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# Assessing the Prevalence of Hbv Among Patients at the Bamenda Regional Hospital

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**ABSTRACT**: **Background:** The liver being one of the most important organs in the body with all its numerous functions like, filtration, digestion and metabolism, when it is attacked by this virus it will lead to so much problem to the system and hence stopping the liver from perform its function as it's described as a silent killer due to its asymptomatic nature. Most people will notice it at the stage when it's chronic leading to liver cirrhosis, cancer, liver failure or even death. Like other chronic liver diseases, hepatitis B infection can do this damage without causing symptoms. Many people don't realize they're infected (Cleveland clinic 2022). Seeing the number of cases around, the researcher to it upon herself to determine the prevalence of HBV among patients at the Bamenda Regional Hospital. To determine the Hepatitis B serological test status among patients in Bamenda Regional Hospital. To find out the level of awareness of Hepatitis B Virus infection among patients and control measures of HBV infection in Bamenda Regional Hospital. To determine the knowledge level of patients about hepatitis B transmission.

**Method:** Descriptive quantitative survey design method was used on 100 patients who accepted to partake in the study by signing the consent form in the Bamenda Regional Hospital. Questionnaires were used to get related information about the prevalence and managing of personnel which were later analysed using Excel and SPSS 26.

**Results:** The test reveal that 30% of the respondents were positive with males coming up with the higher positive percentage of 18% of which 15% came from the age group 30 – 50. All the patients (100%) said they are aware of HBV. Most of the patients hear about HBV from school, 27% from the hospital, 11% from friends and 18% from the media. Majority of the respondents representing 94% indicated that they were using personal protective equipment (PPEs) and 6% indicated they don't use PPE. The results also revealed that 91% of the respondents said there were containers available for bio hazardous waste and majority of them have received HBV vaccination (65%). This shows that most respondents have taken the necessary preventive measures.

**Conclusion:** From the results, the research concluded that there is relatively higher prevalence in men as compared to women and also that respondents are well aware of HBV with the preventive measures against HBV. So the researcher recommended that universal vaccination policy should be implemented, vaccination campaigns and health talks, provision of retractable syringes as well as report of exposure to any risk factor.

**Keywords:** Prevalence, Hepatitis B, Hepatitis B Virus, HBsAg, HBeAb.

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## CHAPTER ONE

## INTRODUCTION

### 1.1. Background of the Study

Hepatitis means inflammation of the liver (Alana et., al 2021) described by impairment and death of the liver cells .If the inflammation is severe, scaring of the connective tissues may occur leading to jaundice, malaise anorexia (Ugbebor *et al*., 2021) and the name hepatitis is derived from two lattin words" Hep" for liver and “Titis" inflammation(Ali et ,al. , 2022). Hepatitis could be acute that's when it last less than 6months and chronic when its persist longer (Schaefer . *et al*., 2022). We have five main types of hepatitis classification which are hepatitis A, B, CD, and E (Sirisha *et al*.,2020). Above that I'll be talking precisely about Hepatitis B.

Hepatitis B is a viral liver infection caused by the hepatitis B virus. It causes inflammation of the liver tissues, which is what “hepatitis” means. It begins as an acute infection that’s usually short-lived. But in some people, it turns into a chronic infection that never goes away Long-term inflammation does serious damage to your liver over time. It can lead to cirrhosis and liver failure. Like other chronic liver diseases, hepatitis B infection can do this damage without causing symptoms. Many people don’t realize they’re infected( Cleveland clinic 2022). This virus is classified as an Orthohepadna virus (Genera) within the family Hepadnaviridae .studies shows that this virus were notice and clone in mammals and birds and for this reason it was classified as (orthohepadna viruses) and (avihepadna viruses)The Orthohepadnavirus genus includes members that infect mammals (woodchucks, ground squirrels, bats and primates) The Avihepadna virus genus infects birds such as ducks (duck hepatitis B virus, ) (Stephan 2007.,Ali 2022)..Hepatitis B is the most common liver infection in the world. As many as 2 billion people have been infected worldwide and approximately 250 million people worldwide are living with chronic hepatitis B infection, and 5% of the world’s population (or 350 million people)people are unaware they have the virus as it's called the" silent infection or silent killer because most people do not have any symptoms when they are infected and hence at a chronic stage infected person's will latter die with liver related complications like cancer, cirhosis and at a certain others will need liver transplant. Since it's mostly asymptomatic the signs and symptoms might seems or infected person's may feel, like the flu, as it's signs and symptoms are almost like other infectious disease this symptoms include Loss of appetite. Nausea and vomiting. Pain in the liver (under the right ribcage). Fever. Pain in the joints. Jaundice (the eyes and skin become yellow) fatigue, light colored urine.,(Alberta health service.,2022).

HBV shares common route of transmission with HIV which includes by having unsafe sex with an

infected person, sharing unsterile piercing or drug injecting equipment, engaging in other activities where the blood or body fluids of an infected person enters the bloodstream of an uninfected person. The virus may also be passed from a pregnant mother to her baby( Willey *et al*.,2008). HBV is a DNA double stranded composed of an outer envelope containing hepatitis B surface antigen. (HBsAg) and an inner nucleocapsid consisting of hepatitis B envelope antigen (HBegAg) hepatitis B Core antigen (HBcAg) (Lai *et al* ,2003).

### 1.2 Problem Statement

The liver being one of the most important organ in the body with all its numerous functions like, filtration, digestion, metabolism and when it is attacked by this virus by it will lead to so much problem to the system and hence stopping the liver to perform its function because it's being described as a silent killer due to its asymptomatic nature most people will notice it at the stage when it's chronic leading to liver cirrhosis, cancer, liver failure, death. Not just that infected people who are ignorant about the infection will serve as a source of transmission to uninfected people or objects around them.

### 1.3. Research Questions

1. What is the prevalence of hepatitis B among patients?
2. What is the Hepatitis B serological test status among patients in Bamenda Regional Hospital?
3. What is the level of awareness of Hepatitis B Virus infection among patients and control measures of HBV infection in Bamenda Regional Hospital?
4. What is the knowledge level of patients about hepatitis B transmission ?

### 1.4 Research Objectives

#### 1.4.1. Main Objective

To determine the prevalence of HBV among patients at the Bamenda Regional Hospital.

#### 1.4.2. Specific Objectives

1. To determine the Hepatitis B serological test status among patients in Bamenda Regional Hospital.
2. To find out the level of awareness of Hepatitis B Virus infection among patients and control measures of HBV infection in Bamenda Regional Hospital.
3. To determine the knowledge level of patients about hepatitis B transmission.

