

PRESBYTERIAN UNIVERSITY COLLEGE, GHANA

FACULTY OF DEVELOPMENT STUDIES

DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES

MANAGEMENT

KNOWLEDGE, ATTITUDE, AND PERCEPTION OF
HEALTHCARE WORKERS ON HEPATITIS B INFECTION
IN 37 MILITARY HOSPITAL

A dissertation submitted to the Department of Environment and Natural Resources Management of the Faculty of Development Studies, Presbyterian University College, Ghana in partial fulfillment of the requirements for the award of Master of Science degree in Environmental Health and Sanitation

BY

AMOFAH EMMANUEL

SEPTEMBER, 2019

DECLARATION

Candidate's Declaration

I hereby declare that this project work (dissertation) is the results of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Name: Emmanuel Amofah

Candidate's Signature:..... Date:.....

Supervisor's Declaration

I hereby declare that the preparation and presentation of the project work (dissertation) were supervised in accordance with the guidelines on supervision of project work laid down by Presbyterian University College, Ghana.

Name: Edward D. Wiafe

Supervisor's Signature:..... Date:.....

ABSTRACT

Hepatitis B (HB) infection remains an important occupational hazard for Healthcare workers (HCWs). This is alarming as HCWs are expected to be trained with the requisite knowledge about the virus, therefore assessing the Knowledge, Attitude and Perception (KAP) of HCWs can highlight the measures needed in order to prevent or reduce risk of transmission among HCWs. A hospital based descriptive cross-sectional study aimed to assess KAP of HCWs concerning HB infection in 37 Military Hospital was undertaken amongst 50 purposively selected HCWs of 37 Military Hospital; were assessed using a structured questionnaire. Descriptive statistics and Chi square analysis of patients' demographic characteristics and for KAP of HCWs were conducted using Statistical Package for Social Science (version 16). Of the 50 respondents, 77.6% were having adequate knowledge whereas 8.4% were of poor knowledge and 14% neither have adequate or poor knowledge. Also, 5.7% of respondents were of negative attitude whereas 89.7% showed a positive attitude and 4.7% were of neutral attitude. Again, 53% of respondents were of good perception whereas 17% were of poor perception and 30% was neither having good nor poor perception. Work experience and occupation of respondents showed significant relation with knowledge ($p < 0.01$, $p < 0.05$). Also, age, work experience and occupation were significantly associated attitude ($p < 0.05$). Contrary, there was no association between demographic data and perception ($p > 0.05$). It was concluded that there was adequate knowledge, positive attitude and good perception among HCWs concerning HB infection in Ghana. It is recommended amongst others that, intensified education be given to the HCWs of 37 Military hospital by the hospital management team to improve the perception towards HB infection.

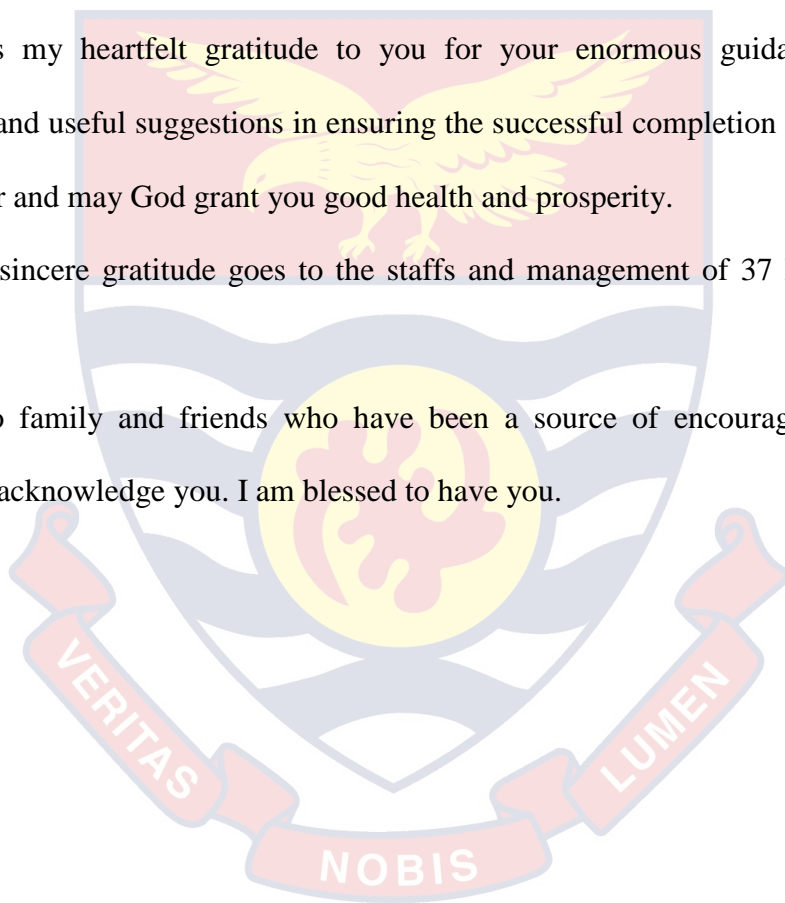
ACKNOWLEDGEMENT

I am very thankful to God Almighty for the mercy and grace upon me to complete successfully. The outcome of the study is not the work of the author alone but also contributions by great individuals.

My sincere gratitude goes to my supervisor, Dr. Edward D. Wiafe, for all help and guidance he has given me. He has not just been a supervisor, but a father as well. I wish to express my heartfelt gratitude to you for your enormous guidance, constructive comment and useful suggestions in ensuring the successful completion of this study. Stay blessed Sir and may God grant you good health and prosperity.

Also, my sincere gratitude goes to the staffs and management of 37 Military Hospital, Accra.

Finally, to family and friends who have been a source of encouragement, love, and support, I acknowledge you. I am blessed to have you.



DEDICATION

I dedicate this work to the Lord God Almighty and to my lovely family



TABLE OF CONTENTS

	Page
DECLARATION	ii
ABSTRACT.....	iii
ACKNOWLEDGEMENT	iv
DEDICATION.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ABBREVIATIONS.....	xi
CHAPTER ONE	
1.0 INTRODUCTION	1-7
1.1 Background of the Study.....	1
1.2 Statement of the Problem.....	3
1.3 Purpose of the Study	4
1.5 Significance of the Study	5
1.6 Delimitations of the Study	6
1.7 Limitations of the Study.....	6
1.8 Organization of the Chapters	7
CHAPTER TWO	
2.0 REVIEW OF RELATED LITERATURE	8-33
2.1 Hepatitis B Virus infection	8
2.2 Global epidemiology of Hepatitis B.....	8
2.3 Hepatitis B epidemiology in Africa	11
2.4 Hepatitis B virus infection epidemiology in Ghana.....	12
2.5 Transmission of HBV infection.....	19
2.6 Signs and Symptoms of HBV Infection.....	20
2.7 Diagnosis of HBV infection.....	20
2.8 Procedures done for HBV infectious patients.....	21
2.9 Prevention and Treatment.....	21
2.10 Preventive measures for HBV infection.....	22

2.11	Knowledge on hepatitis B infection.....	23
2.12	Attitude and practices towards hepatitis B infection.....	28
2.13	Perception towards hepatitis B infection	31
CHAPTER THREE		
3.0	METHODOLOGY	34-42
3.1	Study Area.....	34
3.1.1	The 37 Military Hospital.....	35
3.1.1.1	Mission and Objectives	36
3.2	Study design.....	38
3.3	Population of the Study.....	38
3.4	Sampling Procedure	39
3.5	Sample size	39
3.6	Data Collection Procedure	39
3.7	Research Instrument.....	40
3.7.1	Questionnaire	40
3.7.2	Validity and reliability	40
3.7.3	Pre-testing of questionnaire	41
3.8	Statistical and Data analysis.....	41
3.9	Ethical consideration.....	42
CHAPTER FOUR		
4.0	RESULTS AND DISCUSSIONS.....	43-68
4.1	Demographic characteristics of respondents.....	43
4.2	Knowledge of Hepatitis B Virus (HBV) infection	45
4.2.1	Number of people who have heard of hepatitis B (HB) infection	45
4.2.2	Sexual relationships as means of contracting of HB infection.....	46
4.2.3	Child birth as means of contracting HB infection.....	47
4.2.4	Sharing of Toothbrush with infected person as means of contracting HB infection	48
4.2.5	Sharing spoons or bowls for food as means of contracting HB infection.....	49
4.2.6	Shaking hands with an infected person as means of contracting HB infection	50
4.2.7	Knowledge of Signs and Symptoms of HB infection	51
4.2.8	Knowledge on the ability of asymptomatic person to spread HB infection.....	52
4.2.9	Hepatitis B and Liver cancer.....	53

4.2.10	Comparing Hepatitis B virus and HIV infectivity	54
4.2.11	Summary of Responses to HBV Infection Knowledge Questions.....	55
4.3	Attitude towards Hepatitis B infection	57
4.3.1	Awareness of Hepatitis B vaccine	57
4.3.2	Healthy people and Hepatitis B vaccination	58
4.3.3	Willingness to receive Hepatitis B vaccine.....	59
4.3.4	Number of people who have ever received Hepatitis B vaccine.....	60
4.3.5	Willingness to be tested for Hepatitis B infection	61
4.3.6	Willingness to associate oneself with Hepatitis B infected person.....	62
4.3.7	Summary of Responses to HCWs Attitude towards HBV infection.....	63
4.4	Perception towards Hepatitis B infection.....	64
4.4.1	Efficient treatment for Hepatitis B infection.....	64
4.4.2	Regular exercise and eating healthy food as a mean of preventing Hepatitis B infection	65
4.4.3	Summary of Responses of HCWs towards Perception of HBV infection	66
4.5	Association between demographic characteristics and KAP	67
CHAPTER FIVE		
5.0	SUMMARY, CONCLUSION AND RECOMMENDATION	69-71
5.1	Summary	69
5.1.1	Overview of the Study.....	69
5.1.2	Key Findings	69
5.2	Conclusion.....	70
5.3	Recommendations	70
REFERENCES		72
APPENDIX.....		82
A: QUESTIONNAIRE		82

LIST OF TABLES

Table 1: Demographic information of respondents	44
Table 2: Number of people who have heard of Hepatitis B virus infection	45
Table 3: Child birth as means of contracting HB infection	47
Table 4: Sharing toothbrush with an infected person as a means people get HB infection	48
Table 5: Sharing spoons or bowls for food with infected person as means of get HB infection	49
Table 6: Knowledge of Hepatitis B constitutional signs	51
Table 7: Knowledge on asymptomatic HB infected person and the spread hepatitis B ...	52
Table 8: Knowledge on HB infection and liver cancer.....	53
Table 9: Comparing Hepatitis B virus and HIV infectivity	54
Table 10: Summary of Responses to HBV Infection Knowledge Questions	56
Table 11: Number of people who have heard of Hepatitis B virus infection	57
Table 12: Healthy people and the need for vaccination.....	58
Table 13: Willingness to be vaccinated against hepatitis B.....	59
Table 14: Number of people who have ever received a hepatitis B vaccine	60
Table 15: Willingness to be tested for hepatitis B infection.....	61
Table 16: Willingness to eat, sleep or shake hands a person infected with hepatitis B....	62
Table 17: Summary of Responses to Attitude towards Hepatitis B Infection	63
Table 18: Efficient treatment of hepatitis B virus infection	64
Table 19: Summary of Responses of HCWs Perception towards Hepatitis B infection ..	67

LIST OF FIGURES

Figure 1: Sexual relationship as a mean of contracting HB infection	46
Figure 2: Shaking hands with infected person as a means of contracting HB infection ..	50
Figure 3: Regular exercise and eating healthy food as a mean of preventing Hepatitis B infection	66



LIST OF ABBREVIATIONS

CBD	Central Business District
CHB	Chronic Hepatitis B
CDC	Center for Disease Control
CBC	Complete Blood Count
EPI	Expanded Program of Immunization
GAMA	Greater Accra Metropolitan Area
HB	Hepatitis B
HCW	Health Care Worker
HBV	Hepatitis B Virus
HBsAg	Hepatitis B Surface Antigen
HCC	Hepato-cellular Carcinoma
HIV	Human Immunodeficiency Virus
GHS	Ghana Health Service
KAP	Knowledge, Attitude and Perception
MRI	Magnetic Resonance Imaging
NHIS	National Health Insurance Scheme
SPSS	Statistical Package for Social Science
TB	Tuberculosis
UBP	Universal Basic Precautions
WBG	World Bank Group
WHA	World Hepatitis Alliance
WHO	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

The World Health Organization (WHO) has stated that the prevalence of hepatitis B is highest in sub-Saharan Africa and East Asia, and they estimate that between 5–10 % of the adult population are chronically infected (WHO, 2016). Hepatitis B is an important occupational hazard for Healthcare workers, (WHO, 2016). In some studies, Healthcare workers (HCWs) have been shown to have an up to four-fold increased risk of acquiring Hepatitis B (HB) infection (Jha, Chadha, Bhalla, & Saini, 2012; Ziraba et. al., 2010). The main risk factor to contract HBV infection for HCWs is direct contact with infectious material, especially HBV-infected blood or via a needle stick injury with HBV-contaminated body fluids (Pellissier et. al., 2012). In particular, recapping of hollow-bore needles appears to increase the risk of needle stick injuries (Salehi, & Garner, 2010). Other studies have reported a lack of awareness of HBV among HCWs; consequently, proper precautions (e.g., use of disposable gloves) against blood-borne infections are lacking in these workers (Ansa, Udoma, Umoh, & Anah, 2002). This observation is consistent with other studies demonstrating that untrained individuals are more likely to be exposed to HBV infection (Ziraba et. al., 2010; Nasir et. al., 2000). The annual proportion of health-care workers exposed to blood-borne pathogens was 5.9% for HBV, corresponding to about 66,000 HBV infections in health-care workers worldwide (Jha, Chadha, S., Bhalla, & Saini, 2012). In developing regions, 40%-65% of HBV infections in health-care workers occurred due to per-cutaneous occupational exposure. In contrast,

the fraction of HBV was less than 10%, in developed regions, largely because of immunization and post-exposure prophylaxis (Jha, Chadha, Bhalla, & Saini, 2012).

Studies have shown that of the HCWs who sustained injuries from needles contaminated with blood containing HBV, the risk of developing clinical hepatitis is variable from 1-6% if source is HBeAg negative to 22-31% if source is HBeAg positive (Ziraba et. al., 2010; Pellissier et. al., 2012). Although most of the HBV infections in healthcare workers are attributed to per-cutaneous exposure, in many studies, most infected HCWs could not recall any overt per-cutaneous injury (Salehi, & Garner, 2010). In addition, HBV has been demonstrated to survive in dried blood, at room temperature, on environmental surfaces, for at least one week. Thus, HBV infections that occur in HCWs with no history of exposure might have resulted from direct or indirect blood or body fluid exposures that inoculated HBV into the mucosal surfaces or cutaneous scratches and other lesions (Ziraba et. al., 2010; Pellissier et. al., 2012). The potential for HBV transmission through contact with environmental surfaces has been demonstrated in investigations of HBV outbreaks among patients and staff of hemo-dialysis units (Ansa, Udoma, Umoh, & Anah, 2002; Nasir et. al., 2000). Blood contains the highest HBV titres of all body fluids and is the most important vehicle of transmission in the healthcare settings. HBsAg is also found in several other body fluids, including breast milk, bile, cerebrospinal fluid, feces, nasopharyngeal washings, saliva, semen, sweat, and synovial fluid. However, most body fluids are not efficient vehicles of transmission because they contain low quantities of infectious HBV, despite the presence of HBsAg (Salehi, & Garner, 2010).

Prevention against any disease is proportional to knowledge, attitude and practice (KAP) of the population and reflection of the importance that is paid to health related issue by

the society. Healthcare workers should familiarize themselves with “universal precautions”, which is defined by Center for Disease Control (CDC) as a set of precautions designed to prevent transmission of Human immunodeficiency virus (HIV), HBV, and other blood-borne pathogens when providing first aid or health care. Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV and other blood borne pathogens. In 1964, it became possible to identify people with HBV using serological testing by searching for hepatitis B surface antigen (HBsAg) (Weinbaum, Mast & Ward, 2009). HBV is unique compared to other sexually transmitted diseases, because it can be prevented with a vaccine (WHO, 2012). Vaccination gives long term protection from HBV infection, possibly life-long.

