751088478. If you have questions about your rights as a participant in this study, general questions, or have complaints, concerns or issues you want to discuss with someone outside the research, call the CIUREC Chairperson Dr. Samuel Kabwigu on (0312307400) & the executive secretary of UNCST on (0414 -705500) respectively.

Assessment of understanding

Please check which box best describes your assessment of understanding of the above informed consent document:

□ I have read the above informed consent document and understand the information provided to me regarding participation in the study and benefits and risks. I give consent to take part in the study and will sign the following page.

□ I have read the above informed consent document, but still have questions about the study; therefore, I do not give yet give my full consent to take part in the study.

Signature/ thumbprint of study participant

_____

Date

_____

Research Authorization Date

_____

Angom Doris Brandina

ANGOM DORIS BRANDINA

TRANSLATED CONSCENT FORM IN LUO-LANGI LANGUAGE.

APENY TAM PI BEDO DUL ME IKWEDA

Bang agam apeny, Nyinga obedo Angom Doris Brandina, abedo atin kwan me Clarke International University. Atye akwayi me before dano acel I kinda jo ame ayero me gamo apeny I kom ikweda me Kwan I kom KIT AME TWO ME IMANY TYE KEDE IYI AKINA MON AME YAC KEDE KIT AME MON AME YAC AME TYE APIMERE I OBER HEALTH CENTER III TYE KEDE KERO ME NWONGO TWO MAN. TYEN KOP ME IKWEDA MAN.

Adwogi me ikweda man obino tic kede iyore magi:

Me moko kit ame two imany tye kede iyi akina mon AME yac kede me moko kit ame Mon ame yac romo bedo kede kero me nwongo two man.

Adwogi me ikweda man obino tic kede me nwongo yore me lweny ikom two imany kede gengo mon ame yac me pe nwongo two man.

Adwogi me ikweda man dang obino tic kede me cango mon ame yac ame onwongo two man ame two people ru okobo ikom ikom atin AME pe ru onywalo.

KIT AME IKWEDA MAM BINO WOT KEDE

Ka ibino bedo dul me ikweda man, obino kwayi me timo jami magi:
1. Jalo dakika ni moro anonok me gamo apeny ame the ocoo piny. En apeny magi bino miya kare me cobo cuny tam onyo dit me ikweda man.

2. Obino dang kwayi me miyo adunu remo moro anonok ame romo 2mls kun okwanyo kede pico nibeo ibadi eka ote tero me apima me neno ka nyo two imany tye ikomi onyo pe.

MAGOBA PI BEDO DUL ME IKWEDA MAN MAGOBA

Atir-atir pi yin ibedo dul me ikweda man pe tye, ento agam ame yin ibino miyo pire bino bedo atek me goyo pulan pi yot kom kede keto lok ikom two imany polere wok bot jo ayot onyo bulu.

JAMI AME CAWA OKENE PE IBINO MARO ALUBERE KEDE IKWEDA MAN.

I cawa me kwanyo remo ni, ibino winyo arem anonok kun beo I pico ame obino tic kede. Ento man pe obedo gin ame myero ipar twatwal pien dakatal bino lubu icwil me tic iyore-

yore. Apat kede man, pe dok tye gin okene ame bino miyi lworo kun lubere kede ikweda man.

GWOKO ICWIL KEDE IMUNG

Want obino gwoko acalo imung jami ducu ame yin ibino kobo onyo gamo ame lubere kede ikweda man. Apat kede an, jo ame cik yeyi gi dang bino neno agami ame lubere kede ikweda man ento gin myero ogwok atri-atir acalo imung. Jo ame cik bino yeyi gi me neno agami gin ene: Jo ame tye atimo ikweda man amd tye iye atel wii ikweda kede jo ame tye akonye. Kare okene obino dang miyo lwsk ngeyo adwogi me ikweda man. Ento ka man bino timere, pe obino keto nyingi iye onyo ginoro keken ame mio jo ngeo ni in eno.

JALE ME TIMO IKWEDA MAN ABONGO DIC.

Ka ibino ye me bedo dul me timo ikweda man, pe iwiny ni odii-adia me timo. Itye agonya me timo ikweda man onyo dang iromo kwero oko icawa moro keken. Pe obino tangi pi kwero bedo dul me timo ikewda man onyo ca ni ibino rwenyo mot ame lubere kede bedo dul me timo ikweda man.

PENYO PI NGENYO ATUT.