### 1.5. Significance of the Study

Hepatitis B is a major public health problem globally, and understanding its prevalence and associated risk factors among patients is crucial for developing effective prevention and control strategies. This study will provide important insights into the epidemiology of hepatitis B among patients in Bamenda Regional Hospital, which can help healthcare professionals design targeted interventions to prevent and manage hepatitis B infections. Additionally, this study will increase awareness among patients regarding the transmission and prevention of hepatitis B, leading to better management of the disease and improved quality of life.

### 1.6 Justification of the study

Infection due to HBV should be a public health concern around the world.as considerable percentage of liver disease worldwide , and the infectious individual remains asymptomatic for several years However, more than 80% of them become chronic Carriers which results in an increased risk of liver failure , cirrhosis, cancer 20-30years later(Pennap *et al* ., 2010). In view of the view of the advantage early detection and therapy, it is essential to determine the prevalence of HBV among febrile patient s with a view of providing a baseline data for further research.

### 1.7. Limitation of the Study

This study had a lot of hurdles and flaws which limited the researcher from properly carrying out the study. The calculated sample size of this study was 320 participants but due to financial difficulties, denial of some respondents from participating in the study, the sample size was reduced to 100 participants. The time given by the school to do this research is significantly not enough to perform a study of this magnitude which also limited the researcher from effectively performing this study.

### 1.8. Definition of Terms

**Hepatitis:** Hepatitis B is a severe form of viral hepatitis transmitted in infected blood, causing fever, debility and jaundice

**Prevalence**: the fact or condition of being prevalent (commonness). In other words it can be defined as the proportion of persons in a population who have a particular disease or attribute at a specified point in time or over a specified period of time.

## CHAPTER TWO LITERATURE REVIEW

### 2.1 Hepatitis B Virus

Hepatitis B is a viral infection that affects the liver and can lead to long-term complications such as cirrhosis and liver cancer. The infection is caused by the hepatitis B virus (HBV), which is transmitted through blood, semen, and other body fluids. According to the World Health Organization (WHO), an estimated 292 million people worldwide are living with chronic hepatitis B infection.

Several risk factors have been identified for hepatitis B, including exposure to infected blood or body fluids, unprotected sexual contact, sharing of needles or other drug injection equipment, and mother-to-child transmission during childbirth. Other risk factors include having multiple sexual partners, having a history of sexually transmitted infections, and being a healthcare worker.

Studies have shown that patients with hepatitis B often experience a reduced quality of life, including physical symptoms such as fatigue, abdominal pain, and joint pain, as well as psychological symptoms such as anxiety and depression. In addition, patients with chronic hepatitis B are at increased risk of developing liver cirrhosis, liver failure, and liver cancer.

Efforts to prevent and control hepatitis B have focused on vaccination, education, and screening. Vaccination against hepatitis B has been shown to be highly effective in preventing infection, and several countries have implemented vaccination programs for highrisk groups. Education and awareness campaigns have been effective in increasing knowledge about hepatitis B transmission and prevention, while screening programs have helped to identify infected individuals and provide early treatment.

In summary, hepatitis B is a major public health problem that affects millions of people worldwide. Understanding the prevalence and associated risk factors among patients is crucial for developing effective prevention and control strategies. This study aims to provide important insights into the epidemiology of hepatitis B among patients, which can help healthcare Hepatitis B Virus (HBV) is a small, double shelled virus in the family Hepadnaviridae .and other Hepadnaviridae include duck hepatitis virus, ground squirrel hepatitis virus and wood chuck hepatitis virus. HBV contains numerous antigenic components including HBsAg hepatitis B core antigen (HBsAg), hepatitis B envelope antigen (HBeAg) .Human are the only known host for HBV although some nonhuman primate s have been infected in laboratory conditions (CD 2013).

An estimated number of people about two billion persons worldwide have been infected with HBV and more than 350 million persons have chronic, lifelong infection. HBV infection is established cause of acute and chronic hepatitis and cirrhosis. It's the cause of up to 50% of hepatocellular carcinoma (HCC). The World Health Organization estimated that more than 600,000 persons died Worldwide in 2002 of hepatitis B-associated acute and chronic liver disease. Hepatitis B is 50 to 100 times more contagious

than HIV with many not realizing they are infected. Consequently, it's called the silent killer (Pannap *et al* 2010). Several well defined antigen-antibody system are associated with HBV infection. HBsAg can be identified in serum 30 to 60days after exposure to HBV and persisted for variable periods. HBsAg is not infectious, only the complete virus (Dane particles). HBcAg is not detectable in serum by conventional techniques but can be detected in liver tissues person's with acute or chronic HBV infection. HBeAg Which is a soluble protein is detected in the serum of person's with high virus titers and indicates high infectivity .Antibody to HBsAg (anti HIBs) develops during convalescence (time spent recovering from an illness or medical treatment) after acute HBV infection or following vaccination.

The presence of anti _HBs indicates immunity to HBV ( Anti HBs is sometimes referred to as HBsAb). HBV genotypes are associated with the mode of HBV transmission (vertical vs horizontal) and with risk of certain outcomes of chronic infection, such as cirrhosis and HCC. In Alaska HBV genotypes is associated with HCC in young children as well as adults younger than 30years of age (CDC 2011).

### 2.1.1 Causative agent of hepatitis B and Transmission

Hepatitis B infection is caused by the hepatitis B virus (HBV). The virus is passed from person to person through blood, semen or other body fluids. It does not spread by sneezing or coughing. The younger you are when you get hepatitis B - particularly newborns or children younger than 5, the higher your risk of the infection becoming chronic. Chronic infection may go undetected for decades until a person becomes seriously ill from liver disease.

Common ways that HBV can spread are:

**Sexual contact:** You may get hepatitis B if you have unprotected sex with someone who is infected. The virus can pass to you if the person's blood, saliva, semen or vaginal secretions enter your body.

**Sharing of needles:** HBV easily spreads through needles and syringes contaminated with infected blood. Sharing IV drug paraphernalia puts you at high risk of hepatitis B.

**Accidental needle sticks.** Hepatitis B is a concern for health care workers and anyone else who comes in contact with human blood.

**Mother to child:** Pregnant women infected with HBV can pass the virus to their babies during childbirth. However, the newborn can be vaccinated to avoid getting infected in almost all cases. Talk to your provider about being tested for hepatitis B if you are pregnant or want to become pregnant. (Mayor Clinic system .,2022). All HBsAg -positive persons are infectious (CDC ,2015), but those with HBeAg positive circulate HBV at high range in their blood such that at any chance of a person being a carrier they contract the infection (Oman Medical Journal., 2019).