1.2 Statement of the Problem

Hepatitis B is considered an important occupational hazard for HCWs (WHO, 2016). Even though HCWs are expected to have adequate knowledge, if not better informed than the layman due to their field of practice, training and high illiteracy rate in the country, HCWs continue to get infected with HBV. This is alarming as they are expected to have been trained with the requisite knowledge as a safeguard against prevention of the virus. Also, the exact HBV prevalence in Ghana is not known as different studies targeted different segments of the population and collectively, do not provide a clear picture of the situation on the ground. Report by Ghana Health Service in 2009 indicated that there had been an increase in the prevalence ratio of HBV infection from 8:1 in 2005 to 6:1 in 2009 (GHS Annual Report, 2009) and despite increasing prevalence of HBV and health care workers (HCWs) being at high risk for HBV, there is inadequate information on knowledge, attitude and perception (KAP) of HCWs concerning HBV, especially in

developing countries like Ghana which affects the quality of care provided to patient and the welfare of the HCWs. It is in this regard that the 37 Military Hospital was chosen as the research site because it is one of the leading tertiary hospitals in greater Accra region of Ghana and also serves as a teaching hospital and UN Level IV Military Medical Facility in West Africa sub-region. While public attitudes towards patients with HBV could represent a social issue, the knowledge, attitudes and perception of HCWs towards HBV carries important implications for healthcare as adequate knowledge and positive attitude are important for optimum care of patients living with HBV as it would generate a feeling of comfort in providing care.

1.3 Purpose of the Study

The purpose of the study is to assess the knowledge, attitude and perception of healthcare workers on Hepatitis B infection in 37 Military Hospital.

1.3.1 Specific Objective

The specific objectives of the research are as follows;

1. To determine the knowledge level of Hepatitis B infection among HCW in 37 Military Hospital.
2. To explore the attitude of HCW in 37 Military Hospital towards Hepatitis B infection.
3. To examine the perception about Hepatitis B infection among HCW in 37 Military Hospital.
4. To determine the association between demographic characteristics and the KAP of HCWs in 37 Military Hospital.

1.4 Research Questions

The study sought to answer the following questions to achieve the goal and objectives of the research;

1. What is the knowledge level of Hepatitis B infection among HCW in 37 Military Hospital?
2. What is the attitude of HCW in 37 Military Hospital towards Hepatitis B infection?
3. What is the perception on Hepatitis B infection among HCW in 37 Military Hospital?
4. What is the association between demographic characteristics and the KAP of HCWs in 37 Military Hospital?

1.5 Significance of the Study

HCWs are regarded as a reliable source of information to the public since they are expected to have adequate knowledge, if not better informed than the layman due to their field of practice, training and illiteracy rate in the country. Testing their level of awareness is of the essence. Their responses can give a fair assessment of what the rest of the population knows about the disease. Assessing knowledge, attitude and perception (KAP) of HCWs can highlight the pre-requisite measures needed to be put in place in order to prevent or reduce risk of transmission among HCWs as well as give an approximate assessment of the knowledge of non - medical individuals. Also, healthcare providers, if better trained could play a pivotal role in the implementation of control and prevention programs of HBV in 37 Military Hospital and analogous hospitals in Ghana. In view of the factors and forces facilitating the spread of the disease globally, being

acquainted with the ground facts and figures while promoting positive attitudes and behaviors are of paramount importance in the fight against the spread of HBV.

Also, the research could be used as a mouthpiece to lobby for HBV immunization and treatment to be included under the current list of diseases being taken care of by the National Health Insurance Scheme (NHIS) or incorporate HBV screening and vaccination into the voluntary counseling and testing of HIV to be done concurrently for HCWs.

Results from this study will also provide information that can be used by the various health institutions to plan on how to strengthen the measures like educational programs on infectious diseases and curriculum development to reduce the burden of HBV infection and other infectious diseases among HCWs in Ghana.

1.6 Delimitations of the Study

There are several dimensions of HBV infection that call for investigation. However, this study focuses, among others, the knowledge or awareness of HBV infection, perception on HBV infection, attitude/ practices towards HBV infections, of HCWs about Hepatitis B infection in Greater Accra Region of Ghana particularly 37 Military Hospital, Accra.

1.7 Limitations of the Study

Within the study period, time constraints, and cost is an anticipated limitation. The study is also expected to have challenge with data collection due to recall bias or better still, incomplete responses. Lack of co-operation and willingness on the part of some respondents to provide answers to the questionnaire is an anticipated limitation. In addition, some respondents refused to provide information voluntarily based on personal reasons. Due to the above mentioned reasons, it would be difficult to get reliable data

from the respondent for the fact that some would not be sincere in answering the questionnaires.

1.8 Organization of the Chapters

The study is organized into five chapters. Chapter one: introduction; contains the background of the study, the problem statement, the purpose of the study, the objectives, significance of the study, hypothesis, and organization of the study.

Chapter two: literature review; contains related literature review of hepatitis B from other studies, textbooks, manuals, internet and publications on annual reports.

Chapter three: methodology; consists of research methods; including research design, population under study setting, sample size, sampling technique, instrumentation, validity and reliability, delimitation, analytical procedure, ethical consideration, and pretesting/pilot study.

Chapter four: results and discussion; contains the collected data which was analyzed and presented in raw tabular form and narrative summaries and entails the discussion of findings of the study with literature review.

Chapter five: conclusion and recommendation; contains conclusion drawn from the findings and subsequent recommendations made.

CHAPTER TWO

2.0 REVIEW OF RELATED LITERATURE

2.1 Hepatitis B Virus infection

Hepatitis simply means the inflammation of the liver which is mostly caused by a virus. There are many forms of hepatitis such as viral hepatitis A, B, C, D, E, F and G, Drug-induced hepatitis, Alcohol-induced hepatitis, etc. Hepatitis A and D are predominant in Europe, Middle East, Central Asia, Siberia and America. Hepatitis B and C are predominant in East Asia while E is common in Africa. Hepatitis F is also found in Central America and G in the United States and France (Dongdem et al., 2012).

However, the most dangerous and fast killing among them is the hepatitis B viral (HBV) infection originally called serum hepatitis (WHO, 2015). Hepatitis B infection is caused by the hepatitis B virus (HBV), an enveloped DNA virus that infects the liver cells causing hepatocellular necrosis and inflammation. HBV infection can be either acute or chronic with the associated illness ranging in severity from asymptomatic to symptomatic progressive disease. Chronic hepatitis B (CHB) is defined as persistence of hepatitis B surface antigen (HBsAg) for six months or more (Alexopoulou & Karayiannis, 2014).

2.2 Global epidemiology of Hepatitis B.

The threat posed by the global HBV epidemic continues to assume alarming proportions in areas of public health and national development. Globally, two billion people have been infected with HBV at some point in time in their life time and 360 to 400 million people which represents more than 5% of the world's population are chronic carriers with an estimated 600,000 deaths each year due to consequences of HBV (WHO, 2012). It is estimated to be the tenth cause of deaths worldwide (WHO, 2008). Hepatitis B virus

mostly affects the liver and can cause liver cancer. The disease is 50 to 100 times more infectious than the deadly human immunodeficiency virus (HIV) and can remain on part of the body for close to seven days (Hepatitis Foundation International, 2006).

The incidence of acute hepatitis B varies greatly from country to country as a result of insufficient reliable data and also, comparisons between countries is often difficult due to different reporting systems with limited quality (Grob, 1995). The WHO has therefore demarcated the world according to chronic hepatitis B prevalence into three major blocks which include high, intermediate and low prevalence. High prevalence areas have a prevalence of chronic hepatitis B infection that is equal to or greater than eight (8%) made up of countries from North America, South America, Sub-Saharan Africa and most Asian countries. Intermediate prevalence areas have a prevalence rate which ranges between 2% and 7% and include countries from South America, North Africa, Western Europe, Eastern Europe and the Indian subcontinent. Low prevalence areas are estimated to have a prevalence of chronic infection less than (2%) which includes most of the North American countries, Australia and most of Western Europe including the United Kingdom.

The World Health Organization has targeted hepatitis B as one of eight infectious diseases that should be controlled through vaccination efforts. For the purpose of propagating this agenda the WHO in 1991 instructed all countries to incorporate hepatitis B vaccination into their national vaccination programs. But as at 2006, only 164 countries have acted according to the directive with most countries coming from East and South East Asia, the Pacific, Islands, Australia, Western Europe and the Middle East (WHO, 2006). Despite the fact that since 1982 there is a vaccine against HBV that gives 90-100%

protection against the infection, there are in the world today more than 350 million people living with chronic hepatitis B. The consequence of this is approximately 600 000 HBV related deaths every year around the world, where the cause is primary liver cirrhosis or liver cancer (Diederik et al., 2006; WHO, 2012).

Knowledge of region- and age-specific prevalence of hepatitis B infection is important for evaluating vaccination programs and national disease prevention and control efforts. Furthermore, any modeling and assessment of the disease burden associated with the hepatitis B virus (HBV) requires prevalence estimates. So far, global studies on HBV seroprevalence are limited and comprehensive data are not available for many countries. In addition, demographic changes and expanded vaccination can create new epidemiological patterns of the virus which impact on region-specific endemicity levels. HBV is spread predominantly by per cutaneous or mucosal exposure to infected blood and other body fluids with numerous forms of human transmission. The fatality of these diseases as well as their attribution to hepatitis infection is well known: 600,000 HBV-related deaths were estimated to occur annually (Goldstein et al., 2005) and 73% of all liver cancer deaths worldwide are due to hepatitis viruses, with much higher proportions in low and middle income countries (Ott et al., 2011).

Standardized monitoring would help not only in quantifying the disease burden on a population level but also in determining the characteristics of infected individuals, avoiding further transmission and allocating appropriate treatment. This is particularly important for populous countries that have been previously categorized as highly endemic for chronic hepatitis B infection such as China, Indonesia, Nigeria as part of Africa and Asia, where an immense absolute number of people live with the virus

(Goldstein et al., 2005) and HBsAg (Shepard et al., 2006). However, up to date region-specific and globally comparable chronic HBV prevalence data are lacking and no relevant meta-analysis has been published on this topic (WHO, 2012). In addition, the absolute number of individuals being chronically infected with HBV is not known.

2.3 Hepatitis B epidemiology in Africa

Africa, the second largest continent in the world covers 3,030,000 km² of land i.e. one fifth of the global land area. Despite the fact that it is sparsely populated with estimated 800 million inhabitants, it accounts for 12% of the world's population. Although, the high prevalence of infectious HBV has been well documented worldwide in well-equipped correctional facilities, such information on the exact prevalence of the deadly disease has been so sparse in Africa. This could be attributed to under reporting and ineffective data collection strategies in the continent.

However, from the few data available, it is estimated that out of the 360 million chronic global carriers of HBV, about 65 million of these chronic carriers live in Africa (WHO, 2004). After Asia, Africa has the second largest number of individuals with chronic HBV infection, approaching 58 million (Kiire, 1990). Although overall Africa is considered a high endemic area with 7–26% prevalence of HBsAg, Tunisia, Morocco, and Zambia have intermediate endemicity (Andre, 2000). In some countries in western Africa, e.g., Senegal and Gambia, over 90% of the population are exposed to and become infected with HBV during their lives (Edmunds et al., 1996). Because of high HBV endemicity, Gambia was the first country in Africa to implement a mass infant immunization program in 1990, and demonstrated a reduced HBV burden in children, with HBsAg prevalence decreasing from 10.0 to 0.6% (Montesana et al., 2002). In contrast to Asia, where

mother-to-infant transmission is an important route, horizontal transmission in early life is considered to be the predominant mode of transmission in most parts of sub-Saharan Africa (Edmunds, Medley & Nokes, 1998).

In rural areas of West Africa, HBV infection rates increase rapidly from the age of 6 months, and by the age of 2 years, 40% of children are infected and 15% develop chronic infection. By the age of 10 years, 90% of children become infected and 20% are chronic carriers (Kiire, 1996).

2.4 Hepatitis B virus infection epidemiology in Ghana

The exact hepatitis B prevalence in Ghana is not known as different studies targeted different segments of the population and does not give a clear picture of the situation on the ground. Although there is a relatively low prevalence of HIV with an estimated number of 260,000 carriers as compared to an estimated number of four million carriers of HBV, much of the attention of Ghana Health Service and other health related organizations is focused on HIV prevention and treatment through health education programs and provision of anti-retroviral drugs to the neglect of equally deadly diseases like hepatitis B infection. Meanwhile, few studies conducted in the country about HBV revealed its continuous increase. In a hospital-based study conducted among blood donors it was revealed that HBV is endemic in the country with prevalence rates ranging from 6.4% to 10% among blood donors, 6.4% among pregnant women and 16% for children among the general population (Malik et al., 2000).

Another hospital-based study conducted in two different hospitals in Jirapa and Tumu in the Upper West Region of Ghana by a Cuban Medical Brigade has shown that in 2009, 128 admitted patients were tested HBV positive and that majority of the cases were

between the ages of 30-44 years (GHS, 2009). In a cross-sectional study of children aged 15 years and younger in the rural Ashanti-Akim North district of Ghana, Martinson et al., (1998) estimated the HBV prevalence at 5.4%. A hospital-based study of pregnant women in Accra the capital of Ghana, estimated the prevalence at 2.5% (Lassey et al., 2004). Malik et al., (2000) performed a cross-sectional study of prison inmates in two regional central prisons in Ghana and found that the HBV prevalence was 19%.

Prisoners have been found to be part of the high-risk groups of hepatitis prevalence in Ghana. The congested nature of most prisons in the country coupled with the fact that prison inmates are not usually screened before serving their prison sentence exposes them to HBV infection.

Unpublished data on causes of deaths in Ghana's premier hospital, Korle Bu Teaching Hospital, over a 20-year period (1980-2000) from the Department of Pathology revealed that the commonest cause of liver diseases leading to death at autopsy in Ghana was cirrhosis of the liver. Although statistics from the Ghana Health Service mentioned liver cirrhosis as the major cause of all liver related deaths in Ghana, there have been very few studies of the possible role of hepatitis B and other possible risk factors that account for the deadly epidemic in the country. This is a clear manifestation that hepatitis B related causes of liver cirrhosis are relegated to the background and not much documentation on it. The HBV prevalence rates for studies published within the period of 2003-2009 ranged from 10.5 to 22.1 %. The pooled prevalence rate across the studies published within the period was 14.7 %. For 18 studies published within the last 5 years (2010–2015), the HBV prevalence ranged from 3.6 to 16.8 % (Ali -Abdulai et al., 2016). The pooled prevalence rate across the studies published within the period was 10.2%. Such

comparative information further highlights the enormity of the HBV burden in Ghana. Studies also raise serious concerns regarding the safety of blood supply in Ghana as nearly 1 in 9 blood donors may be infected with HBV with even higher proportions in replacement blood donors. Ghana has a national blood policy which requires the screening of all donated blood for HIV 1 and 2, HBV, Hepatitis C and Syphilis (WHO, 2006). Findings from studies highlight the need for stricter adherence to such policies as the risk of receiving contaminated blood, which in this is HBV remains high. Additionally, HBV infection among pregnant women also remains high (≈ 1 in 8) and which justifies the establishment of a national HBV screening program for all pregnant women in antenatal clinics throughout Ghana.

Additionally, a national policy to vaccinate all pregnant women who test negative for HBV should be adopted so as to reduce the risk of mother to child transmission within the population (Ephraim et al., 2015). A number of factors may account for the observed high HBV prevalence in Ghana. This includes lack of adequate information and understanding among Ghanaians of the transmission dynamics of the virus. For instance, in an assessment of 200 barber shops within the Kumasi metropolis, only 7 % knew the route of transmission of HBV (Mutocheluh & Kwateng, 2015). Akumiah and Sarfo, (2015) further pointed out that, the barber community in Ghana paid more attention to the decoration (e.g. availability of television, air conditioning, sound system etc.) other than the risk factors associated with their profession in the transmission of diseases such as HBV. Although, the 3 main transmission routes of HBV in Ghana are transfusion of infected blood, unprotected sex and mother to child transmission, and most Ghanaians with chronic hepatitis B were infected at birth or in childhood, HBV has often been

framed as a sexually transmitted infection in many communities and even among health workers (Owusu- Ansah, 2014). Stigmatization arising from such misconceptions has many times prevented patients from finding their way to proper care and subsequently reducing their infectivity rate.