Ka nyo itye kede apeny, para moro, peko moro, onyo ngec ame lubere kede ikweda man, onyo itamo ni peko moro romo bedo iye, go cim bot dano ame tye aloyo ikweda man I namba me cim magi: 0773701201/0751088478. Onyo ca itye kede apeny ame lubere kede twero ni ame kwako ikweda man, onyo cucura, onyo peko ame itamo ni myero inyam kede ngat ame pe tye idul me ikweda man okwai me goyo cim bot (CIUREC) man dul ame loo kop I kom ikweda I ka pwonyere me Clarke International University. Atel wi dul man obedo Dr. Samuel Kabwigu (0312307400) onyo bot aran Adwong (0414705500.

NGEYO TAMI I KOM IKWEDA MAN.

Gwet yi bokci ame I tamo ni moko tami miti ni onyo yee ni pi bedo dul me timo ikweda man. Akwano jami ame oco kan pi penyo tama pi bedo dul me timo ikweda man dang ate nyang jami iye ducu. Dong pi man, an aye me bado dul me timo ikweda man. Akwano jami ame oco kan pi penyo tama pi bedo dul me timo ikweda man ento pwoc atye kede apeny ame myero anyang iye. Dong pi man, omio pe ru amoko tama me ye bedo dul me timo ikweda man.

Cing agam apeny.....

Nino dwe ame imomoko kede.....

Angom Doris Brandina

ANGOM DORIS BRANDINA

APPENDIX II: QUESTIONNAIRE

Questionnaire on the prevalence and risk factors for hepatitis B virus infection among pregnant women attending antenatal clinic at Lira regional referral hospital

Part 1: Socio demographic factors of the pregnant women

1. What is your age? ……. years

2. What is your marital status?

A) Married ☐ B) Single ☐ C) Divorced ☐

D) Widowed ☐

3. What is your highest level of education?

A) Primary level ☐ B) Secondary level ☐

C) Tertiary / university level ☐ D) Never went to school at all ☐

5. What is your occupation?

A) Farmer ☐ B) Business woman ☐ C) Unemployed ☐

D) Civil servant ☐ E) Any other state ……

8. How many children do you have?

A) 1 – 5 ☐ B) 6 – 10 ☐

C) More than 10 ☐ D) None ☐

Part B: associated factors of the pregnant women

5. How many sexual partners have you had in the past two years?

A. One ☐ B. Two ☐ C. More than two ☐

6. Have you ever had any hepatitis B positive family member?

A. yes ☐ B. No ☐

7. Do you have any history of hospital admission in the past one year?

A. yes ☐ B. No ☐

Part C: Other risk factors of hepatitis B infection

1. Have you ever been vaccinated against hepatitis B?

A) Yes ☐ B) No ☐

2. If yes how many vaccine doses did you receive?

A. One dose ☐ B. Two doses ☐ C. Three doses ☐

3. Have you ever received health education on hepatitis B?

A) Yes ☐ B) No ☐

4. If yes, from which source?

A. Health care work ☐ B. Radio ☐ C. Newspaper ☐

Church/mosque ☐ F. Others specify……

28. Have you ever tested (screened) for hepatitis B?

A) Yes ☐ B) No ☐

Thank you for participating in this study and for your valuable time

TRANSLATED QUESTIONNAIRE IN LUO- LANGI LANGUAGE.

APENY AME LUBERE KEDE IKWEDA MAN

Apeny I komikweda me Kwan ikom kit ame two imanytyekedeiyiakina Mon ameyackede kit amemonameyacametyeapimere I dakatalAdwong me Lira romobedokedekero me nwongo two man.

CURA ME ACEL: Yin ameiyaciibedongakedeikwo no ngo?

1. Mwakanityeadi.....?

2. Kop me nyomerenitye no ngo?

A) Anyomere……B) PeruAnyomere……C) Opokereoko……. D) Abedodako too …….

3. Rwom me kwanitye no ngo?

A) Agik I Puramari……. B) Agik I cinia ……C) Akwano tic……. D) Peakwanoatwali……

4. Itio tic ango?

A) Abedo ate-dero/apur…… B) Abedoacat will…... C) Abedoaticagamente…... D) Co en okenekan……...

5. Ityekedeotinoadi?

A) 1-5…… B) 6-10…… C) Kato aparoko…… D) Peruanywal …….

CURA ME ARYO: Jami amekwako yin ameiyaci.

1. Iriberekede co adiimwakiaryoameokatoangec?

A) Acel……. B) Aryo……. C). Kato aryooko ……

2. Onyocangatoroipaconiobinonwongo two imany?

A) Danoonwongo……. B) Danopeonwongo…….

3. Onyocaobinogamiitano me otyatiyongemwakaacelokatoangec?

A) Ogama…… B) PeOgama……. CURA ME ADEK: Yore me gengere I kom two imany.