### 2.1.2 Pathogenesis of Hepatitis B

Hepatitis B virus (HBV) is a liver disease which consists of s four overlapping reading frames that code for surface proteins (HBsAg), core proteins (HBcAg/HBeAg), Hepatitis B virus is dangerous because it attacks the liver, thus inhibiting the functions of this vital organ. The virus causes persistent infection, chronic hepatitis, liver cirrhosis, hepatocellular carcinoma, and immune complex disease (Sunbul,2014; CDC 2015). Persistence of HBsAg, HBeAg and high level of HBV DNA in the serum, for more than 6months after primary infection is defined as chronic infection. Shepard *et al*. 2006 reported that the likelihood of developing a chronic in infection depends on the age at which a person becomes infected. young Children are most likely to develop a chronic infection when infected with the virus and about 80-95% of infants infected during the first year of life develop chronic infection (Brooks at all.,2013)).five percent of adults develop chronic infection and 15_25% of adults who become chronically infected during childhood die of liver cirrhosis or cancer related to HBV ,More than 90% of healthy adults who are infected with HBV will recover and be completely rid of the virus within six months (WHO,2013). Most cases are asymptomatic. Most people don't experience any symptoms during the acute infection phase. However , most people have acute illness with symptoms that last several weeks including; fever,

loss of appetite, abdominal discomfort, nausea, extreme fatigue, vomiting, dark urine, changes in stool color and hepatomegaly or splenomegaly and other symptoms gradually appear following an incubation period of 1 to 3 months (Shepard *et al*.,2006;WHO,2013). This is followed by jaundice, the accumulation of bilirubin (a break down product of hemoglobin) in the skin and other tissues with rashes, arthralgias, and arthritis can also occur (CDC 2001). In some people, hepatitis B infection causes a chronic liver infection that later develop into primary liver cancer, known as hepatocellular carcinoma (Willey *et al*., 2013).

**2.1.3 Risk factors of hepatitis B**

Although anyone can get hepatitis B, these people are at greater risk:

- Infants born to mothers with hepatitis B
- People who inject drugs or share needles, syringes, and other types of drug equipment
- Sex partners of people with Hepatitis B
- Health care and public safety workers exposed to blood on the job  People on dialysis (CDC., 2022).

**2.1.4. Signs and Symptoms of Hepatitis B**

About half of adults with hepatitis B never get any symptoms. The symptoms can also feel like other illnesses, like the flu. So it's possible to have the infection and not know it. When people do show signs of hepatitis B, they usually show up between 6 weeks and 6 months after they got the virus. Hepatitis B symptoms typically last for a few weeks, but can sometimes stick around for months. (2023 Planned Parenthood Federation of America Inc.).

People who do have symptoms or signs may get:

- Yellowing of the skin and eyes (jaundice)
- Dark urine
- Extreme fatigue
- Nausea and vomiting
- Muscle and joint pain
- Abdominal pain
- Loss of appetite
- Pain in the right-hand side of the abdomen
- Fever

Symptoms usually start 2 to 3 months after infection with the virus and may last from 6 weeks to 6 months.(WHO, Planned Parenthood)

**2.1.5 Diagnosis of Hepatitis B**

The diagnosis of hepatitis B virus infection requires the evaluation of the patient's blood for hepatitis B surface antigen, hepatitis B surface antibody, and hepatitis B core antibody.

**Blood tests.** Blood tests can detect signs of the hepatitis B virus in your body and tell your provider whether it's acute or chronic. A simple blood test can also determine if you're immune to the condition.

**Liver ultrasound.** A special ultrasound called transient elastography can show the amount of liver damage.

**Liver biopsy.** Your provider might remove a small sample of your liver for testing to check for liver damage. This is called a liver biopsy. During this test, your provider inserts a thin needle through your

skin and into your liver and removes a tissue sample for laboratory analysis. First step of HBV diagnosis is achieved by using serological markers for detecting antigens and antibodies. In order to verify first step of diagnosis, to quantify viral load and to identify genotypes, quantitative or qualitative molecular tests are used. In this research, the serological and molecular tests for diagnosis of HBV infection will be done. The diagnosis of HBV infection requires the evaluation of the patient's blood for HBsAg, hepatitis B surface antibody (HBsAb), and hepatitis B core antibody (HBcAb). Although the presence of HBsAg indicates that the person is infectious, the presence of HBsAb indicates recovery and immunity from HBV infection or successful immunization against HBV. HBcAb appears at the onset of acute HBV infection, but may also indicate chronic HBV infection. HBcAb = hepatitis B core antibody; HBsAb = hepatitis B surface antibody; HBsAg = hepatitis B surface antigen; HBV = hepatitis B virus; + = positive test result; – = negative test result.

- The presence of HBsAg indicates that the person is infectious.
- HBcAb appears at the onset of acute HBV infection. Presence may also indicate chronic HBV infection or a false-positive test.
- The presence of HBsAb indicates recovery and immunity from HBV infection or successful immunization against HBV (Jeong Eun *et al*., 2010).

### 2.1.6 Complications of Hepatitis B

Chronic hepatitis can lead to complications such as cirrhosis (scarring of the liver), liver failure, and liver cancer. Early diagnosis and treatment of chronic hepatitis may prevent these complications. (Journal Articles References and abstracts from Medline/PubMed (National Library of Medicine)).

Chronic hepatitis B can lead to

- Cirrhosis, a condition in which scar tissue replaces healthy liver tissue and prevents your liver from working normally. Scar tissue also partly blocks the flow of blood through the liver. As cirrhosis gets worse, the liver begins to fail.
- Liver failure, in which your liver is badly damaged and stops working. Liver failure is also called end-stage liver disease. People with liver failure may require a liver transplant.
- Liver cancer. Your doctor may suggest blood tests and an ultrasound or another type of imaging test to check for liver cancer. Finding cancer at an early stage improves the chance of curing the cancer. (NIDDK).

### 2.1.7. The Hepatitis B Virus classification

This virus (HBV) is classified as an orthohepadnavirus belonging to the family Hepadnaviridae with a very high transmissibility (Isa *et al*., 2015). The infecting virus is a 42nm spherical particle, which contains DNA, and RNA called the Dane particles. This virus is composed of 27 NM nucleocapsid Core surrounded by an outer lipoprotein coat containing the Hepatitis B surface antigen (HBsAg) (Ado *et al*., 2010). The viral genom is 3.2 kb in length consisting of four partially overlapping, open reading frames that encode viral proteins. Viral replication takes place predominantly in the hepatocytes. The infecting virus encases its double- shelled Dane particles within the membrane envelopes coated with HBsAg particles. a spherical 22mnm particle and tubular or filamentous particles that that vary in length (Willey *et al*., 2013). The virus particles consist of an outer lipid envelope and an icosahedral nucleocapsid Core which is composed of protein, the outer envelope contains proteins that are involved in viral binding and entry in to susceptible cells .the outer surface or envelope contains hepatitis B surface antigen (HBsAg) and surrounds the inner nucleocapsid Core that contains Hepatitis B core antigen (HBc Ag) ( Geo *et al*.,2007).