There are three (3) key components to controlling hepatitis B. These include treating infected persons, interrupting the spread of the infection transmission and reducing the mortality associated with advanced hepatic disease and HCC (Lesi, 2015). A vaccine against hepatitis B has been available since 1982. The vaccine is safe and 95 % effective in preventing infection and the development of chronic disease and HCC due hepatitis B (WHO, 2015). For instance, in Senegal, vaccinations have reduced infection rates among children from 18.7 to 2.2 %, whereas in Gambia, it has led to a reduction in infection rate from 10 % to less than 1 % (Vildosola, 2000). Ghana introduced Hepatitis B vaccination of babies as part of the Expanded Programme of Immunization (EPI) in 2002 (Owusu- Ansah, 2014). Babies from 6 weeks onwards receive the pentavalent vaccine (diphtheria, polio, tetanus, hepatitis B, influenza type B). The coverage of EPI is good in all regions of the country and among the highest in Sub-Saharan Africa (Menaca, 2014). The introduction of the HBV vaccine in 2002 might have contributed to the lowering of prevalence rates as studies published in the post vaccine introduction periods 2003–2015 recorded lower HBV prevalence rates than the pre-vaccine introduction period (1995–2002).

On the other hand, although, Ghana's National Health Insurance Scheme (NHIS) introduced in 2003, aims to improve access to health services by eliminating financial barriers (particularly out of pocket payments), hepatitis B screening and vaccination in

Ghana outside EPI are still not covered under the scheme. Screenings are only covered and prescribed at hospitals for patients suspected to be reactive to hepatitis B and/or C. Hepatitis B immunoglobulin G and hepatitis B monovalent vaccine for babies born to hepatitis B reactive mothers are also not covered by the NHIS [World hepatitis alliance (WHA, 2013)]. These may have all hampered effective control of the disease over the last couple of years. Epidemiological studies have demonstrated that rapid urbanization, overpopulated cities and poor socioeconomic conditions such as lack of access to clean water and sanitation are implicated in the burden of HBV (WHO, 2015). The World Banknotes that over the last 2 decades, there has been a steady increase in the proportion of Ghanaians with access to portable water with current rates exceeding 88 % (World Bank Group; WBG, 2015). Nevertheless, less than 15 % of Ghanaians have access to proper sanitation (UNICEF, 2013).

Martinson et al. (1996) has demonstrated that the improvement of socioeconomic conditions may lead to a decreasing exposure to viral hepatitis such as HBV in Ghana. Hence, the apparent reported lower prevalence rate within the period 2003–2015, may have been due to the combined effect of vaccine introduction and improvement in some socioeconomic conditions. Better socioeconomic improvement and vaccination coverage in urban areas compared to rural areas may underline the difference in HBV prevalence rates difference between these two settings. However, it is unclear the extent to which factors such as vaccination and socioeconomic conditions have played in the slight regional variations in HBV prevalence across the country.

Although, there exist significant gaps in the evidence documenting the burden of HBV on individuals, the healthcare system and the country as a whole, the cost associated with

HBV in Ghana can be enormous because of the high morbidity and mortality associated with end stage liver disease, cirrhosis and HCC. Blankson et al. (2005) identified that over 2 in 5 cirrhotic patients in Ghana had chronic HBV. The cost of oral treatment for HBV in Ghana is about GHC 300-400 (USD100-150) a month or the same amount weekly to take an injection for 48 weeks as a way of managing the condition (Myjoyonline, 2011). This cost is enormous and one that majority of Ghanaians cannot afford. Even if this was to be publicly funded, the impact on health expenditure would be significant. Moreover, as it affects people between ages 16–39 years covering some of the most productive age groups, thus the economic impact of HBV in Ghana through loss of life and absenteeism from work cannot be underestimated.

Addressing Ghana's high HBV prevalence should remain a key national priority and one that needs strategic public health interventions. In 2014, the World Health Assembly (WHA) adopted the second WHO resolution on viral hepatitis thus, providing guidance to governments on how to prioritize actions to tackle all forms of viral hepatitis in a coordinated manner (WHO, 2014). Subsequently, the recently released WHO guidelines on the management of chronic hepatitis B, highlights the importance of adopting a simplified public health approach to controlling the virus (WHO, 2015). The key highlights of this guideline include developing publicly-funded screening and treatment programmes and providing universal access to hepatitis B prevention, care and treatment. Scaling up this programme in Ghana will have two main benefits. Firstly, it will expand access to the general population. And secondly, it will strengthen the diagnostic services and laboratory infrastructure to support care. In line with this, Hepatitis B vaccination should be covered by the NHIS, preferably for every citizen. If this is not achievable

owing to resource limitations, it should be made available at least to all family members/close contacts of persons with hepatitis B in efforts to reduce horizontal transmission of the disease.

Effectively tackling HBV burden calls for a stronger political will and a wider social involvement; the aim will be to solidify the inclusion of HBV prevention in the overall national health agenda and salvage the needed resources to execute the necessary interventions. Lemoine et al. (2015) makes interesting reference to lessons learnt from the HIV/AIDS epidemic and advocates that, the same energy and mobilization must be applied to fighting viral hepatitis such as HBV (Lemoine et al., 2015). Within the HIV/AIDS domain, pressure from patient advocacy groups and civil societies for instance “pushed” policy makers and drug manufacturers to lower the cost of antiretroviral therapy (ARTs) to the current level of around USD100 per person per year from about \$10,000 per patient per year in the early 2000s (Lemoine et al., 2015). This has subsequently had tremendous impact on the number of individuals receiving ART. Also integrating viral hepatitis programmes into the existing national health programs like Tuberculosis (TB) or HIV may allow shared synergies in terms of the programme’s success and limit its cost (Lesi, 2015).

In view of the above-mentioned factors and forces facilitating the spread of the disease worldwide, being knowledgeable about the facts and figures on the ground and having positive attitudes and behaviours are paramount in the fight against the spread of the global epidemic.

2.5 Transmission of HBV infection

The transmission of HBV is predominantly by per-cutaneous or mucosal exposure to infected blood and various body fluids including saliva, menstrual, vaginal, and seminal fluid, which have all been implicated as vehicles of human transmission. Sexual transmission of hepatitis B may occur particularly in unvaccinated men who have sex with men and heterosexual persons with multiple sex partners or contact with sex workers. Infection in adulthood leads to chronic hepatitis in less than 5% of cases (Olawumi et al., 2014).

Hepatitis B viral infection (HBV) is one of the highly rated endemic blood borne diseases that can easily be transmitted through cross infection among HCW'S in our various health facilities (Ziraba et al., 2010). The transmission rate for HBV infection was estimated in a study by Bhattarai et al. (2014) to be (32-67) % per each exposure in the ward. The HCWs activities in the various wards are closely related to patient blood and body fluids. For instance: non-sterile exposures like needle-pricks, sharp related injuries, torn gloves during a procedure, splashes from body fluids to the eyes and mucus membranes. According to Bhattarai et al. (2014), medical and dental students start their hands on training during internship whilst that of the nursing students start right from beginning of the course making them more vulnerable to the HBV infection. It was also realized that student nurses do not adhere to the common standard protocols during clinical schedules either due to lack of knowledge or no available resources to practice or due to inexperience (Ziraba et al., 2010). Assessment of the risk factors in a study indicates that the transmission rate of HBV was between (37% - 62%) per each exposure in the ward. This indicates that the transmission rate for the HBV is very high among the other possible infectious diseases in any clinical setting (Bhattarai et al., 2014).

Transmission of the virus may also result from accidental inoculation of minute amounts of blood or fluid during medical, surgical and dental procedures, or from needles, razors and similar sharp objects contaminated with infected blood. Intravenous and percutaneous drug abuse like tattooing, body piercing and acupuncture cannot be left out of the vehicles of transmission. A large proportion of viraemic mothers especially those who are seropositive for HBsAg transmit the infection to their infants at the time of, or shortly after birth (Pirillo et al., 2015). Coupled with these exposures, majority do not vaccinate against HBV before starting their clinical practice.

2.6 Signs and Symptoms of HBV Infection

HBV infection patients can have either an acute symptomatic disease or an asymptomatic disease depending on the stage of the disease. Thus either acute, icteric, chronic or the end stage of the disease. Icteric hepatitis is associated with a prodromal period during which a serum sickness-like syndrome can occur. The symptomatology is more constitutional and includes the following; anorexia, nausea, vomiting, low-grade fever, myalgia, fatigability, disordered gustatory acuity and smell sensations (aversion to food and cigarettes), right upper quadrant and epigastric pain (intermittent, mild to moderate).

2.7 Diagnosis of HBV infection

Some of the physical examinations used to confirm HBV infection are as follows; low-grade fever, jaundice (10 days after appearance of constitutional symptomatology; lasts 1-3 months), hepatomegaly (mildly enlarged, soft liver), splenomegaly (5-15%), palmar erythema (rarely) and spider nevi (rarely) (Nkrumah, Owusu, & Averu, 2011). Those with chronic infection presents hepatomegaly, splenomegaly, muscle wasting, palmar erythema, spider angiomas and vasculitis (rarely) whilst those with cirrhosis of the liver

presents ascites, jaundice, history of variceal bleeding, peripheral edema, gynecomastia, testicular atrophy and abdominal collateral veins (caput medusa).

The following laboratory tests may be used to assess various stages of hepatitis B disease by WHO, 2015:

- Liver function test
- Hematologic and coagulation studies (platelet count, complete blood count [CBC], international normalized ratio)
- Ammonia levels
- Erythrocyte sedimentation rate
- Serologic tests

The above-mentioned serologic tests should include the following laboratory studies in order to confirm the HBV infection in an individual: Hepatitis B profile and Viral load

The following radiologic studies may be used to evaluate patients with hepatitis B disease; abdominal ultrasonography, abdominal computed tomography (CT) scanning and abdominal magnetic resonance imaging (MRI).

2.8 Procedures done for HBV infectious patients

Liver biopsy, percutaneous or laparoscopic is the standard procedure to assess the severity of disease in patients with features of chronic active liver disease (thus abnormal aminotransferase levels and detectable levels of HBV DNA).

2.9 Prevention and Treatment

Vaccination is always encouraged in individuals who test negative to the disease and some prophylaxis given to HBV positive pregnant women in the health facilities to prevent mother to child transmission of the disease (WHO, 2015). For those with the

disease, the primary treatment goal is to prevent progression of the disease particularly to cirrhosis, liver failure, or hepatocellular carcinoma. Pegylated interferon alfa (PEG-IFN-a), entecavir, and tenofovir disoproxil fumarate are the first-line agents in the treatment of hepatitis B disease. Others include; nucleos(t)ide reverse transcriptase inhibitors (tenofovir disoproxil fumarate, lamivudine) and hepatitis B agents (adefovir dipivoxil, entecavir, telbivudine, PEG-IFN-a 2a and interferon alfa-2b) (WHO, 2015).

Available treatment for HBV infection does not provide a complete cure which makes the preventive method much important to every nation especially among health workers and students (Ziraba et al, 2010). The vaccine for HBV has been there since 1982 with about 95% efficacy rate but the patronage by the health workers has not been encouraging especially among health students (Mengal et al., 2008). It can be due to government lack of policy initiatives to tackle the issue or due to inadequate information on the prevention of the disease among health care workers.

2.10 Preventive measures for HBV infection

A study conducted by Coppola et al., (2015) on medical students from Second University of Naples Italy found that universal HBV vaccination was more effective in generating a prolonged protective response in subjects vaccinated at adolescence than in infancy. Students who were vaccinated at infancy could be vaccinated later as it was more protective in adolescent than infancy (Coppola et al., 2015).

A study was done to determine the prevalence and factors relating to the acceptance of hepatitis B virus (HBV) vaccination in a tertiary hospital in Pakistan among 210 nursing students in second and fourth year. The prevalence of the acceptance for HBV vaccination among them was 75.0% but 37.2% completed the vaccination and 25.0% had

not been vaccinated at all. More than half of the unvaccinated nursing students were willing to be vaccinated if it was offered to them for free. Three variables were significantly related to acceptance of HBV infection vaccination; history of accidental exposure to blood or blood products, acceptable knowledge about HBV infection, and adequate budget for HBV vaccination (Mengal et al., 2008).

A cross sectional institutional study was conducted among 250 first year students of medical, dental and nursing colleges of Subharti University to assess their knowledge level of HBV infection. 83.32% of the study students had heard of the disease and only 42% knew that virus is the cause of hepatitis B. Unsafe blood transfusion as a risk factor of hepatitis B was known by 35.2% but their knowledge regarding reused needles and unsafe sex as risk factors was lesser. 44% of them were not aware of vaccination against hepatitis B. There was a significant difference in the proportion of students of the different faculties about the correct knowledge about HBV infection (Maroof, Bansal, Parashar, & Sartaj, 2012).

2.11 Knowledge on hepatitis B infection

Knowledge is formed through interaction with the surroundings where individuals themselves construct their understanding of the world through experience. Its exchange is an integral part of learning as well as helping the individual to shape his or her abilities by converting theoretical and practical skills into new knowledge. Human knowledge is mostly acquired through communication and its processes. Knowledge is the key to prevention and education is the key to knowledge. However, knowledge about the deadly disease in 37 Military Hospital is average.

An interaction with some HCWs in the hospital shows that, many HCWs have average or little knowledge or understanding of the importance of their liver which plays a major role in the maintenance of good health. This low or average knowledge or awareness is not only limited to hepatitis B but also their overall well-being in terms of health.

There are a lot of factors impeding efforts put up by established institutions like WHO and otherworld organizations to curb the menace of hepatitis B globally. Notably among these is the lack of knowledge and awareness among health care providers, social service professionals, young adults, members of the public and even policy makers (WHO, 2006).

It is an established fact that though there has been a safe and effective vaccine for hepatitis B over the past 20 years, universal vaccination is still lacking in many countries including Ghana. One of the major obstacles identified for this drawback is the lack of commitment to preventive medicine and vaccines. Due to the apparent lack of knowledge about hepatitis B, most governments which are supposed to be the major financiers of public health activities have seriously not considered hepatitis B prevention as a topmost priority in health care and have opted for selective prevention strategies. Most interventions aimed at reducing HBV prevalence among high risks groups have failed because of the inability to access these groups. There is also lack of perceived risk among these high risk groups and over 30% of those with acute hepatitis B infection do not have identifiable risk factors (Mangtani, 1995).

Lack of knowledge on hepatitis B virus infection makes the condition a serious health issue which needs greater attention. A patient knowledge about the signs and symptoms could prompt early care seeking. Similarly, a person's knowledge about the mode of

transmission and methods of prevention would have helped people to take measures to protect themselves and others from contracting the disease.

Burnett et al, (2007) examined the knowledge on HBV and liver cancer among 256 Vietnamese Americans with low socioeconomic status. The results showed that the participants had general knowledge of HBV, but only 22% knew that HBV could spread through unprotected sex. Many did not know that liver cancer is preventable or that it is curable. Only a third of the participants knew about the vaccine that protects against HBV. An average knowledge was confirmed by Morrow et al., (2012) where the knowledge level about HBV infection was investigated among 433 Vietnamese men in Australia. About half of the respondents knew that HBV could spread by unprotected sex. Only 32% of them knew that sharing food and drink with an infected person is not a risk factor for being infected with HBV. Knowledge about the progression and character of the disease was higher. Approximately 60% knew that long-time infection still can transmit the disease, be asymptomatic and that treatment is available. Less than half of the respondents knew that it could turn into a lifelong disease.

A study was carried out in China (Chao et al., 2010) to investigate the knowledge about HBV among 250 health professionals by handing out a questionnaire at the “China national conference on the prevention and control of viral hepatitis”. The results showed that even among highly educated health professionals the knowledge on the disease was deficient. One-third of the respondents did not know that it is common for chronic HBV infection to be asymptomatic or that it can lead to liver cancer, liver cirrhosis and premature death. The authors believe that this increases the risk of health professionals

overlooking the significance of screening even those who are asymptomatic, and vaccinating those who need it.

Mohamed et al. (2012) also found that factors associated with greater knowledge about HBV are high educational level or employment in professional jobs. Study by Taylor et al. (2005) investigated knowledge and awareness of hepatitis B among randomly selected Vietnamese adults living in the United States. About 81% of the 715 adults that participated in the study had heard of hepatitis B and 67% had been tested for HBV. The knowledge of the infection was generally good, with about three-quarters knowing the different ways of transmission but only 69% knew about infection through unprotected sex.