1. Onyo can obinogweri I kom two imany?

A) Ogwera……. B) Peogwera …….

2. Kaogweri, igweretyenadi?

A) Tyenacel……. B) Tyenaryo…… C)Tyenadek…….

3. Onyocaibininwongopwonyerealuberekede two imany?

A) Abinanwongo……... B) Peabinanwongo…….

4. Kainwongo, pwoyereobedokwene?

A) Atic me yotkom…… B) Radio……. C) Paparaamut me akwana……. D) Kanica/Ekilizia/Muzigiti……. E) Co kanokeneameinwongoiyekan……

5. Onyocaibinipimereikom two imany?

A) AbinApimere…… B) Peabinapimere……

Apwoyomatek me jalocawaniamepiretekwoki me bedodul me timoikweda mam. Jok-jokamalu, Gabi Pinymedi gum.

APPENDIX III: INTRODUCTORY AND CORRESPONDENCE LETTER

CLARKE INTERNATIONAL UNIVERSITY
LEAD · INNOVATE · TRANSFORM
ALLIED Institute of Allied Health Sciences

(+256) 0312 307400
deansallied@ciu.ac.ug
www.ciu.ac.ug

Kampala, Thursday 14th October 2021

To: HOSPITAL DIRECTOR:
@ LIRA REGIONAL REFFERAL HOSPITAL
P.O box 2, LIRA - UGANDA.

Dear Sir/Madam,

RE: ASSISTANCE FOR RESEARCH

Greetings from Clarke International University formerly known as International Health Sciences University.

This is to introduce to you **Angom Doris Brandina** Reg. No. **2017-BMLS-FT-AUG-005** who is a student of our University. As part of the requirements for the award of a Bachelors Degree of Medical Laboratory Sciences of our University, the student is required to carryout research in partial fulfillment of her award.

Her topic of research is: **PREVALENCE AND RISK FACTORS OF HEPATITIS B INFECTION AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINIC AT LIRA REGIONAL HOSPITAL LIRA DISTRICT.**

This therefore is to kindly request you to render the student assistance as may be necessary for her research.

I, and indeed the entire University are grateful in advance for all assistance that will be accorded to the student.

Yours sincerely,

for

Dr. Okiria John Charles (PhD)
Professor / Dean IAHS
(0772409126 /0752409126)

FOR HOSPITAL DIRECTOR
BOX 2. LIRA
14 OCT 2021
LIRA REGIONAL REFERRAL HOSPITAL

Approved for data collection at LRRH
14th/10/2021

#Make a Difference

Kawagga Close, off Kalungi Road, Muyenga
Block 244 | Plot 8244 Bukasa Kyadondo
P.O.Box 7782 Kampala-Uganda

APPENDIX VI: STANDARD OPERATING PROCEDURE FOR HbsAg TESTING

PURPOSE OF THE TEST.

The rapid test is intended for the qualitative detection of hepatitis B surface antigen in serum sample.

PRINCIPLE OF THE TEST

The rapid the HbsAg rapid test dip stick is a qualitative, solid phase two side sandwich immune assay for the detection of HbsAg in whole blood serum or plasma. The membrane is pre coated with anti HbsAg antibodies on the test line region of the dipstick. During testing the sample reacts with the particle coated with the antibodies. The mixture upgrades upwards on the membrane chromatographically by capillary action to react with the antibodies on the membrane and create a colored line. The presence of the colored line on the test region indicates a positive result while its absence shows a negative result. To serve as a control a colored line will always appear on the control line region indicating that proper volume of a specimen that has been added and that membrane wicking has occurred.

(HbsAg rapid test dip stick, package insert REF IHBSG-401)

MATERIALS NEEDED.

Test dip sticks

Centrifuge

Timer

Pasteur pipette

METHOD.

Ensuring that all the test kits are at room temperature before use, open the wrap from an individual kit and remove the strip place on a flat clean bench top and label with a unique identifier.

Pipette 75microlitters of the serum and put on the sample pad of the test strip and let the test run for 15 minutes.

Results read after 15 minutes will be considered invalid.

Record results and dispose off the strip appropriately.

RESULTS.

If the HbsAg is present in the sample, a colored line will appear at the test region and another colored line at the control region of the strip/cassette and will be reported as positive for hepatitis B virus.

If the HbsAg is not present in the sample, no colored line will appear at test region however there will be a colored line at the control region of the strip/cassette and will be reported as negative

If there is no colored line at the control region but one present at the test region the result is considered and will be reported as invalid.