2.1.8 Prevention and control of hepatitis B (Primary Prevention)

- Advocacy and raising awareness of all types of viral hepatitis infections help reduce transmission in the community.
- Implementation of blood safety strategies, including blood supplies based on voluntary non-remunerated blood donations, effective public education on blood donation, donor selection, and quality-assured screening of all donated blood and blood components used for transfusion can prevent transmission of HBV .
- Infection control precautions in health care and community settings can prevent transmission of viral hepatitis as well as many other diseases.
- Safe injection practices can protect against HBV and HCV transmission.
- Safer sex practices, including minimizing the number of partners and using barrier protective measures (condoms), protect against HBv transmission.
- Early diagnosis provides the best opportunity for effective medical support and prevention of further spread.
- It also allows the infected persons to take steps to prevent transmission of the disease to others.
- Early diagnosis of those with chronic infection also allows people to take precautions to protect the liver from additional harm, specifically by abstaining from alcohol and tobacco consumption and avoiding certain drugs that are known to be toxic to the liver.

Both the introduction of confirmatory testing and the notification and counseling of blood donors who have reactive results detected during screening of donated blood provide unique opportunities for early diagnosis and medical support to asymptomatic individuals who come

**2.1.8 Treatment for hepatitis B**

The medication cannot cure the disease, but can help reduce the number of viruses in the body and the risk of complications. You may undergo periodic blood tests to monitor drug resistance and determine whether the medication is having an effect. Treatment varies whether a person has acute or chronic hepatitis B.

**Acute**

There is little effective treatment apart from rest, following a nutritious diet, and maintaining hydration. If a person has severe symptoms, they may need treatment at the hospital.

**Chronic**

Medication is available to treat this condition, which has no cure and requires monitoring by a healthcare professional. Treatment for chronic HBV reduces the risk of developing liver failure, cirrhosis, liver cancer, and hepatitis-related deaths. Chronic HBV currently has two types of therapy with approval for use with the condition:

Immune modulator drugs: These boost the immune system to help get rid of the hepatitis B virus. Healthcare professionals administer them as an injection for around 6 months to 1 year.

Antiviral drugs: These slow down or prevent the virus from reproducing. provider who is knowledgeable about hepatitis B) whether they are on treatment or not.

Approved Hepatitis B Drugs for Adults (United States)

Oral Antivirals (Nucleos(t)ide Analogues)

Tenofovir disoproxil (Viread) is a pill taken once a day, with few side effects, for at least one year or longer. This is considered a first-line treatment with an excellent resistance profile. (Approved in 2008)

Tenofovir alafenamide (Vemlidy) is a pill taken once a day, with few side effects, for at least one year or longer. This is considered a first-line treatment with an excellent resistance profile. (Approved in 2016)

Entecavir (Baraclude) is a pill taken once a day, with few side effects, for at least one year or longer. This is considered a first-line treatment with an excellent resistance profile. (Approved in 2005)

Telbivudine (Tyzeka or Sebivo) is a pill taken once a day, with few side effects, for at least one year or longer. This is considered a second-line treatment option. (Approved in 2006)

Adefovir Dipivoxil (Hepsera) is a pill taken once a day, with few side effects, for at least one year or longer. This is considered a second-line treatment option and patients must have their kidney function monitored regularly. (Approved in 2002)

Lamivudine (Epivir-HBV, Zeffix, or Heptodin) is a pill that is taken once a day, with few side effects, for at least one year or longer. This is generally not used in the U.S. because it is less potent than the newer drugs and most people develop drug resistance within a year or two. (Approved in 1998)

Immune Modulators (Interferons)

Pegylated Interferon (Pegasys) is given by injection once a week usually for 6 months to 1 year. The drug can cause side effects such as flu-like symptoms and depression. (Approved in 2005)

Interferon Alpha (Intron A) is given by injection several times a week usually for 6 months to 1 year, but treatment can be longer. The drug can cause side effects such as flu-like symptoms, depression, and headaches. This is an older drug that is not used as often.

(Approved in 1991) (hepatitis B foundation, medically reviewed by Alan Carter, Pharm. D.

By Sarah Charmley on March 21, 2022, WHO).

## CHAPTER THREE RESEARCH METHODOLOGY

### 3.1. Study design

These are sets of methods and procedures used in collecting and analyzing variables specified in the research work. For the purpose of this research, the descriptive quantitative survey design method was used, analysis and interpretation of data is represented using statistical tools such as tables, charts, histograms

### 3.2. Study site

This study was carried out at the Bamenda Regional Hospital in all department. This was done in order to have access to all patients admitted in the hospital who are at risk at contacting HBV.

### 3.3. Study area

This study was carried out at Regional Hospital Bamenda Mezam. Division North West region of Cameroon. It is located in Bamenda II Sub Divisions in the Nitob 1 neighborhood. Its gate way opens from the famous hospital round about whose name was gotten from the hospital towards the highway to the Bamenda airport. Regional hospital went operational in the early 40s at up station and was later transferred to nitob1 on the 5$^{th}$ of April 1959, it was inaugurated by his Excellency sir James Robenson Governor general of The Federal republic of Nigeria. The hospital has since grown in size and quality up to the recent date. It has lots of units and a number of special department in the laboratory department like the hematological, biochemistry, parasitology, microbiology serology blood bank Some of the units in the hospital include tuberculosis unit, reexamination unit, hemodialysis center, imagery center, pediatric unit, just to name a few .Some of the specialized departments of the hospital are 0pthalmology ,ear, nose and throat departments, internal medicine, surgery and many others. The hospital has a capacity of 400 beds in different units.

**B**amenda Regional Hospital is a hospital in Cameroon. Bamenda Regional Hospital is situated nearby to

the marketplace Bamenda food market and 3rd District Police Station.

### 3.5. Study Population

The study population was made up of all patients admitted in the Bamenda Regional Hospital and are at risk of getting Hepatitis B.

### 3.6. Sample Size

The proportion of patients at risk of getting Hepatitis B in Bamenda Regional Hospital is estimated to be more than 30.2%. Also, a confidence level of 95% and the desired level of precision set at 5% was used for sample size determination. The sample was calculated using the formular developed by Cochran to yield a representative sample for proportions (Cochran, 1977)

$$n = \frac{z^2 pq}{e^2}$$

Where,

$n$ 0 = the sample size

Z = standard normal deviate which is 1.96 at 95% confidence interval P = the proportion of the population estimated to be at risk (0.311) q = the proportion of the population not at risk (1-0.302=0.698) e = the desired level of precision set at 5% (0.05)

$$n = \frac{1.95^2 x 0.302(1 - 0.302)}{0.05^2}$$

$$N = 320$$

### 3.8. Exclusive criteria

All patients who are admitted in the Bamenda Regional Hospital

### 3.7. Inclusion criteria

All patients admitted in the Bamenda Regional Hospital who are at risk of contracting Hepatitis B and have accepted and signed the consent form to partake in the study.