Hwang, Huang and Yi (2010) investigated knowledge about HBV and predictors of HBV vaccination among 251 Vietnamese American college students. More than half of the participants were aware that HBV could be transmitted via unprotected sex and contaminated blood; though most of the participants' thought that HBV was transmitted through food and water. Less than one third knew that Asian Americans have higher risk of being infected with HBV than other people. About 87% had heard about HBV before and they had significantly greater knowledge compared to those who had not heard about the disease. The knowledge was also greater among those who had been screened for, or vaccinated against HBV, or had family members diagnosed with HBV or liver cancer. The study also indicated that women had greater knowledge about HBV compared to men. About 43% of the participants reported being vaccinated against HBV and they had greater knowledge than those who had not been vaccinated. Older participants or

participants who were sexually active and/or knew someone with HBV were less likely to have been vaccinated.

A study conducted by Boakye, (2014) on Assessing Knowledge Attitude and Perception of hepatitis B among senior high students in Dunkwa-on-offin Ghana, revealed high level of knowledge on the disease. A look at the knowledge about Hepatitis B Virus infection among the students revealed that majority of the students answered 7 out of 11 questions on knowledge correctly. This indicates a high level of knowledge among the students. It was also revealed that majority of the respondents (92%) had heard of HBV infection. Majority of the respondents (53.6%) answered correctly that HBV could not be inherited. However, Only 20% of respondents knew HBV could be sexually transmitted.

Less than half of the respondents (41%) knew correctly that HBV could be transmitted during childbirth. More than half (58%) of the respondents were right that HBV cannot be transmitted by sharing food with an infected person or eating food that has been prepared by an infected person. A majority of the respondents (81.1%) were also right that people could get HBV by eating food that has been pre chewed by an infected person, and 70% knew that HBV could be transmitted by sharing a toothbrush with an infected person. About 85% of respondents knew that holding hands with an infected person could not transmit HBV. Most of them (75%) knew infected person can have signs or symptoms like jaundice, bodily weakness, right sided abdominal pains, fever and loss of appetite. Majority of respondents (84%) knew that even asymptomatic HBV infected persons could transmit the disease.

A study by Afihene et al. (2015) on knowledge attitude and perception of hepatitis B among healthcare workers in Sunteresu Government hospital revealed generally good

knowledge about the condition as most of the respondents (90%) answering correctly the questions related to knowledge.

2.12 Attitude and practices towards hepatitis B infection

Atkinson et al. (2003) defined attitude as the favorable or unfavorable reaction to objects, people, situations or other aspects of the world. Other social psychologists considered attitudes to include factors such as cognition, affection and behavior (Kruglanski et al., 2007). They further explained the cognition aspect of a person to mean a person's knowledge of something, the affective component represents an individual's feelings and evaluations that influence the standpoint for or against something and the behavioral aspect to be, the way people act towards a situation or a person and the motivation to make changes. Attitudes as suggested by psychologist are formed through experiences in lifetime and are usually determined by beliefs and the evaluation of such beliefs. Attitudes formed by individuals in society can be comprehensive as well as unspecific. Fishbein et al. (1975) indicated that comprehensive attitudes are more stable and are usually strongly held by the owners therefore, very difficult if not impossible to be influenced as compared to unspecific attitudes. A person's behavior can be predicted by using the strength and consistency of his or her attitude. In this regard, any intervention that is aimed at changing the behavior of an individual must first of all have enough information about his or her attitudes and then employ methods that will help change these attitudes. Attitudes of which one is aware of or that are based on one's own experience can predict behavior to a higher degree than attitudes that do not meet these criteria (Smith et al, 2003).

Smith et al. (2003) indicated those possible factors that could help influence the attitudes of an individual include, the nature of the sender (e.g. the nurse, doctor, health worker or professional in a counseling situation), the receiver (e.g. the patient), the message itself and the social context in which the information was communicated. Trustworthiness, expertise and interpersonal attraction are important signs that should be exhibited by the sender in order to influence a person's attitude. It is important to state that for a sender to be able to make an impact on the attitude of a receiver factors such as sex, age, self-esteem and knowledge have an important role to play.

Knowledge does not necessarily influence a person's attitude. People may be knowledgeable about a particular risk behavior but may still go ahead to do it. Knowledge about hepatitis B is necessary but the provision of knowledge alone is not sufficient since it does not necessarily lead to the behavior change. Attitudes, values and beliefs (including perceptions about personal vulnerability to infection) as well as cultural norms and the influence of family, peers and the media are all important determinants of whether or not appropriate behavior is adopted by a person (Emmons et al., 1986). Another important motivation for a behavior change among young adults or anybody at risk of a health situation is the feeling of compassion for those already affected. This is backed by the fact that stigmatization of disease is often a sign of denial of potential personal risk (Parker and Aggleton, 2003).

A report from the USA on Health Care Worker's attitudes towards vaccination against hepatitis B found that they were reluctant to be vaccinated, as they fear plasma-derived vaccine as it contains attenuated Hepatitis B virus (Zanetti et al., 2008). However many studies have found a positive correlation between increased knowledge and uptake of

HBV vaccination. For example, studies in Nigeria, Spain, and Taiwan found that most vaccinated nurses and dental students acquired knowledge of HBV from their nursing degree and from working in high-risk areas that expose them to HBV (Hu et al., 2004).

Contrary to these findings, a study conducted in the UK on nurses' reports that, nurses did not finish their vaccination schedule despite having studied a course on vaccination, and midwives who were not immunized showed lack of awareness of the existence of the vaccine (Lee, 2009).

In a study conducted in Saudi Arabia, low immunization uptake was identified among dental staff despite their knowledge and availability of the vaccine (Goldstein et al., 2006). In Slonim et al. (2005) study, carried out in the U.S., 96 adolescents were individually interviewed and 17063 adolescents and young adults filled in a questionnaire. The participants were European-Americans, African-Americans, multiracial, Native Americans, Asian and Pacific Islanders, and other races.

The study showed that the most common barrier to hepatitis B vaccine acceptance was that the adolescents did not like getting shots (94%) and time-related barriers (50%), as they had to comeback two more times to the clinic to get the remaining doses of vaccine. Almost two-thirds of the adolescents that were interviewed could not provide any correct information before their clinic visit about hepatitis B.

In a study (Nguyen et al., 2010) carried out in the U.S. among Vietnamese-Americans, 1704 respondents participated in a computer-assisted telephone interviewing survey. The interviews included questions about knowledge, beliefs and communication regarding HBV testing. The study showed that 17.7% reported a family history of hepatitis B and 61.6% had been tested for hepatitis B. Only 26.5% reported that they had been vaccinated

against HBV, which was disappointingly low. Studies conducted in Iran and Egypt found high uptake of free vaccine among young surgeons (Yayehyirad et al., 2009; Zanetti et al., 2008). In Sweden despite the availability of free vaccine, seventy six (76%) percent of HCWs were not vaccinated, they either forgot or never made appointment for vaccination (Dannetun et al., 2006).

A study by Boakye (2014), on knowledge attitude and perceptions of student also revealed that, most of the students had a good attitude towards Hepatitis B virus infection. They indicated that healthy people need vaccination against HBV, and thought that people of their own age need vaccination. Students were also willing to be tested for Hepatitis B Virus infection. Despite the good attitude of the students towards HBV infection, only few of them had ever been vaccinated against the disease, which was disappointingly low. The main reasons stated for the non-patronize of HBV vaccination was that, they believe they were not at risk for getting Hepatitis B Virus, Hepatitis B vaccine cost too much, and they do not believe in the Hepatitis B vaccine.

2.13 Perception towards hepatitis B infection

In a study made in Singapore (Tan et al., 2005) the authors looked into the health-seeking behaviours of those infected with HBV by interviewing 39 HBV infected individuals. Those who had a family member that had had HBV-related liver disease or had liver abnormality themselves were more likely to seek help. They wanted to know if their own livers were functioning normally, but were at the same time reluctant to find out the results of a test, in fear of it. The authors concluded that the low compliance to follow-up among the patients was partly due to a widespread perception that there was no efficient treatment to the disease. Many patients preferred traditional medication such as herbs

instead of western medication, which was perceived not to be as effective as the herbal medicine (Tan et al., 2005).

In a study by Mohamed et al. (2012) on knowledge, attitudes and practices among 483 chronically HBV infected people in Malaysia was investigated. The study showed that more than half of the participants felt worried about the diagnosis and felt anxious about spreading the HBV infection to family and friends. A third of the participants felt embarrassed to make their diagnosis public. About 11.6% reported that they would not tell their doctor or dentist about being HBV positive, while most of them would tell their family and friends. Many of the participants had changed their life-style habits after receiving the HBV diagnosis. A majority of those who had smoked and drunk alcohol reduced their intake-level and about half of the participants made healthier food choices and increased their daily exercise level. A large interest about encouraging family members to be screened for HBV was also noticed after receiving the HBV diagnosis (Mohamed et al., 2012).

In a study by Boakye, (2014) on Assessing Knowledge Attitude and Perception of hepatitis B among senior high students in Dunkwa-on-offin Ghana, revealed that, the perception of students on Hepatitis B Virus infection was good. Results from the study showed that majority of the students (68%) were of the view that there is efficient treatment of Hepatitis B Virus infection. About 29.5% indicated that persons with HBV infection should be isolated away from the people to prevent spread. It was further showed that half of respondents (50%) were of the view that exercising regularly and eating healthy food can prevent Hepatitis B Virus infection. The results of the study showed that most of respondents (64%) believed that healthy people need vaccination

against HBV infection and 70.5% of them thought that people of their own age need vaccination. More than half of the respondents (53%) indicated that they were willing to be tested for Hepatitis B Virus infection. However, only 4% had ever been vaccinated against the disease. Majority of them (88%) had never received a Hepatitis B vaccine before.



CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Area

The study was conducted at 37 Military Hospital in Accra Metropolitan Area of Greater Accra region of Ghana. Accra is the capital and largest city of Ghana, covering an area of 225.67 km² (87.13 sq mi) with an estimated urban population of 2.27 million as of 2012 (World Factbook, 2015). It is organized into 10 local government districts – 9 municipal districts and the Accra Metropolitan District, which is the only district within the capital to be granted city status (Accra Metropolitan Assembly, 2018). "Accra" usually refers to the Accra Metropolitan Area, which serves as the capital of Ghana, while the district within the jurisdiction of the Accra Metropolitan Assembly is distinguished from the rest of the capital as the "City of Accra" (Accra Metropolitan Assembly, 2018). In common usage, however, the terms "Accra" and "City of Accra" are used interchangeably. The intersection of the Lafa stream and Mallam junction serves as the western border of Accra, the Great Hall of the University of Ghana forms Accra's northern border, while the Nautical College forms the eastern border. The Gulf of Guinea forms the southern border. Formed from the merger of distinct settlements around British Fort James, Dutch Fort Crêvecoeur (Ussher Fort), and Danish Fort Christiansborg as Jamestown, Usshertown, and Christiansborg respectively, Accra served as the capital of the British Gold Coast between 1877 and 1957 and has since transitioned into a modern metropolis. The capital's architecture reflects this history, ranging from 19th-century colonial architecture to modern skyscrapers and apartment blocks (Accra Metropolitan Assembly, 2016).

Accra is the Greater Accra Region's economic and administrative hub, and serves as the anchor of the larger Greater Accra Metropolitan Area (GAMA), (Songsore, 2008) which is inhabited by about 4 million people, making it the thirteenth-largest metropolitan area in Africa. Strategic initiatives, such as transportation, are coordinated between the local government authorities, while the Accra Metropolitan Assembly, based in West Ridge, is responsible for the administration of the 60 km² (23 sq mi) City of Accra only. The central business district of Accra contains the city's main banks and department stores, as well as an area known as the Ministries, where Ghana's government administration is concentrated. Economic activities in Accra include the financial and commercial sectors, fishing and the manufacture of processed food, lumber, plywood, textiles, clothing and chemicals. Tourism is becoming a thriving source of business for those in arts and crafts, historical sites and local travel and tour agents. The Oxford Street in the district of Osu has grown to become the hub of business and night life in Accra. In 2010, the Globalization and World Cities Research Network think tank designated Accra as a Gamma level world city, indicating a growing level of international influence and connectedness (GaWC, 2010).

3.1.1 The 37 Military Hospital

The 37 Military Hospital is a specialist hospital located in Accra on the main road between Kotoka International Airport and central Accra. It is a 600 bed capacity hospital with 13 wards (Ward 1 through to 10, F1, 2 and 3) and currently the largest military hospital in the Republic of Ghana after the Korle-Bu Teaching Hospital. The 37 Military Hospital recently undergone expansion and included a 24-hour Emergency Department (ED) and 7 days a week basis.

The hospital was originally established in 1941 by a British military officer, General George Giffard, as a military hospital to provide treatment for troops injured in the Second World War. At the same time, Giffard also arranged the creation of the 52 Military Hospital at Takoradi, although this was later relocated to India. The hospital's name at this time was No. 37 General Hospital; it was changed to 37 Military Hospital of the Gold Coast in 1956. The hospital is also known for the story of the bats that never left their chief. The hospital was later expanded and opened to the public, although the hospital continues to be staffed primarily by military personnel. From 1991 till today the German company Hospital Engineering GmbH had significant participation in the phased Development of the 37 Military Hospital and is responsible for the maintenance of the equipment: Medical Oxygen Production and Distribution (1991/1992), Operating Theatre Block, including Central Sterilisation Department (1992/1993), Mortuary and Department of Morbid Anatomy (1995), Pharmacy (1998-2001), Laboratories, including Blood Bank (1998-2001), Functional Diagnostics Department (1998-2001), Burns Unit (1998-2001), Intensive Care Unit (1998-2001), VIP/Officers Ward (1998-2001), Rank Wards (1998-2001), Satellite Maternity Unit (1998-2001), and the Out-Patient-Department Planning Design, Architectural Drawings, Turnkey Construction (2004).

3.1.1.1 Mission and Objectives

3.1.1.1.1 Objectives

- The primary objective of 37 Military Hospital is to provide quality healthcare to service personnel and their families, civilian employees of the Ministry of Defense and their families and ex-service personnel as well as the general public.

- The hospital additionally serves as the National Disaster and Emergency Response health facility. The hospital has also been designated as a United Nations' (UN) Level IV Military Medical facility within the West African sub-region in addition to providing Levels I and II support at various peacekeeping missions.
- It also serve as teaching hospital for the post graduate training of doctors for major universities in Ghana and abroad, and the training of house officers, medical students, physician assistants (anaesthesia, medical), nurses, midwives, , emergency medical technicians and other para-medical professionals.

3.1.1.1.2 Mission

The hospital is committed to provide tertiary health care facilities and services, training, research, and advocacy for service personnel and their families, civilian employees of the Ministry of Defense and their families and ex-service personnel as well as the general public.

3.1.1.2 Organizational and Administrative Structure

The hospital is headed by the Commander who reports to the Director General of Medical Service, Ghana Armed Forces Medical Service. The Commander is assisted by the following officers in descending order; the Commanding Officer, Matron, Administrator (Medical), Administrator (General), Adjutant, Command Sergeant Major, Regimental Sergeant Major, Company Sergeant, and Chief Clerk.

3.1.1.3 Organogram of 37 Military Hospital

The 37 Military Hospital is organized into working units (Divisions and Departments) or sub-units, which has created a good standard of structure within the facility. The

Divisions and Departments (the units) are developed and joined according to medical, paramedical and administrative lines and each of these units has its own departmental head. The Divisions at the hospital include: Public Health Division, Medical Division, Accident & Emergency, Dental Division, Obstetrics & Gynaecology, Paediatric Division, Pathology Division, Pharmacy Division, Radio Diagnosis, Radiography & X-Ray, Surgical Division, Veterinary Division, Health Training School (Medical Education), Ophthalmology Division, and Ear, Nose and Throat Division.

The Public Health Division has the following departments; Environmental Health, Disease Control, Health Promotion, Infection Prevention and Control, Family Planning, Child Welfare Clinic, and Anti-Retroviral Clinic.

3.2 Study design

A study design is procedural plan that is adopted in a study to answer questions validly, objectively, accurately and economically (Kumar, 2011). The study design adopted was a hospital based descriptive cross-sectional survey. This study design was chosen because, considering the purpose of this study, the research questions and the target population, it is the most appropriate design that suits the aim/objectives of the study and to collect data from respondents.

3.3 Population of the Study

The population of the study comprised of HCWs in Ghana where the target population is HCWs at 37 Military Hospital, Accra. The choice of the target population was underscored by proximity of the researcher to 37 Military Hospital, Accra, and the ability

of researcher to obtain thorough, in-depth and insightful information from the HCWs in the hospital.