### 3.9. Sampling

The study is analytical cross-sectional study by means of pre-tested, structured and self-administered questionnaires. The study focused on the level of awareness of HBV among patients, the control measures of HBV infection and the sero-logical test status of patients in Bamenda Regional Hospital.

### 3.10. Data collection instruments

Data was collected with the help of interview and questionnaires comprising of open and closed ended questions**.** These instruments were used to get in-depth information that could help the researcher get the information concerning prevalence of HBV.

### 3.11. Sampling Technique and Data Collection Procedure

A structured questionnaire was used in collecting the data from each stratum among the study participants. The questionnaire comprised of both closed and open ended-questions that sought to determine the categories of patients exposed to Hepatitis B viral infection, the practices that expose them, Hepatitis B serological test status, Hepatitis B vaccination status and control measures available for Hepatitis B. Participants' Hepatitis B serological test status was determined by testing with the test kits. Upon arrival, the investigator introduced herself and explained the purpose of the study and its

importance to the participants. Information about the study was given to participants contained in the information notice. Those who accepted to participate in the study were given consent forms to sign then the questionnaires were administered to the consenting respondents. The questionnaire was answered completely by the respondent and respondents who had questions asked them and were clarified by the researcher and the questionnaires were collected immediately by the investigator after ensuring completion of all the items on the questionnaire.

### 3.12. Data management and Statistical Analysis

Data from the respondents with the use of questionnaires was kept confidential and analyzed using Microsoft excel and SPSS version 26.

### 3.13. Ethical Considerations

An inform consent form was attached to the questionnaire which was further explained to the respondent and validated by signing.

The purpose of the study was made known to the participants stating the need to participate, benefits of the participation and above all privacy and confidentiality.

And ethical clearance was gotten from an ethical clearance board of Capitol Higher National Institute of Health and Biomedical Science Bamenda and an administrative clearance was gotten from the Regional Delegation of Public Health North West Region, from the director of Bamenda Regional Hospital and the Chief of Service Bamenda Regional Hospital Laboratory.

Only participants who agree to take part in the study after clear explanation about the research work were asked to sign the inform consent form.

No participant's name was used anywhere in the research publications, none of the identification of the participants made known anywhere to anyone.

The records of the study were kept private, coded, signed and used for participant identification was only understood by me carrying out the research. Research records were kept in a locked file for privacy and only researcher had access to it.

Participants in this study were completely voluntary.

Subjects have the right not to participate at all or leave the study at any time. validity of instrument

### 3.14. Data collection

Data was collected through the use of interview and questionnaire which were distributed to all patients at the Bamenda regional hospital to know the prevalence of HBV among them in which some of them asked questions to know more about hemolytic disease of the new born and fetus and were given clear answers to their questions.

## CHAPTER FOUR PRESENTATION OF RESULTS

### 4.0. Introduction

This chapter presents the information on the data collected from the respondents. The findings of this study were analyzed and presented based on the specific objectives of this study.

### 4.1. Demographic Data

**Table 1: Personal Data of the Respondents**

| Characteristic | Frequency | Percent | Valid Percent |
|---|---|---|---|
| **Age (in years)** | (N=100) | | |
| **< 30** | 50 | 50 | 50 |
| **30 – 50** | 33 | 33 | 33 |
| **51 – 70** | 11 | 11 | 11 |
| **70 <** | 06 | 06 | 06 |
| **Gender** | | | |
| **Male** | 49 | 49 | 49 |
| **Female** | 51 | 1 | 1 |
| **Marital Status** | | | |
| **Married** | 37 | 37 | 37 |
| **Single** | 63 | 63 | 63 |
| **Education** | | | |
| **Primary** | 7 | 7 | 7 |
| **Secondary** | 16 | 16 | 16 |
| **Tertiary** | 59 | 59 | 59 |
| **No formal education** | 18 | 18 | 18 |
| **Occupation** | | | |
| **Civil Servant** | 42 | 42 | 42 |
| **Self Employed** | 26 | 26 | 26 |
| **Jobless** | 06 | 06 | 06 |
| **Student** | 26 | 26 | 26 |
| **Religion** | | | |
| **Christian** | 93 | 93 | 93 |
| **Muslim** | 7 | 7 | 7 |

The demographic characteristics of the respondents are shown in the table above. The demographic profile of the respondents in terms of their age distributions revealed that most (50%) were aged below 30 years. Gender distribution had a slightly high proportion of females (51%) compared to males (49%) among patients. From the results, almost ¾ (63%) of the respondents indicated they were not married whilst the rest were married.

The educational level of the respondents revealed that 18% had no formal education whilst 59% had tertiary education among patients as compared to 16% that has secondary education and 7% has primary education among the patients. Almost halve (42%) of the respondents among the patients were civil servants while 26% were self-employed, 6% were jobless and 26% still students. Christians were higher than the other denomination, Muslims, with 93% while Muslims were just 7%.

### 4.2. Serological Test Status of Respondents

**Table 2: Serological Test of the Patients According to Age and Gender**

| Age (in years) | Gender | | Results | | |
|---|---|---|---|---|---|
| | | Positive | Percent | Negative | Percent |
| **< 30** | Male | 2 | 2.0 | 19 | 19.0 |
| | Female | 1 | 1.0 | 28 | 28.0 |
| **30 – 50** | Male | 15 | 15.0 | 9 | 9.0 |
| | Female | 7 | 7.0 | 2 | 2.0 |
| **51 – 70** | Male | 1 | 1.0 | 3 | 3.0 |

| | | | | | |
|---|---|---|---|---|---|
| | Female | 2 | 2.0 | 5 | 5.0 |
| **70 <** | Male | 0 | 0.0 | 4 | 4.0 |
| | Female | 2 | 2.0 | 0 | 0.0 |
| | **Total** | **30** | **30** | **70** | **70** |

Under this portion, the study assessed the prevalence of HBV infection among two categories of respondents, males and females. Following the test results the majority of the positive patients were in the age group 30 – 50 (22%) with males carrying the majority with 15% while females with only 7%. Those who were below 30 years were the majority 50(21 males, 29 females) in the study but when it comes to the results, the majority of them were negative(47%) while only 3% were positive while the positive results of the age group 51 – 70 is same as that of those below 30 years (3%) while 8% were negative. Those above 70 years were just 6(6%) with the 2 females in this group all being positive while the 4 males were all negative. This can be diagrammatically represented as below

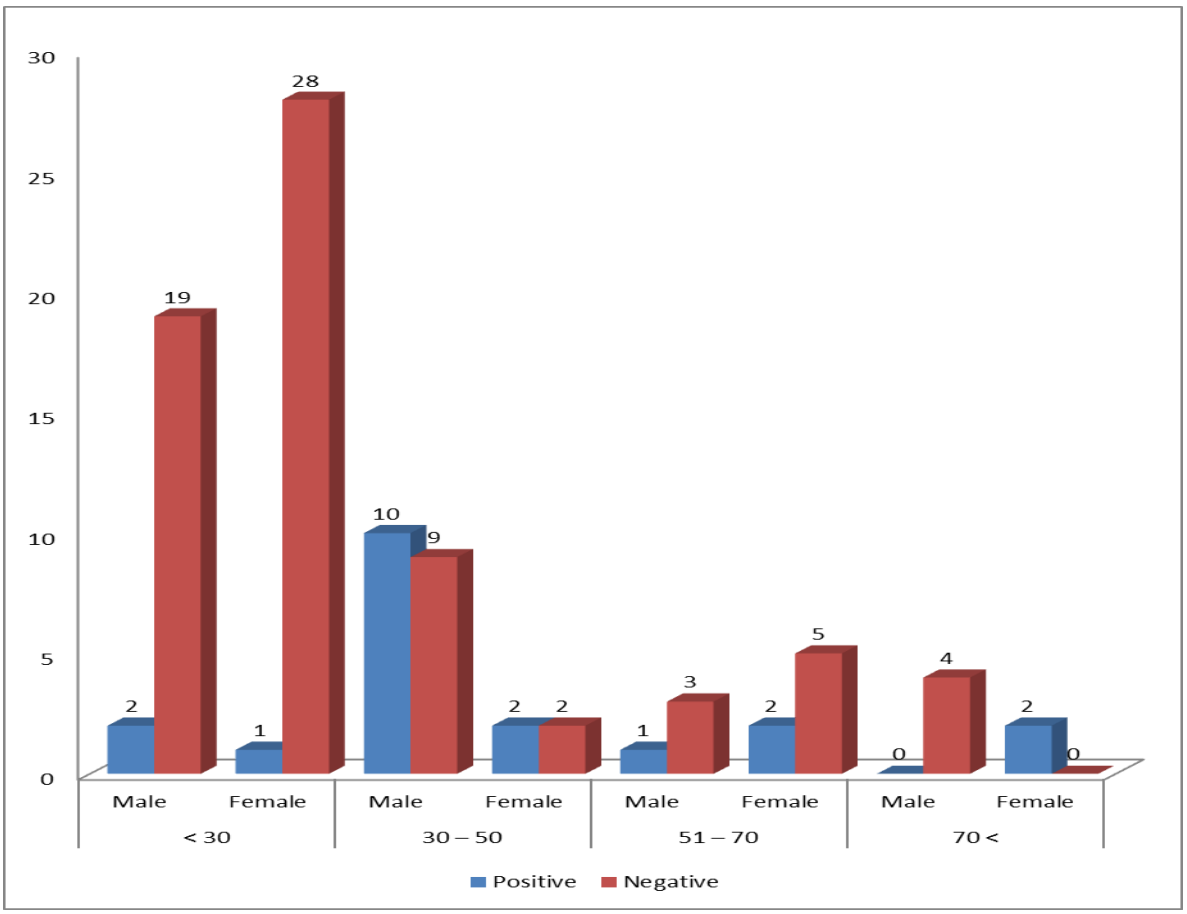


**Figure 1: Serological Test of the Patients According**

**4.3 Level of Awareness of HBV Infection among Respondents**

**Table 3: Respondent's Level of Awareness of HBV Infection**

| Question | Response | Frequency | Percentage % |
|---|---|---|---|
| Are you aware of HBV | Yes | 100 | 100 |
| | No | 0 | 0 |
| From where did you hear about HBV? | School | 44 | 44 |
| | Hospital | 27 | 27 |
| | Friends | 11 | 11 |
| | Media | 18 | 18 |

| | | | |
|---|---|---|---|
| | **Total** | **100** | **100** |

The level of awareness of respondents on HBV infection was assessed. The patients were analyzed to get a better picture of the study. All the patients (100%) said they are aware of HBV. The results also showed that 44. % of patients heard of HBV from school as compared 27% who heard about it from the hospital. It was also revealed that, most 11% among the respondents identified friends as their major source of information on HBV while 18% heard from the media. As in the figure below

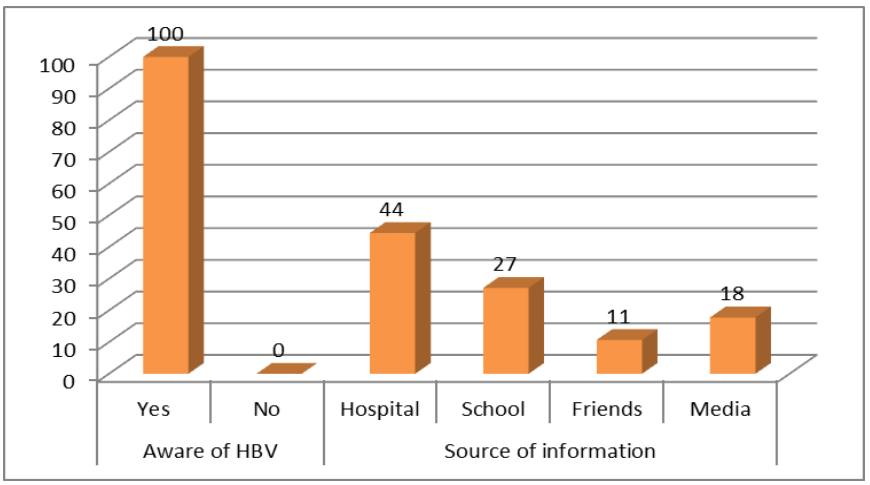


**Figure 2: Respondent's Level of Awareness of HBV Infection**

**Table 4: Respondents Clinical Knowledge on Hepatitis B Infection**

| Question | Responses | (N = 100) | Percentage (%) |
|---|---|---|---|
| Signs and symptoms | Jaundice | 49 | 49.0 |
| | Swollen abdomen | 40 | 40.0 |
| | Fatigue | 6 | 6.0 |
| | Muscle and joint pains | 5 | 5.0 |
| | **Total** | **100** | **100.0** |
| Mode of HBV spread | Horizontal transmission | 63 | 63.0 |
| | Vertical transmission | 20 | 20.0 |
| | Unsafe needles | 17 | 17.0 |
| | **Total** | **100** | **100.0** |
| Complications of HBV infection | Liver failure | 40 | 40.0 |
| | Death | 17 | 17.0 |
| | Cirrhosis | 7 | 7.0 |
| | Chronic Hepatitis | 36 | 36.0 |
| | **Total** | **100** | **100.0** |

The respondent's clinical knowledge concerning HBV infection is shown in the table reveals that majority of the respondents (49%) identified jaundice as a sign of HBV infection whilst 40% also indicated swollen stomach as a sign of HBV infection. Only 5% of the respondents identified muscle as well as joint pain as signs of HBV infection. The rest were for the fact that fatigue is a sign of HBV with a percentage of 6%.