3.4 Sampling Procedure

The researcher utilized purposive sampling method which is a non-probability technique. The reason underpinning the use of the technique includes difficulty in obtaining the sample frame for the participants within the study period because of the busy nature of their work, time constraints and cost.

3.5 Sample size

In congruence with the sampling techniques, representative sample of 50 respondents were used as the sample. Due to factors like determination of target population size and time frame, the study was classified as a small-scale research, which normally involves between 30 and 250 cases (Denscombe, 2007). Also, according to Creswell (2009), quantitative study should have a sample size not less than 30. This makes the 50 sample size adequate for the study.

3.6 Data Collection Procedure

On the day of the data collection, the researcher visited the departments of the various occupations; Doctor/Physician Assistant, Nurse/Midwife, Laboratory Personnel, and Janitorial Personnel, to select participants. The participants in each department were selected based on purpose. After the selection process, a vivid explanation was made to the participants concerning the objective of the research as well as their right to opt out of the study if they so wish and the need for them to answer the questions individually. The study participants were also assured of confidentiality and that, the data will not be

released for any other purpose apart from the purpose it was meant for. After the explanation, the questionnaires were personally administered to each of the participants. The researcher provided further explanation to those who needed help in understanding in understanding the question (s). They were given 20 minutes to respond to the questions after which the questionnaires were collected back from them. The process was continued until 50 respondents were enrolled in the study.

3.7 Research Instrument

3.7.1 Questionnaire

The instrument used for the data collection was a structured questionnaire with closed and open ended questions. The data collection instrument was developed in line with the study objectives; thus, focusing on assessing the knowledge, attitude and perception concerning HB infection among HCWs in Ghana. The questionnaire was divided into four major sections. Section A sought to know the respondents background information such as age, sex, educational level, occupation, and experience level. Section B basically talks about HCWs knowledge about hepatitis B. Section C talks about the attitude of HCWs towards the spread of the disease hepatitis B as well as their attitude towards carriers of the disease. Section D talks about perception of HCWs about hepatitis B virus infection.

3.7.2 Validity and reliability

For the purpose of validity, the content of the questionnaire reflects the objective of the study. Appropriate literature review was ensured. Reliability was ensured through the

explanation of terms and concepts in clear and understanding form, collection of the right information and usage of systematic methodology.

3.7.3 Pre-testing of questionnaire

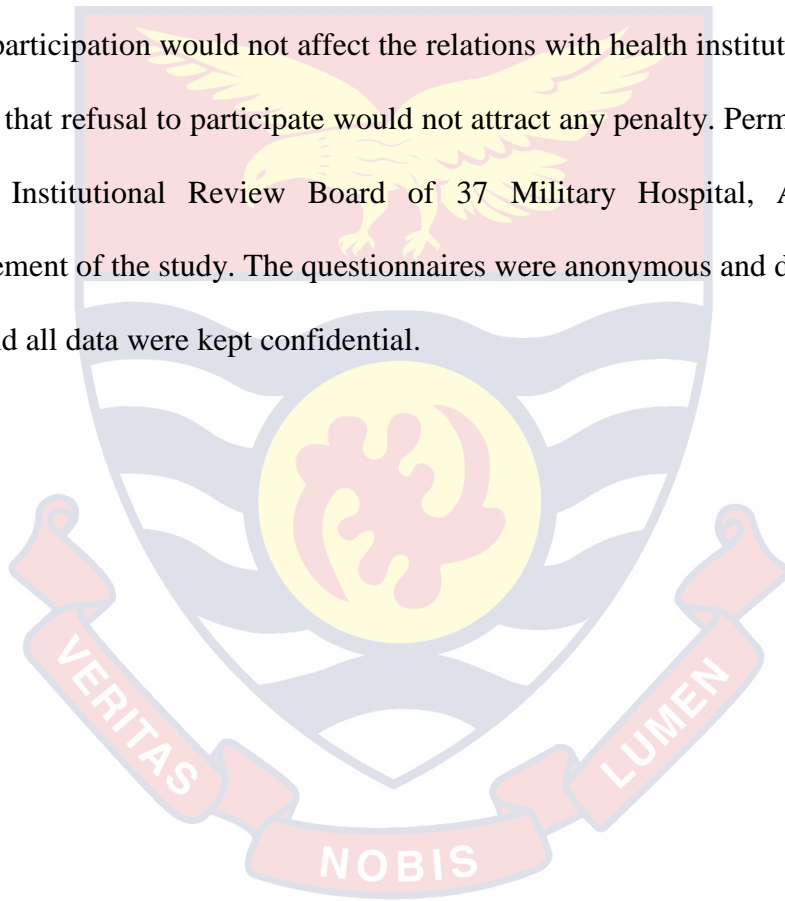
Pre-testing was done in Legon Hospital to evaluate the reliability and consistency of the questions been asked, willingness of the respondents to answer the questionnaire, reliability of the questionnaire, the accuracy of the questionnaire, sequencing and clarity of the questions and ascertaining success of the training given to the research assistants. After the pre-testing, it made sure the questionnaires were reviewed according to the information gathered from the pretesting with the supervisor before the main survey took place.

3.8 Statistical and Data analysis

Data was entered, processed and analysed using SPSS for windows version 16 and transpose into word excels 2007. After entry, the data was cleaned by running the raw statistics, filling in the missing value to ensure completeness of the data entry. These were presented in frequency tables, pie charts. To measure the level of knowledge on HBV infection, attitude as well as perception of respondents towards the infection, a scale of 0 – 100% was used for each of knowledge, attitude and perception. Respondents were considered to have adequate knowledge on the HBV infection if the mean percentage scores is $\geq 50\%$ and poor knowledge if the mean percentage score was below $\leq 50\%$. For attitude, the rating is as follows; $\leq 50\%$ indicated negative attitude, ≥ 50 signified positive attitude. Likewise, perception was measured as follows; $\leq 50\%$ indicated poor perception whiles ≥ 50 signified good perception (Likerts scale).

3.9 Ethical consideration

Ethical clearance was sought from the Institutional Review Board of Presbyterian University College, Ghana. Introductory letter was obtained from the Faculty of Development Studies and the Head of Department of Environmental and Natural Resources Management. Informed consent was sought from the respondents of the study. They were assured of confidentiality of their responses. In addition, they were assured that their participation would not affect the relations with health institutions now or in the future and that refusal to participate would not attract any penalty. Permission was sought from the Institutional Review Board of 37 Military Hospital, Accra before the commencement of the study. The questionnaires were anonymous and did not require any identity and all data were kept confidential.



CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

4.1 Demographic characteristics of respondents

The result that 50% of the respondents were male while the other 50% were female. It was also found that 6% of the respondents were aged < 20, 62% of respondents were aged 21-30, 22% of respondents were aged 31-40, 8% of respondents were also aged 41-50, while another 2% of respondents were aged 51-60. Also majority (62%) of the respondents were between the ages of 21-30 years (Table 1).

It was also extrapolated from the result that majority (66%) of the respondents had Degree certificate. While 28% of the respondents' possessed Diploma certificate, 6% possessed Masters Degree certificates. This could be related to the fact that majority (62%) of the respondents were between the ages of 21-30 years where this age group tends to pursue further education as compared to other age groups (Table 1).

In order to ascertain the years of experience, the respondents were asked to disclose their work experience. Most (40%) of the respondents indicated that they have worked in the hospital for a period of less than 1, followed by 30% of those respondents who have worked in the hospital for a period of 1 to 4 years, then 20% in the category of having worked in the hospital for 5 to 9 years. While 2% of the respondents have worked in the hospital for 10 to 14 years; only 8% have worked in the hospital 15 or more years. This result also reflects on the youthful nature of the respondents in which majority of the respondents were in the ages of 21-30 years (Table 1). It could be said that most people in the aforementioned age group just completed their tertiary education and tend to seek further education than to apply to remain at workplace.

Also, majority of respondents (36%) were Doctor/Physician Assistant followed by Nurse/Midwife (22%) and the least (12%) been Janitorial workers.

Table 1: Demographic information of respondents

Demographics		Frequency	Percent
Gender	Male	25	50
	Female	25	50
Age	<20 years	3	6
	21-30	31	62
	31-40	11	22
	41-50	4	8
	51-60	1	2
Level of education	Diploma	14	28
	Degree	33	66
	Masters	3	6
Work Experience	Less than 1	20	40
	1 to 4	15	30
	5 to 9	10	20
	10 to 14	1	2
	15 or more	4	8
	Occupation	Doctor/Physician Assistant	18
	Nurse/Midwife	11	22
	Laboratory Personnel	8	16
	Janitorial	6	12
	Others	7	14

Source: Field survey, 2019

4.2 Knowledge of Hepatitis B Virus (HBV) infection

4.2.1 Number of people who have heard of hepatitis B (HB) infection

During the survey, majority (90%) of the correspondents strongly agreed that they have heard of Hepatitis B virus infection before. Whereas 8% of the respondents agreed that they have heard of HBV infection, 2% neither agreed nor disagreed that they have heard of HBV infection as shown in Table 2. This results show that majority (98%) of the respondents indicated that they have heard of Hepatitis B infection before. This could be attributed to the fact that most young people or adults are more interested in exploring media sources for general information. The finding correlates with other studies as follows; study by Boakye (2014) revealed that majority of the respondents (92%) had heard of HBV infection. Similarly, Hwang, Huang and Yi (2010) found that about 87% of respondents had heard about HBV before and had significantly greater knowledge compared to those who had not heard about the disease.

Table 2: Number of people who have heard of Hepatitis B virus infection

Variable	Frequency	Percent
strongly agree	45	90.0
agree	4	8.0
neutral	1	2.0
Total	50	100.0

Source: Field survey, 2019

4.2.2 Sexual relationships as means of contracting of HB infection

From Figure 1, most of the respondents during the survey knew that sexual relationship contributes to getting HBV infection as 82% of respondents strongly agreed that people get HB infection through sexual relation. While 12% agreed that people get HB infection through sexual relationships, 6% were of neutral view to it. It could be inferred from the result that majority (94%) of the respondents have the knowledge that sexual relationship contributes to acquiring HBV infection. Similarly, Afihene et al. (2015) reported on knowledge attitude and perception of hepatitis B among healthcare workers in Sunteresu Government hospital, Ghana that 82.28% of respondents knew that HBV could spread by sex.

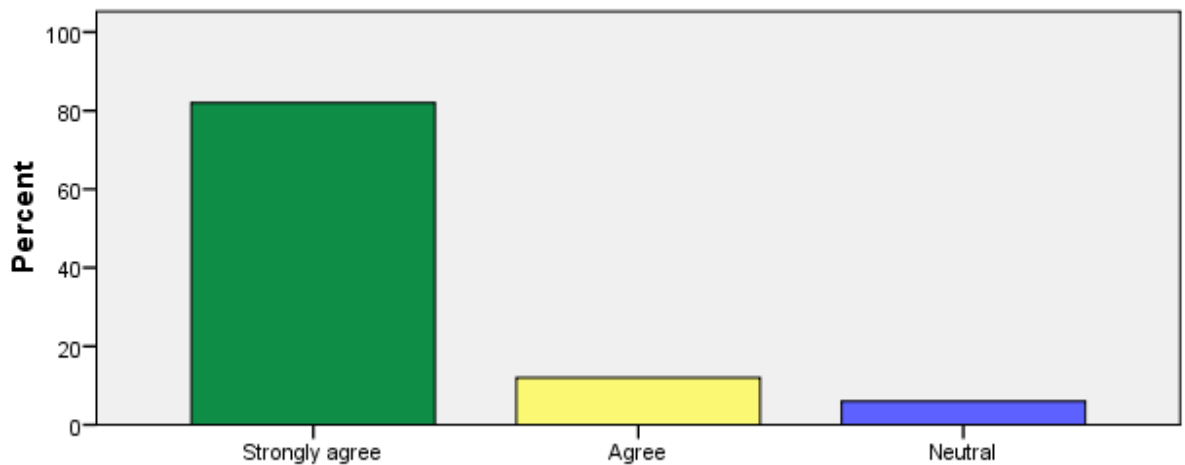


Figure 1: Sexual relationship as a mean of contracting HB infection

Source: Field survey, 2019

4.2.3 Child birth as means of contracting HB infection

From Table 3, it was observed that while 48 % of the respondents strongly agreed that people get HB infection during childbirth, 36 % also agreed that people get HB infection during childbirth. Also, 8 % of the respondents neither agreed nor disagreed that childbirth is a means of contracting HB infection. Although 2 % disagreed that people contract HB infection during child birth, 6 % strongly disagreed that people get HBV infection during childbirth. It was inferred from the result that majority (84%) of the respondent knew HB infection can be contracted during childbirth. This is in line with Afihene et al. (2015) who found a generally good knowledge about the condition as most of the respondents (90%) answering correctly the questions related to knowledge. This is in contrast to Boakye, (2014) who revealed that less than half of the respondents (41%) knew correctly that HBV could be transmitted during childbirth.

Table 3: Child birth as means of contracting HB infection

Variable	Frequency	Percent
Strongly agree	24	48.0
Agree	18	36.0
Neutral	4	8.0
Disagree	1	2.0
Strongly disagree	3	6.0
Total	50	100.0

Source: Field survey, 2019

4.2.4 Sharing of Toothbrush with infected person as means of contracting HB infection

It was uncovered, in Table 4, that whereas 38 % of the respondents strongly agreed people get HBV infection by sharing toothbrush with an infected person, 28 % accepted that sharing of toothbrush with infected person is a means of contracting HB infection; meanwhile 10% neither agreed nor disagreed. Moreover, 14 % disagreed where 10 % strongly disagreed that people get HBV infection from sharing toothbrush with an infected person. It was extrapolated that majority (66%) of the respondent knew HB infection can be contracted when they share toothbrush with an infected person. Similarly, Boakye, (2014) found that 70% of the respondents at Dunkwa on Offin SHS knew that HBV could be transmitted by sharing a toothbrush with an infected person. However it could be noted that Boakye (2014) reported higher percentage than that observed from the current study. This could be attributed to difference in category of people that the researchers targeted.

Table 4: Sharing toothbrush with an infected person as a means people get HB infection

Variable	Frequency	Percent
Strongly agree	19	38.0
Agree	14	28.0
Neutral	5	10.0
Disagree	7	14.0
Strongly disagree	5	10.0
Total	50	100.0

Source: Field survey, 2019

4.2.5 Sharing spoons or bowls for food as means of contracting HB infection

From Table 5, it was noted that 32% of the respondents strongly disagreed that people get HB infection by sharing spoons or bowls for food. It was also found that 30% of respondents disagreed, 22 % were of neutral view, 10% agreed and 6% strongly agreed that that people get HB infection by sharing spoons or bowls for food respectfully. These showed that majority (62%) knew that sharing spoons or bowls for food is not a means of contracting HB infection. Comparably, Boakye (2014) revealed that more than half (58%) of the respondents at Dunkwa on Offin SHS were right that HBV cannot be transmitted by sharing food with an infected person or eating food that has been prepared by an infected person even though the reported number (58%) is quite less than that of current study.

Table 5: Sharing spoons or bowls for food with infected person as means of get HB infection

Variable	Frequency	Percent
Strongly agree	3	6.0
Agree	5	10.0
Neutral	11	22.0
Disagree	15	30.0
Strongly disagree	16	32.0
Total	50	100.0

Source: Field survey, 2019

4.2.6 Shaking hands with an infected person as means of contracting HB infection

With reference to Figure 2, whereas most (60%) of the respondents strongly disagreed that people get HB infection by shaking hands with an infected person, 20% disagreed to it; 14% were of neutral view while 6% strongly agreed that people get HB infection by shaking hands with an infected person. It was extrapolated from current study that majority (80%) knew that people don't get HB infection by shaking hands with an infected person. Similar finding by Boakye, (2014) indicated that about 85% of respondents at Dunkwa on Offin SHS knew that holding hands with an infected person could not transmit HBV.