Also, most of the respondents (63%) who were patients indicated horizontal transmission as the mode of HBV spread. Twenty percent (20%) and 17% of the respondents indicated vertical transmission and unsafe needles as the mode of HBV spread respectively. The results further showed that, 40% of the respondents identified liver failure as a complication of HBV infection. seventeen percent (17%) and 7% of the respondents reported death and cirrhosis as complications of HBV infection respectively. Those who were for chronic hepatitis as a complication of HBV were 36% as in the figure below.

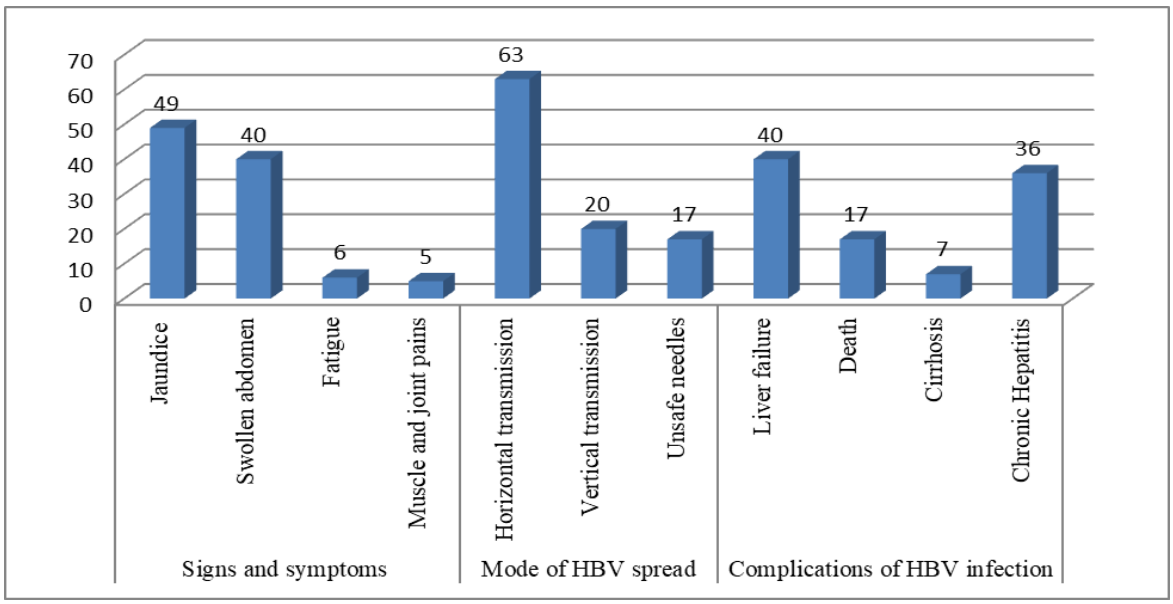


**Figure 3: Respondents Clinical Knowledge on Hepatitis B Infection**

**4.4 Control Measures of HBV Infection among Respondents**

**Figure 4: Control Measures Used in the Hospital**

| Question | Responses | (N = 100) | Percentage (%) |
|---|---|---|---|
| Do you use personal protective equipment (PPEs)? | Yes | 94 | 94 |
| | No | 6 | 6 |
| | **Total** | **100** | **100** |
| Are there containers available for bioharzadous waste? | Yes | 91 | 91 |
| | No | 9 | 9 |
| | **Total** | **100** | **100** |
| Do you use retractable syringes? | Yes | 40 | 40 |
| | No | 60 | 60 |
| | **Total** | **100** | **100** |
| Have you been vaccinated against HBV? | Yes | 65 | 65 |
| | No | 35 | 35 |
| | **Total** | **100** | **100** |
| If yes, how many doses did you take ? | One | 8 | 12 |
| | Two | 18 | 28 |
| | Three | 39 | 60 |
| | **Total** | **100** | **100** |

This section mainly focused on the patients' measures employed in the hospital to control HBV infection. From Majority of the respondents representing 94% indicated that they were using personal protective equipment (PPEs) and 6% indicated they don't use PPE. The results also revealed that 91% of the respondents said there were containers available for bio hazardous waste. There was low (40%) usage of retractable syringes and needles. Regarding vaccination, 65% said they were vaccinated. However, 12% completed first dose, 28% of the respondents completed second dose of the vaccination and 60% completed third dose of the vaccination.

## CHAPTER FIVE DISCUSSION, CONCLUSION AND RECOMMENDATIONS

### 5.1. Discussion

This chapter closely discusses the main findings of the study and compares them to available literature. Key among the issues are the extent to which findings agree with or at variance with the reviewed literature. The discussion of the results is presented based on the specific objectives of the study.

### 5.1.1. Serological Test Status of Respondents

Patients are at an increased risk of contracting HBV due to their exposure to fluids of infected patients at the clinical environment. Life in the hospital setting is mostly involved in a lot of uncertainties which exposes both the patient and care giver to having contact with infected persons or other risk factors like accidental piercing and cutting by sharp objects. Thus, the risk of accidental exposure to Hepatitis B virus being high. This assertion was manifested in the study results. From the results, 13 out of the 20 positive patients were male patients. This is in line with a study carried out by Fawad *et al* (2011) in Afghanistan in which 68.15% of the HBV carriers were male patients. The highest age group of carriers in this study is the age group 30 – 50, with 60% followed by the age groups 51 – 70 and those below 30 years who all had an equal 15% share from the carriers with the least coming from those above 70 with 10%. This is in contrast with the study in Afghanistan where the highest number of infected persons 34.93% was from the age group 21 – 30 (Fawad *et al*, 2011). This can be due to exposure of the age groups in these two separate environments or other factors that are contributing as risk factors in these age groups.

Hepatitis B virus infection often has no symptoms and may not even be noticed. It is common among adults who are infected with acute Hepatitis B virus to recover fully. Infected adults can develop complications such as hepatocellular carcinoma, liver cirrhosis and chronic infection. With the knowledge of the mode of transmission, patients in the Bamenda Regional Hospital were more likely to be careful when going about their activities as all of them were aware about the existence of HBV.

### 5.1.2. Level of Awareness of HBV Infection among HCWs

Hepatitis B virus infection is a major threat to public health globally especially among patients in a hospital setting. It has been shown that patients have up to four-fold increase in incidence of this infection in the general population as health workers can easily transmit to them at the least carelessness. The main risk factor to acquire HBV infection for patients is direct contact with infectious material or persons in the hospital, especially HBV infected blood or body fluid. Some studies have also reported that awareness of HBV and proper precautions against blood-borne infections are lacking in most health facilities especially in Bamenda. Therefore, raising awareness of patients concerning HBV infection is ideal in protecting themselves against the disease.

From the results, all the respondents indicated that they had heard of HBV infection. This agrees with a study conducted by Bakry *et al*. (2015) where knowledge of patients on HBV infection was found to be high. Their sources of knowledge were perhaps informed by the hospital, and at their various schools they are attending or attended. Also, all the patients recruited for the study indicated the hospital and schools as the major source of acquiring knowledge on HBV infection. A study conducted by Hussain *et al*. (2016) supports this finding. In their study, patients in Tanzania identified hospitals and schools as their major sources of knowledge concerning HBV infection (Hussain *et al*., 2016).

Respondent's awareness concerning the mode of spread of HBV infection was also assessed in the study. Blood and its products were seen to be the common source of transmission in hospital settings. There is an increasing risk of HBV infection due to invasive diagnostic and therapeutic procedures. It is necessary for patients and healthcare workers to always practice appropriate protective methods because of their constant handling of biomedical wastes and patients alike. Hence the need for them to be aware of HBV infection and its prevention. The major route of HBV transmission in sub-Saharan Africa is horizontal (that is transmission unrelated to recognize-sexual, perinatal, parenteral exposure) in children under 5

years of age; however, percutaneous/parenteral transmission is also an important mode of spread (Malewezi, Omer, Mwagomba, & Araru, 2017). The results further showed that, majority of the respondents working at the hospital identified horizontal transmission as a mode of spread of HBV infection. This finding from the study disagrees with the study done by Kabir *et al*. (2010) where patients and healthcare workers alike cited accidental exposure to infected blood samples as a mode of HBV infection route. HBV could be transmitted through many other routes, and inadequate knowledge of HBV among patients may reflect their behavioural pattern to vaccination and safety measures.

Similarly, from the results, some of the respondents identified abdominal distension as a sign of HBV infection. This is in agreement with the findings Muljono *et al*. (2018) where patients in Indonesia identified similar condition as a sign of HBV infection. The symptom identified as abdominal distension could be as a result of respondents coming into contact with other patients in the clinical environment with those symptoms. The results also showed that, majority of the respondents cited liver failure as a complication of HBV infection. This finding from the study is in disagreement with the study done by Karaivazoglou *et al*. (2014) where patients in a study did not have much knowledge on complications of HBV infection as liver failure. One of the elements that could contributes to the prevention of vertical transmission of Hepatitis B among patients is the knowledge and compliance with the established actions for prevention, which depended mainly on the attitudes and practices of health workers and care givers. Identifying and educating those infected with Hepatitis B virus regarding vertical transmission and the need for pre-natal care is an important way of reducing mother to child transmission during childbirth. Enhancing the awareness patients, care givers and health workers on HBV infection would serve as means of creating the awareness of the general population, since health workers are the main source of information regarding health and the implementation of control and preventive measures to Hepatitis B virus infection.

### 5.4 Control Measures of HBV Infection among Respondents

Hospitalised patients have higher risk of being infected with transmissible diseases like HBV because of the constant contact with body fluids and contaminated objects. In this study, it was found that, the level awareness among patients was adequate.

The results of the study showed that majority of the respondents indicated were using personal protective equipment as a way of preventing HBV infection. This disagrees with the study done by Afihene *et al*. (2017) where most respondents were not using hand gloves and complained of unavailability of those items. Majority of the respondents in this study had containers for biohazardous waste. This agrees with the study done by Muljono *et al*. (2018) where respondents indicated that they had waste containers in the health care setting. In preventing HBV infection, hospital waste management is very important aspect which should not be underestimated. Trained healthcare workers should be involved in monitoring for effective disposal of hospital generated waste. From the results, majority of the patients indicated that they had taken the third dose of the HBV vaccination. This is a requirement to fully prevent one from contracting the virus. This is contrary to the findings of Bakry *et al*. (2015) where most of the patients in Uganda Hospital indicated that they had taken only the first dose of HBV vaccination.

The number of healthcare workers who had taken only first and second doses of HBV vaccines is of great concern. Interactions with some of these patients indicated that they did not complete the vaccination requirement while others at the time of conducting the study had just begun the vaccination. This shows alarming evidence that very few patients in subSaharan Africa report receiving vaccination against HBV (Kao & Chen, 2002). This is of critical importance since accidental injuries are common at the hospital. Moreover, some reports have indicated that sub-Saharan Africa has the highest incidence of occupational exposures in the world (Karaivazoglou *et al*., 2014).

The high prevalence of chronic HBV infection and risk factors for their transmission make prevention and control of these infections very critical for correctional health programs. In addition, because a substantial proportion of members of the community continue to acquire or transmit these infections at a

high rate, correctional efforts should become part of prevention and control efforts in the broader community (Ozsoy *et al*., 2003).

### 5.2. Conclusion

The research identified that Hepatitis B prevalence was relatively high among patients in the Bamenda Regional Hospital. Generally, there was high level of awareness of Hepatitis B Virus diseases, though some patients were not well informed about the mode of infection of the disease. This was basically due to the level of education and the willingness of patients to learn. Control measures to mitigate the rate of infection was also low. Lack of retractable syringes which is a key measure to avoid needle prick injury during recapping was a major issue. Though there was high usage of personal protective equipment, some of this equipment was reported to have expired. Lack of vaccination policy in the hospital is also a major factor. Low figures were reported to have vaccinated and that contributed to the high prevalence of the disease.

### 5.3. Recommendations

The following actions were recommended based on the findings of the study:

- Universal vaccination policy should be implemented for all Healthcare Workers to ensure that every staff is vaccinated to prevent infection and transmission to patients in the Bamenda Regional Hospital.
- Since some Hepatitis B cases had history of needle stick injuries, healthcare administrator or managers should provide retractable syringes in the hospital to avoid such injuries during recapping.
- Patients and nurses should be educated on the prevalence of these infectious diseases, so as to take the necessary preventive measures within the hospital setting.
- Hospital sterile equipment should be sterilized when necessary and not on specified bases such as daily or twice daily.
- Cleaners working at the hospital should be informed of reporting channels within the departments in cases of injury and skin contacts with patient's body fluids.

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