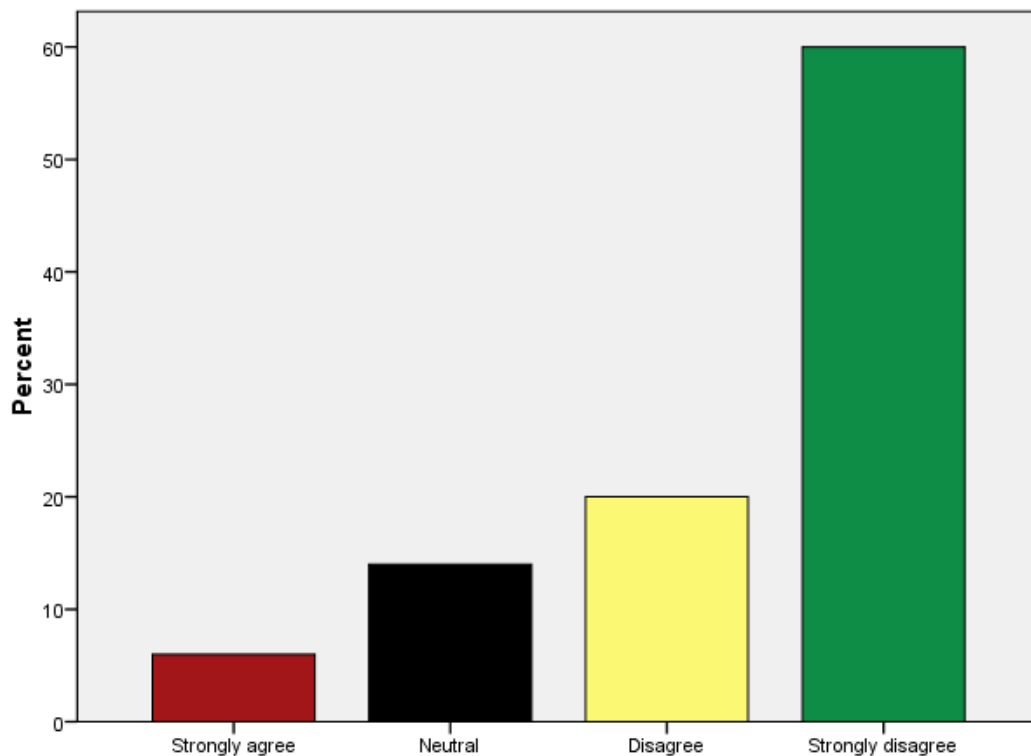


Figure 2: Shaking hands with infected person as a means of contracting HB infection

Source: Field survey, 2019

4.2.7 Knowledge of Signs and Symptoms of HB infection

Out of the 50 respondents in Table 6, greater part (58%) of the respondents strongly agreed that HB infection present with signs like fever, weakness, jaundice, right sided abdominal pains (constitutional signs) whiles 24% agreed that HB infection present with the constitutional signs; 16% were of neutral view whiles 2% of the respondents strongly disagreed that HB infection present with the constitutional signs. In all, majority (82%) of the respondents knew that infected person can present with signs like fever, weakness, jaundice and right-sided abdominal pains. The current study's reported finding (82%) is much higher than that reported by Boakye (2014) where most (75%) of the respondents at Dunkwa on Offin SHS knew infected person can have signs or symptoms like jaundice, bodily weakness, and right- sided abdominal pains, fever and loss of appetite. Difference may be due to the smaller sample size used in current research.

Table 6: Knowledge of Hepatitis B constitutional signs

Variable	Frequency	Percent
Strongly agree	29	58.0
Agree	12	24.0
Neutral	8	16.0
Strongly disagree	1	2.0
Total	50	100.0

Source: Field survey, 2019

4.2.8 Knowledge on the ability of asymptomatic person to spread HB infection

From Table 7, 50% of the respondents strongly agreed that asymptomatic HB infected person can spread HB infection. Whiles 28% agreed that asymptomatic HB infected person can spread HB infection, 16% were of neutral view. Also, 4% disagreed that asymptomatic HB infected person can spread HB infection whiles 2% strongly disagreed. In all, majority (78%) answered that asymptomatic HB infected person can spread HB infection. Similarly, Boakye (2014) reported that majority of respondents (84%) knew that even asymptomatic HBV infected persons could transmit the disease. In contrast to these, Morrow et al., (2012) reported lower percentage among 433 Vietnamese men in Australia where approximately 60% knew that long-time infection still can transmit the disease and be asymptomatic. This could be as result of geographical and sample size differences.

Table 7: Knowledge on asymptomatic HB infected person and the spread hepatitis B

Variable	Frequency	Percent
Strongly agree	25	50.0
Agree	14	28.0
Neutral	8	16.0
Disagree	2	4.0
Strongly disagree	1	2.0
Total	50	100.0

Source: Field survey, 2019

4.2.9 Hepatitis B and Liver cancer

From Table 8, while more than half (54%) of the respondents strongly agreed that HB infection cause liver cancer, 18% agreed that HB infection cause liver cancer and 16% were of neutral view. While 4% disagreed that HB infection causes liver cancer, 8% strongly disagree. It was deduced from the current research that majority (72%) of respondents knew HB infection cause liver cancer. Similar findings by Chao et al. 2010 showed that one-third of the respondents did not know that it is common for chronic HBV infection to be asymptomatic or that it can lead to liver cancer, liver cirrhosis and premature death.

Table 8: Knowledge on HB infection and liver cancer

Variable	Frequency	Percent
Strongly agree	27	54.0
Agree	9	18.0
Neutral	8	16.0
Disagree	2	4.0
Strongly disagree	4	8.0
Total	50	100.0

Source: Field survey, 2019

4.2.10 Comparing Hepatitis B virus and HIV infectivity

From Table 9, 32% of the respondents strongly agreed that hepatitis B virus is more infectious and deadly than human immunodeficiency virus (HIV) while 28% agreed that hepatitis B virus is more infectious and deadly than human immunodeficiency virus (HIV) giving a total of 60% of respondents. Whereas, 30% were of neutral view while 10% disagreed. It is obvious that most people are increasingly becoming aware of the fact that Hepatitis B virus is more infectious and deadly than the once known deadly HIV/AIDS. It was estimated that the HBV is 50 to 100 times more infectious than the deadly human immunodeficiency virus (HIV) and can remain in part of the body for close to seven days (Hepatitis Foundation International, 2006). This can be attributed to increased access to information on the internet nowadays.

Table 9: Comparing Hepatitis B virus and HIV infectivity

Variable	Frequency	Percent
Strongly agree	16	32.0
Agree	14	28.0
Neutral	15	30.0
Disagree	5	10.0
Total	50	100.0

Source: Field survey, 2019

4.2.11 Summary of Responses to HBV Infection Knowledge Questions

Table 10 shows the summary of responses by respondents to the questions asked concerning knowledge of HBV infection. The questions covered the awareness, mode of transmission, signs and symptoms of, and infectivity of HBV. Overall, adequate knowledge (79.8%) was apparent in responses provided to the questions (Table 10). The highest percentage recorded (98%) was to ‘Have you heard of Hepatitis B (HB) infection before?’ and the least percentage recorded (60%) was related to the question ‘Do you agree that hepatitis B virus more infectious and deadly than human immunodeficiency virus (HIV)’ (Table 10). Similarly, Afihene et al. (2015) reported good knowledge (72.1%) of Hepatitis B infection among HCW in Sunteresu Government hospital, Ghana. Variation of total mean knowledge score could be attributed to sample size difference between the two studies.

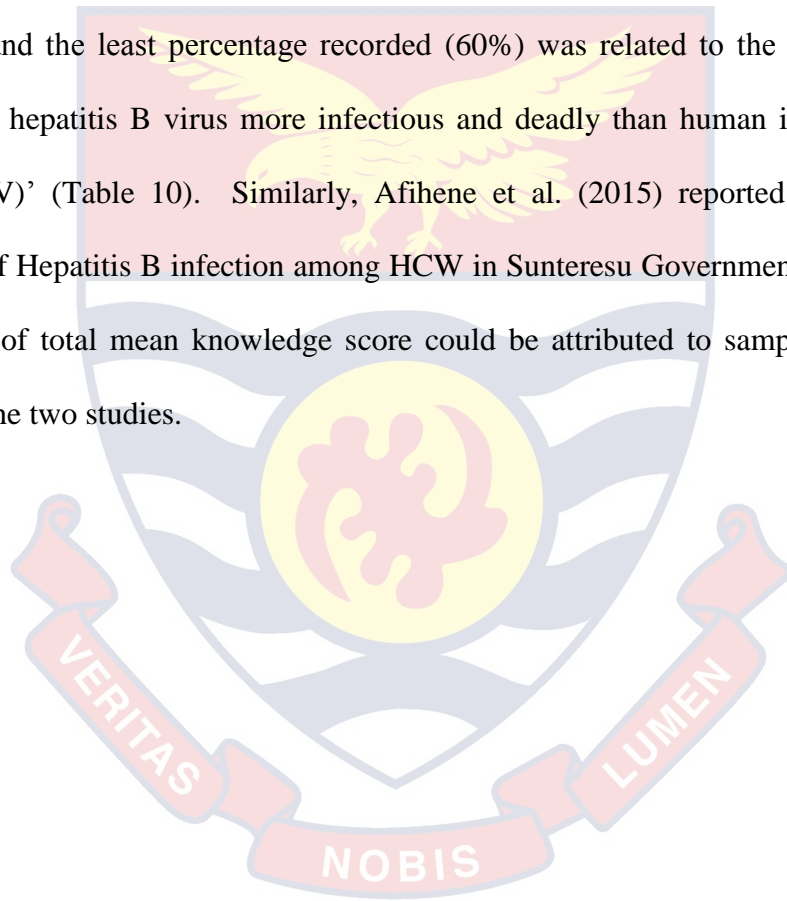


Table 10: Summary of Responses to HBV Infection Knowledge Questions

Knowledge of HBV Infection	Correct Response		Neutral Response		Incorrect Response	
	N	%	N	%	N	%
Have you heard of hepatitis B (HB) infection before?	49	98	1	2	0	0
People get HB infection from sexual relationships	47	94	3	6	0	0
Do you agree that people get HBV infection during birth?	42	84	4	8	4	8
Do people get HB infection by sharing spoons or bowls for food?	31	62	11	22	8	16
Do people get HB infection by sharing a toothbrush with an infected person?	33	66	5	10	12	24
People get HB infection by shaking hands with an infected person	40	80	7	14	3	6
HB infection present with signs like fever, weakness, jaundice, right sided abdominal pains	41	82	8	16	1	2
HB infection cause liver cancer	36	72	8	16	6	12
If someone is infected with hepatitis B infection but he or she look and feel healthy, do you think that person can spread hepatitis B	39	78	8	16	3	6
Do you agree that hepatitis B virus more infectious and deadly than human immunodeficiency virus (HIV)?	30	60	15	30	5	10
MEAN	38.8	77.6	7	14	4.2	8.4

Source: Field survey, 2019

4.3 Attitude towards Hepatitis B infection

4.3.1 Awareness of Hepatitis B vaccine

From Table 11, whereas majority (84%) respondents strongly agreed that they have heard of hepatitis B vaccine before, 14% of respondents agreed giving a total of 98% indicating that they have heard of the Hepatitis B vaccine before and 2 % was of neutral view. The findings may largely be due to availability of information on the internet since most of the respondents were in the age group of 21 to 40 where they tend to browse the internet to access information. The increased awareness of the Hepatitis B vaccine could be related to the educational level of the respondents as most of the respondents have acquired degree certificate where they may be introduced to conditions affecting the liver. Contrary to these findings, a study conducted in the UK on nurses' reports that midwives who were not immunized showed lack of awareness of the existence of the vaccine (Lee, 2009).

Table 11: Number of people who have heard of Hepatitis B virus infection

Variable	Frequency	Percent
Strongly agree	42	84.0
Agree	7	14.0
Neutral	1	2.0
Total	50	100.0

Source: Field survey, 2019

4.3.2 Healthy people and Hepatitis B vaccination

From Table 12, all of the respondents were of the opinion that healthy people need hepatitis B vaccination. Out of these, 78% strongly agreed that healthy people need vaccination while 22% of respondents agreed that healthy people need hepatitis B vaccination. Comparably, Boakye (2014) reported that most of the students of Dunkwa on Offin SHS had a good attitude towards Hepatitis B virus infection. They indicated that healthy people need vaccination against HBV, and thought that people of their own age need vaccination.

Table 12: Healthy people and the need for vaccination

Variable	Frequency	Percent
Strongly agree	39	78.0
Agree	11	22.0
Total	50	100.0

Source: Field survey, 2019

4.3.3 Willingness to receive Hepatitis B vaccine

From Table 13, most (82%) of respondents strongly agreed that they are willing to receive hepatitis B vaccine while 16% of respondents agreed that they are willing to receive hepatitis B vaccine; with a total of 98% of respondents willing to receive Hepatitis B vaccine. Also, 2 % of respondents were of neutral view in willingness to receive hepatitis B vaccine. It reflects a very positive attitude towards willingness to vaccinate against HBV among HCWs in Ghana. Contrary to this is a study in Saudi Arabia where low immunization uptake was identified among dental staff despite their knowledge and availability of the vaccine (Goldstein et al., 2006). Similarly, Zanetti et al. 2008 reported that HCWs were reluctant to be vaccinated, as they fear plasma-derived vaccine as it contains attenuated Hepatitis B virus.

Table 13: Willingness to be vaccinated against hepatitis B

Variable	Frequency	Percent
Strongly agree	41	82.0
Agree	8	16.0
Neutral	1	2.0
Total	50	100.0

Source: Field survey, 2019

4.3.4 Number of people who have ever received Hepatitis B vaccine

From Table 14, majority (70%) of respondents strongly agreed that they have received Hepatitis B vaccine before whiles 14% of respondents agreed they have also received Hepatitis B vaccine before; total of 84% ever receiving Hepatitis B vaccine. Also, 2 % was of neutral view. However, 8% respondents strongly disagreed that they have received Hepatitis B vaccine before whiles 6% of respondents disagreed they have received Hepatitis B vaccine before. This general indicates a positive attitude towards Hepatitis B vaccination. Similar study in Iran and Egypt reported high uptake of free vaccine among young surgeons (Yayehyirad et al., 2009; Zanetti et al., 2008). On the contrary, Boakye (2014) indicated that despite the good attitude of the students towards HBV infection, only few of them had ever been vaccinated against the disease. Also, despite the availability of free vaccine in Sweden, 76% of HCWs were not vaccinated; they either forgot or never made appointment for vaccination (Dannetun et al., 2006).

Table 14: Number of people who have ever received a hepatitis B vaccine

Variable	Frequency	Percent
Strongly agree	35	70.0
Agree	7	14.0
Neutral	1	2.0
Disagree	3	6.0
Strongly disagree	4	8.0
Total	50	100.0

Source: Field survey, 2019

4.3.5 Willingness to be tested for Hepatitis B infection

From Table 15, most (74%) respondents strongly agreed they were willing to be tested for hepatitis B infection while 18% of respondents agreed they were willing to be tested for hepatitis B infection; with a total of 92% portraying a positive attitude towards getting tested for Hepatitis B infection. Also, 4 % were of neutral view. Whereas 2% of respondents strongly disagreed, 1% of respondents disagreed that they were willing to be tested for hepatitis B infection. Similar results were reported by Boakye (2014) where most students were also willing to be tested for Hepatitis B Virus infection.

Table 15: Willingness to be tested for hepatitis B infection

Variable	Frequency	Percent
Strongly agree	37	74.0
Agree	9	18.0
Neutral	2	4.0
Disagree	1	2.0
Strongly disagree	1	2.0
Total	50	100.0

Source: Field survey, 2019

4.3.6 Willingness to associate oneself with Hepatitis B infected person

From Table 16, 36% of respondents strongly agreed that they will like to eat, sleep or shake hands a person infected with hepatitis B while 30% responding by agreed they are willing to eat, sleep or shake hands a person infected with hepatitis B with a total of 66% portraying a positive attitude. Also, 18 % were of neutral view, 12% of respondents strongly disagreed while 4% of respondents disagreed they will like to eat, sleep or shake hands a person infected with hepatitis B. In contrast to this finding, Boakye (2014) reported 29.5% of respondents indicated that persons with HBV infection should be isolated away from the people to prevent spread. Emmons et al. (1986) indicated that attitudes, values and beliefs (including perceptions about personal vulnerability to infection) as well as cultural norms and the influence of family, peers and the media are all important determinants of whether or not appropriate behavior is adopted by a person; which is applicable to the current finding.

Table 16: Willingness to eat, sleep or shake hands a person infected with hepatitis B

Variable	Frequency	Percent
Strongly agree	18	36.0
Agree	15	30.0
Neutral	9	18.0
Disagree	2	4.0
Strongly disagree	6	12.0
Total	50	100.0

Source: Field survey, 2019

4.3.7 Summary of Responses to HCWs Attitude towards HBV infection

Table 17 shows the summary of responses by respondents to the questions asked concerning HCWs attitude towards HBV infection by asking six questions. Out of the 50 respondents, 5.7% were within the negative attitude range whereas 89.7% showed a positive attitude towards HBV and 4.7% were of neutral response (Table 17). Overall the respondents had a positive attitude towards HBV with mean percent score of 89.7%.

Table 17: Summary of Responses to Attitude towards Hepatitis B Infection

Attitude towards Hepatitis B Infection	Positive Response		Neutral Response		Negative Response	
	N	%	N	%	N	%
Have you heard of hepatitis B vaccine before?	49	98	1	2	0	0
Do you agree that healthy people need vaccination?	50	100	0	0	0	0
Would you agree to go for the hepatitis B vaccine?	49	98	1	2	0	0
Have you ever received a hepatitis B vaccine before?	42	84	1	2	7	14
Would you be willing to be tested for hepatitis B infection?	46	92	2	4	2	4
Will you like to eat, sleep or shake hands a person infected with hepatitis B?	33	66	9	18	8	16
MEAN	44.8	89.7	2.3	4.7	2.8	5.7
SD	6.5	13.0	3.3	6.7	3.7	7.4

Source: Field survey, 2019

4.4 Perception towards Hepatitis B infection

4.4.1 Efficient treatment for Hepatitis B infection

From Table 18, 30% of respondents strongly agreed that there is efficient treatment of hepatitis B virus infection while 16% agreed that there is efficient treatment of hepatitis B virus infection; with a total of 56% portraying an average positive perception towards it and 38% were of neutral view. While 8% respondents strongly disagreed, 8% of respondents disagreed that there is efficient treatment of hepatitis B virus infection. This average perception towards treatment of Hepatitis B infection may influence their decision to know their status. Report by Boakye (2014) showed that majority of the students (68%) were of the view that there is efficient treatment of Hepatitis B Virus infection. It can be said that the reported finding by Boakye (2014) was higher than the current research which is quite alarming because it is assumed that most HCWs are highly trained and are expected to know more than the average person.

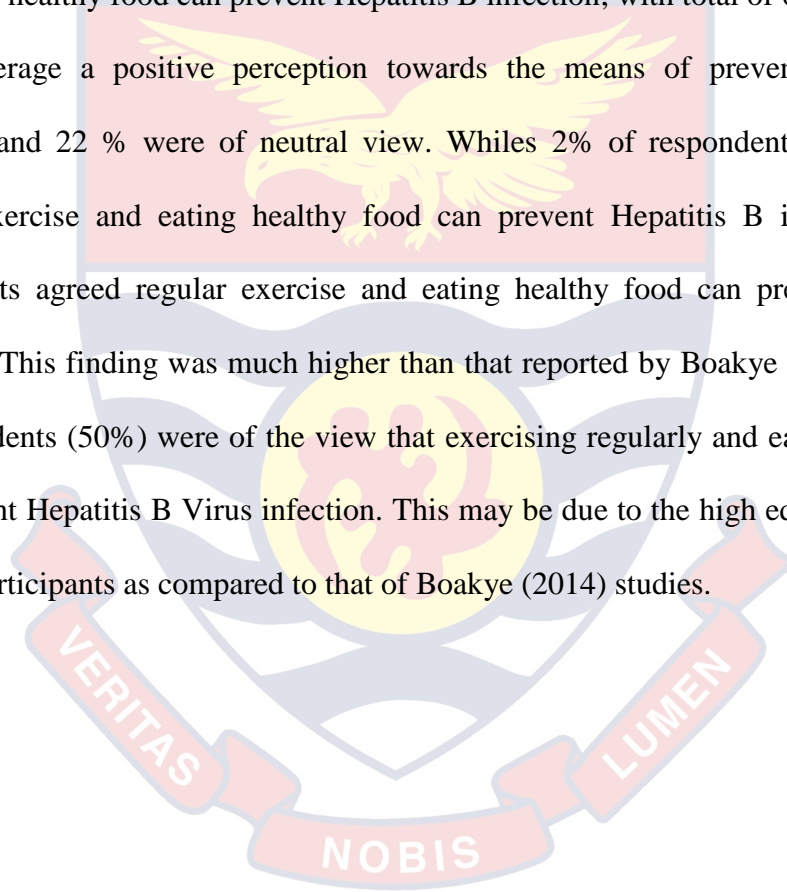
Table 18: Efficient treatment of hepatitis B virus infection

Variable	Frequency	Percent
Strongly agree	15	30.0
Agree	8	16.0
Neutral	19	38.0
Disagree	4	8.0
Strongly disagree	4	8.0
Total	50	100.0

Source: Field survey, 2019

4.4.2 Regular exercise and eating healthy food as a mean of preventing Hepatitis B infection

From Figure 3, 30% respondents strongly disagreed that regular exercise and eating healthy food can prevent Hepatitis B infection whiles 30% disagreed that regular exercise and eating healthy food can prevent Hepatitis B infection; with total of 60% portraying an above average a positive perception towards the means of preventing Hepatitis B infection and 22 % were of neutral view. Whiles 2% of respondents strongly agreed regular exercise and eating healthy food can prevent Hepatitis B infection, 14% of respondents agreed regular exercise and eating healthy food can prevent Hepatitis B infection. This finding was much higher than that reported by Boakye (2014) where half of respondents (50%) were of the view that exercising regularly and eating healthy food can prevent Hepatitis B Virus infection. This may be due to the high educational level of current participants as compared to that of Boakye (2014) studies.



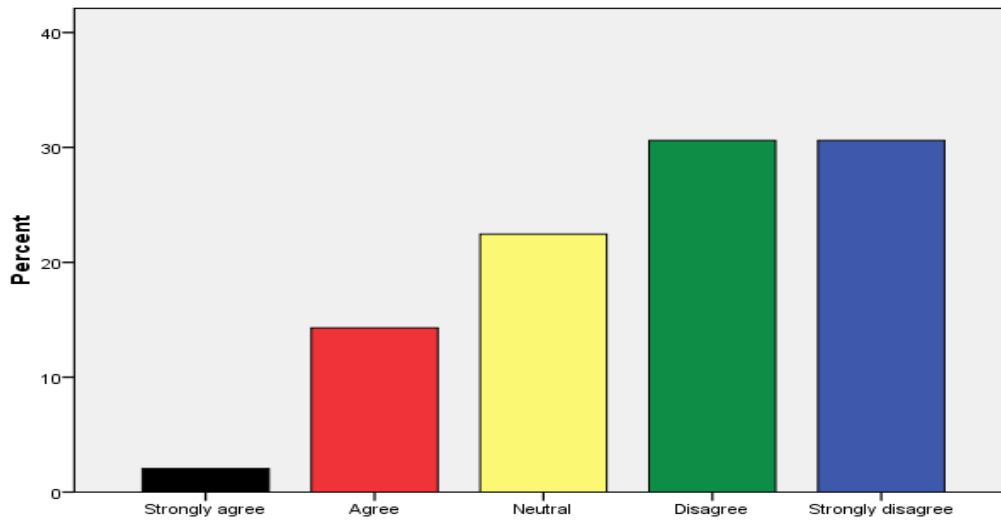


Figure 3: Regular exercise and eating healthy food as a mean of preventing Hepatitis B infection

Source: Field survey, 2019

4.4.3 Summary of Responses of HCWs towards Perception of HBV infection

Table 19 shows the summary of responses by respondents to the questions asked concerning HCWs perception of HBV infection. Out of the 50 respondents, 17% were within the negative perception range whereas 53.0% showed good perception towards HBV and 11.3% were of neutral response (Table 19). Overall the respondents had a good perception towards HBV infection with mean percent score of 53.0% (Table 19). Contrary, Boakye 2014 reported that majority (68%) of the Dunkwa-on-Offin SHS students were of the view that there is efficient treatment of Hepatitis B Virus infection.

Table 19: Summary of Responses of HCWs Perception towards Hepatitis B infection

Perception towards Hepatitis B infection	Correct Response		Neutral Response		Incorrect Response	
	N	%	N	%	N	%
Do you think there is efficient treatment of hepatitis B virus infection?	23	46	19	38	8	16
Do you agree that regular exercise and eating healthy food can prevent hepatitis B virus infection?	30	60	12	22	8	18
MEAN	26.5	53	15.5	30	8	17
SD	4.9	9.9	4.9	11.3	0.0	1.4

Source: Field survey, 2019

4.5 Association between demographic characteristics and KAP

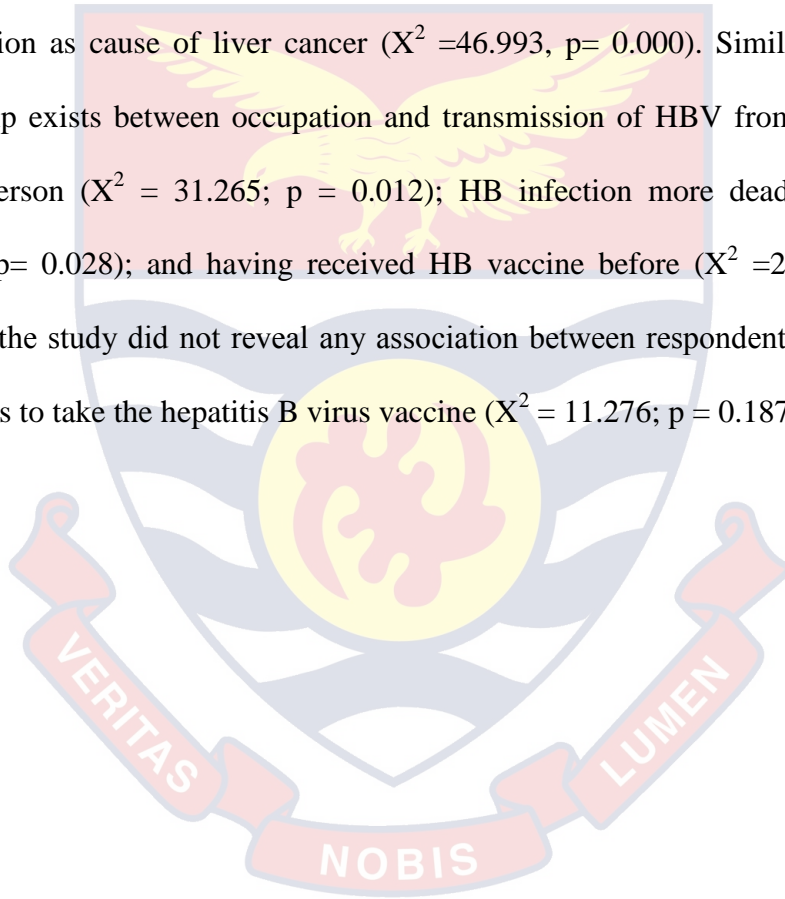
Demographic factors and their association with knowledge, attitude and perception on hepatitis B virus infection were analyzed. The demographic factors were age, sex, work experience, educational level and occupation. Chi-square test (X^2) was used to test for significant relationships. The analysis was significant at $p < 0.05$ and $p < 0.01$.

The findings of the study showed significant association between age of respondents and willingness to go for the hepatitis B vaccine ($X^2 = 17.932$, $p = 0.022$). Contrary, the study did not reveal any association between respondents' educational level and willingness to take the hepatitis B virus vaccine ($X^2 = 5.538$; $p = 0.236$).

Also, the study revealed a significant relationship between work experience and sharing a toothbrush with an infected person as a means of getting HB infection ($X^2 =$

28.960; $p = 0.024$); and willing to test for hepatitis B virus infection ($X^2 = 29.165$; $p = 0.023$).

There was also a significant relationship between occupation and child birth as a means of getting HB infection ($X^2 = 27.455$; $p = 0.037$); sharing of toothbrush with an infected person as a means of getting HB infection ($X^2 = 40.058$; $p = 0.001$); signs and symptoms of HBV infection ($X^2 = 39.826$; $p = 0.000$); and HB infection as cause of liver cancer ($X^2 = 46.993$, $p = 0.000$). Similarly, a significant relationship exists between occupation and transmission of HBV from infected healthy looking person ($X^2 = 31.265$; $p = 0.012$); HB infection more deadly than HIV ($X^2 = 23.012$, $p = 0.028$); and having received HB vaccine before ($X^2 = 29.686$, $p = 0.020$). Contrary, the study did not reveal any association between respondents' occupation and willingness to take the hepatitis B virus vaccine ($X^2 = 11.276$; $p = 0.187$).



CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

5.1.1 Overview of the Study

The purpose of the study was to assess the KAP of HCWs concerning Hepatitis B infection in Ghana. In order to achieve the objectives, data relating to the KAP were collected from 50 purposely selected respondents using structured questionnaire. The data was subjected to preliminary analysis using descriptive statistics and summarized in form of frequency tables and figures and were further subjected to chi-square analysis to establish the existence of relationships between the demographic characteristics of respondents and KAP.

5.1.2 Key Findings

Pertinent finding from the research are as follows;

The analysis of the results showed adequate level (77.6%) of knowledge among the HCWs concerning HB infection where 8.4% were within the poor knowledge range and 14.0% neither have adequate or poor knowledge.

Also, there was positive attitude (89.7%) towards Hepatitis B infection, where 5.7% were within the negative attitude range and 4.7% were of neutral response

There was also good perception (53%) among the HCWs concerning HB infection where 17% were within the negative perception range and 30% were of neither good nor negative perception.

It was also found that work experience and occupation of respondents showed significant relation with knowledge of HCWs ($p < 0.01$ and $p < 0.05$). Also, age, work experience and

occupation were significantly associated attitude of HCWs ($p < 0.05$). Contrary, the study did not revealed any association between demographic features and perception of HCWs ($p > 0.05$).

5.2 Conclusion

The research assessed the knowledge, attitude and perception (KAP) concerning Hepatitis B infection among healthcare workers in Ghana. From the results, the following conclusions were made:

Firstly, there was adequate level of knowledge among the HCWs concerning HB infection.

Secondly, there was positive attitude among the HCWs concerning HB infection.

Thirdly, there was good perception among the HCWs concerning HB infection.

Finally, work experience and occupation of respondents were the significant demographic factors associated with the knowledge of HCWs and also, age, work experience and occupation were significantly associated attitude of HCWs whiles the study did not revealed any association between demographic features and perception of HCWs .

5.3 Recommendations

From the results and discussions, the following recommendations can be made:

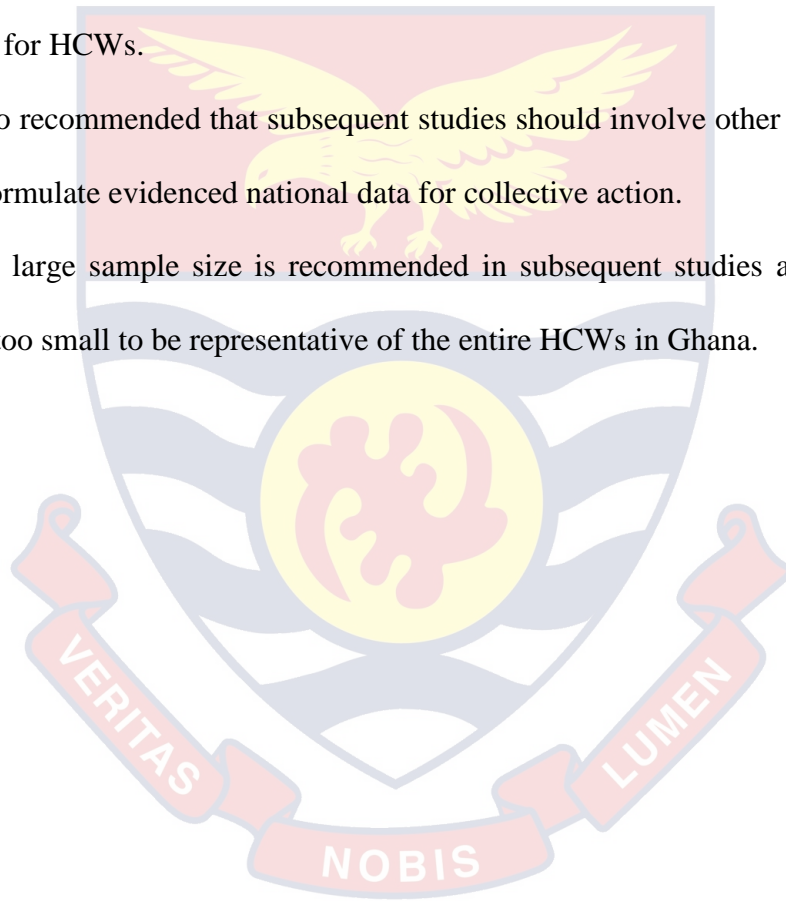
1. Educational campaigns among HCWs should be intensified with focus being on perceptual change towards Hepatitis B infection. This should be carried out by staffs of the public health division of the hospital.

2. National Health Insurance Authority/Government of Ghana should make screening programs for Hepatitis B virus free of charge to its citizen in order to improve access to it.

3. It is also recommended that the National Health Insurance Authority in collaboration with government of Ghana should include HBV vaccination in the preventive services of the National Health Insurance Scheme (NHIS) in order to make vaccination compulsory, especially for HCWs.

4. It is also recommended that subsequent studies should involve other health facilities in order to formulate evidenced national data for collective action.

5. Also, a large sample size is recommended in subsequent studies as the sample size used was too small to be representative of the entire HCWs in Ghana.



REFERENCES

- Afihene, M. Y., Babatunde, M. D., Tetteh, H. L. A., & Mahafroz, K. (2015). Knowledge attitude and perception of hepatitis B among health care workers in Suntereso Government Hospital Ghana. *International J community med public health*, 2(3), 244-253.
- Akumiah, P. O., & Sarfo, L. A. (2015). Assessing the level of awareness on viral hepatitis among educated people. *Applied Research Journal*, 1(2), 45-56.
- Alexopoulou, A., & Karayiannis, P. (2014). HBeAg negative variants and their role in the natural history of chronic hepatitis B virus infection. *World Journal of Gastroenterology*, 20 (24), 7644–7652.
- Ali- Abdulai, M., Baiden, F., Ajyei, R., & Owusu, S. (2016). Low level of hepatitis B knowledge and awareness among pregnant women in kintampo municipality: implication of disease control Ghana. *Medical Journal*, 5 (3).
- Andre, F. (2000). Hepatitis B epidemiology in Asia, the Middle East and Africa. *Vaccine*, 8(1), 2022.
- Ansa, V. O., Udoma, E. J., Umoh, M. S., & Anah, M. U (2002). Occupational risk of infection by human immunodeficiency and hepatitis B viruses among health workers in south-eastern Nigeria. *East Afr Med J*, 79, 254–266.
- Atkinson, R. L., Smith, E., & Hilgard, E. R. (2003). *Introduction to psychology*: Australia Belmont, CA: Wad worth/Thomson Learning, 658-666
- Bhattarai, S., K C, S., Pradhan, P. M. S., Lama, S., & Rijal, S. (2014). Hepatitis B vaccination status and needle-stick and sharps-related Injuries among medical school students in Nepal: a cross-sectional study. *BMC Research Notes*, 7, 774.

- Blankson, A., Wiredu, E. K., Adjei, A., & Tettey, Y. (2005). Seroprevalence of hepatitis B and C viruses in cirrhosis of the liver in Accra, Ghana. *Ghana Med J*, 39(4), 132–137.
- Boakye, K. (2014). Assessing the knowledge attitude and perception of hepatitis B virusinfection among senior high students in Dunkwa-on-Offin, Ghana. *International J community*, 1, 40-45.
- Burnett, H. (2007). Knowledge and attitude of medical science students toward hepatitis B and C infections. *Int J Clin Exp Med*, 6(3), 197–205.
- Chao, J., Chang, E. T., & So, S. K. (2010). Hepatitis B and liver cancer knowledge and practices among healthcare and public health professionals in China: a cross-sectional study. *BMC Public Health*, 10, 98.
- Coppola, N., Azampino, R., Boemio, A., Sagnelli, C., Alesio, L., Adinolfi, L., & Evagelista, S. (2015). Hepatitis B virus burden in developing countries. *World journal of gastroenterology*, 21 (42).
- Creswell, J.W., & Clark, V. L. P. (2009). Designing and conducting mixed methods research. New York, NY: Sage publications.
- Dannetun P, Rosenberg D.M. & Shepard, E.P, (2006). Hepatitis B virus infection: epidemiology and vaccination in Sweden. *Epidemiol Rev*, 28, 125–136.
- Diederike, W. G., Lucia, E. V., Kofi, A., & Jos Van, R. (2006). Trends in maternal mortality: a 13-year hospital-based study in rural Ghana. *European J of Obst and Gynecol and Repro Biology*, 107, 135-39.
- Dongdem, J. T., Kampo, S., Soyiri, I. N., Asebga, P. N., Ziem, J. B., & Sagoe, K. (2012). Prevalence of hepatitis B virus infection among blood donors at the Tamale Teaching Hospital, Ghana (2009). *BMC Research Notes*, 5, 115.

Edmunds, W. J., Medley, G. F., & Nokes, D. J. (1996). Epidemiologic patterns of hepatitis B virus (HBV) in highly endemic areas. *Epidemiol Infect*, 117, 313–325.

Edmunds, W. J., Medley, G. F., & Nokes, D. J. (1998). The transmission dynamics and control of hepatitis B virus in the Gambia. *Stat Med*, 15, 2215–2233.

Emmons, C., Joseph, J., Kessler, R., Worman, C., Montgomery, S., & Ostrow, D. (1986). Psychological predictors of reported behavior change in homosexual men at risk of AIDS. *J of Health Education*, 13, 331-45.

Ephraim, R., Donkor, I., Sakyi, S. A., Ampong, J., & Agbodjakey, H. (2015). Seroprevalence and risk factors of hepatitis B and hepatitis C infections among pregnant women in the Asante Akim North Municipality of the Ashanti region, Ghana; a cross sectional study. *Afr Health Sci.*, 15(3), 709–713. doi: 10.4314/ahs.v15i3.2.

Fishbein, M., & Ajzen, I. (1975). *Belief, intention and behavior*: Introduction to theory and research: Reading mass. New York, NY: Addison-Wesley Publishing Company.

GaWC, (2010). Globalization and World Cities (GaWC) Study Group and Network. Loughborough University. Archived from www.lboro.ac.uk/gawc/ the original on 24 September 2011.

GHS (2009). Annual Report- Ghana Health Services. [Cited 22nd July, 2014]. Available at: [www.ghanahealthservice.org/.../Final Draft 2009 GHS Annual Report%2](http://www.ghanahealthservice.org/.../Final_Draft_2009_GHS_Annual_Report%2)

Goldstein, S. T. (2005). A mathematical model to estimate to estimate global hepatitis B disease burden and vaccination impact. *Int J Epidemiol*. 34(6), 1329–1339. doi: 10.1093/ije/dyi206.

Goldstein, T., Rosenberg, D. M., & Lok, A. S. (2006). Hepatitis B immunization and hepatocellular carcinoma among dental health staff, Saudi Arabia. *Journal of Viral Hepatology*, 1263–1272.

Grob, R. (1995). Incidence of hepatitis B viral infection and variation among countries. *J Infect Dis.*, 150, 315-31.

Hepatitis B Foundation International, (2006). Global epidemics of hepatitis B viral infection. *J Viral Hepat*, 5, 45–51.

Hwang, H., Huang, & Yi, (2010). Knowledge about HBV and predictors of HBV vaccination among Vietnamese American college students. *Int J Clin Exp Med*, 4 (2), 177–185.

Jha, A. K., Chadha, S., Bhalla, P., & Saini, S (2012). Hepatitis B infection in microbiology laboratory workers: prevalence, vaccination, and immunity status. *Hepat Res Treat*, 5(20), 362.

Kiire C.F, (1990). Hepatitis B infection in sub-Saharan Africa: the African Regional Study Group. *Vaccine*, 8, 107–112.

Kiire, C. F. (1996). The epidemiology and prophylaxis of hepatitis B in sub-Saharan Africa: a view from tropical and subtropical Africa. *Gut*, 37 (Suppl 2):S5–S12. doi: 10.1136/gut.38.Suppl_2.S5.

Kruglanski, A. W., & Higgins, E. T. (2007). *Social Psychology. Handbook of basic principles*. New York, NY: Guilford Press.

Kumar, R. (2011). *Research methodology: a step by step guide for beginners*. London, UK: SAGE publication limited, 77-85.

- Lasley, T., Alter, M. T., & Williams, I. T. (2004). Hepatitis viral infection among pregnant women in Accra; a hospital base study. *Vaccine*, 6, 105–115.
- Lee, R. (2009). Knowledge and attitude of nursing students toward hepatitis B virus infections, UK. *Int J Clin Exp Med*, 5 (3), 193–204.
- Lemoine, M., Eholié, S., & Lacombe, K. (2015). Reducing the neglected burden of viral hepatitis in Africa: strategies for a global approach. *J Hepatol*. 62(2), 469–76. doi: 10.1016/j.jhep.2014.10.008.
- Lesi, O. (2015). Hepatitis B in Africa: the challenges in controlling the scourge. <http://theconversation.com/hepatitis-b-in-africa-the-challenges-in-controlling-the-scourge-43818>. Accessed 02 Oct 2015
- Malik, A. H., & Lee, W. M. (2000). Chronic Hepatitis B Virus Infection. Treatment Strategies for the next Millenium. *Annals of Internal Medicine*, 132 (9), 723- 731.
- Mangtani, P. (1995). Hepatitis B Vaccination: the cost effectiveness of alternative strategies in England and Wales.
- Maroof, K. A., Bansal, R., Parashar, P., & Sartaj, A. (2012). Do the medical, dental and nursing students of first year know about hepatis B? A study from a university of North India. *The Journal of the Pakistan Medical Association*, 62 (1), 25–7.
- Martinson, F. E., Weigle, K. A., Mushahwar, I. K., Weber, D. J., Royce, R., & Lemon, S. M. (1996). Seroepidemiological survey of hepatitis B and C virus infections in Ghanaian children. *J Med Virol*. 48(3), 278–83. doi: 10.1002/(SICI)1096-9071(199603)48:3<278::AID-JMV11>3.0.CO;2-9.

- Menaca, A., Tagbor, H., Adjei, R., Bart-Plange, C., Collymore, Y., Ba-Nguz, A., Mertes, K., & Bingham, A. (2014). Factors likely to affect community acceptance of a malaria vaccine in two Districts of Ghana: a qualitative study. *PLoS One*, 9(10), e109707.
- Montesano, R. (2002). Hepatitis B immunization and hepatocellular carcinoma: A Hepatitis Intervention Study. *J Med Virol*, 67, 444 – 446.
- Morrow, R., Sai, F., & Barker L, (1971). Australia Antigen and Hepatitis in Accra, Ghana. *British Med J*. 13(4); 389-91.
- Mutocheluh, M., & Kwarteng, K. (2015). Knowledge and occupational hazards of barbers in the transmission of hepatitis B and C was low in Kumasi, Ghana. *Pan Afr Med J.*, 20, 260. doi: 10.11604/pamj.2015.20.260.4138.
- Myjoyonline (2011). Direct policy interventions towards treatment of Hepatitis B – Pharmacist <http://lifestyle.myjoyonline.com/pages/health/201108/70392.php>. Accessed 01 October 2015.
- Nguyen, V. T., Law, M. G., & Dore, G. J. (2009). Hepatitis B-related hepatocellular carcinoma: epidemiological characteristics and disease burden. *Journal of Viral Hepatology*, 16, 453-463.
- Nkrumah, B., Owusu, M., Frempong, H. O., and Averu, P. (2011). Hepatitis B and C viral infections among blood donors from Rural Ghana. *Ghana Med J*. 45(3), 97–100.
- Ola, S. O., Odaibo, G. N., Olaleye, O. D., & Ayoola, E. A. (2012). Hepatitis B and E viral infections among Nigerian healthcare workers. *Afr J Med Med Sci*. 41, 387–91.
- Olawumi, H. O., Olanrewaju, D. O., Shittu, A. O., Durotoye, I. A., Akande, A. A., & Pellissier, G., Yazdanpanah, Y., Adehossi, E., Tosini, W., Madougou, B., & Ibrahima, K. (2012). Is universal HBV vaccination of healthcare workers a relevant strategy in

developing endemic countries? The case of a university hospital in Niger. *PloS One*, 7, e44442.

Ott, J. J., Stevens, G. A., Groeger, J., & Wiersma, S. T. (2012). Global epidemiology of hepatitis B virus infection: new estimates of age-specific HBsAg seroprevalence and endemicity. *Vaccine*, 30(12), 2212–9. doi: 10.1016/j.vaccine.2011.12.116.

Owusu-Ansah, T. (2014). Viral Hepatitis in Ghana: The Role of the Government <http://www.ghanaweb.com/GhanaHomePage/NewsArchive/Viral-Hepatitis-In-Ghana-The-Role-Of-The-Government-222118>. Accessed 01 Oct 2015.

Parker, R., & Aggleton, P. (2003). HIV and AIDS related stigma and discrimination: conceptual framework and implications for action. *J soc sci & med*, 57, 13-24.

Pirillo, M. F., Scarcella, P., Andreotti, M., Jere, H., Buonomo, E., Sagno, J.-B., & Giuliano, M. (2015). Hepatitis B virus mother-to-child transmission among HIV-infected women receiving lamivudine-containing antiretroviral regimens during pregnancy and breastfeeding. *Journal of Viral Hepatitis*, 22(3), 289–96.

Salehi, A. S., & Garner, P. (2010). Occupational injury history and universal precautions awareness: a survey in Kabul hospital staff. *BMC Infect Dis.*, 10, 19.

Shepard, C. W., Simard, E. P., & Finelli, A. (2006). Hepatitis B virus infection: epidemiology and vaccination. *Epidemiol Rev.* 28, 112–125.

Smith, E., Atkinson, R. L., Hilgard, E. R. (2003). *Introduction to psychology*: Australia Belmont, CA: Wad worth/Thomson Learning, p658-666

Songsore, J. (2008). Environmental and Structural Inequalities in Greater Accra. *The Journal of the International Institute*, 16(1), 56-60.

Tan, N. C., Cheah, S. L., & Teo, E. K, (2005). A qualitative study of health-seeking behaviour of hepatitis B carriers. Singapore. *Medical Journal*, 46 (1), 6-10.

Taylor, V. M., Tu, S. P., Woodall, E., Acorda, E., & Chen, H. et al. (2005). Hepatitis B knowledge and practices among Chinese immigrants to the United States. *Asian Pac J Cancer Prev.*, 7 (2), 313–7.

UNICEF. Ghana-WASH in Communities (2013). <http://www.unicef.org/ghana/wes.html>. Accessed 02 Oct 2015.

Vildósola, G. H. (2000). Hepatitis B, vaccination impact on acute disease, chronic carriers and hepatocarcinoma incidence. *Rev Gastroenterol Peru.* 20(4), 414–421.

World Health Organization, (2004). Global Burden of Diseases Update. Geneva. World Health Organization, (WHO/W74/2004). Available at: http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf. Accessed 2 Feb 2015.

World Health Organization (2006). Ghana National blood Policy. http://www.who.int/bloodsafety/transfusion_services/GhanaNationalBloodPolicy2006.pdf Accessed 10 January 2016.

World Health Organization, (2008). Hepatitis B. Fact sheet N°204. Geneva: WHO.

World Health Organization, (2012). Expanded Programme on Immunization Hepatitis B Vaccine. Available from: URL: <http://www.who.int/vaccines-documents/DoxNews/updates/updat31e.pdf>

World Health Organization (2014). World Health Assembly approves resolution on hepatitis and mechanism to coordinate non-communicable disease

response. <http://www.who.int/mediacentre/news/releases/2014/WHA-20140522/en/> Accessed 03 Oct 2015.

World Health Organization, (2015). Hepatitis B [http://www.who.int/mediacentre/factsheets/fs204/en/]

The World Bank Group (2015). Improved water source (% of population with access). <http://data.worldbank.org/indicator/SH.H2O.SAFE.ZS> . Accessed 03 Oct 2015.

WHO, (2016). Global health sector strategy on viral hepatitis 2016–2021. Toward ending viral hepatitis. www.who.int/hepatitis/strategy2016-2021/ghss-hep/en/. [Accessed on November 2017].

World Hepatitis Alliance (2013). Ghana Survey highlights. http://webcache.googleusercontent.com/search?q=cache:So4LDh_banUJ:global-report.worldhepatitisalliance.org/en/download/civil-society-download.html%3Ffile%3Dfiles/global_report/download/CS%2520countries/Ghana.pdf+%amp;cd=1&hl=en&ct=clnk&gl=gh. Accessed 01 Oct 2015.

Weinbaum, C. M., Mast, E. E. & Ward, J. W. (2009). Recommendations for identification and public health management of persons with chronic hepatitis B virus infection. *Hepatology*, 49(5), 35-44.

Yayehyirad, K., Asfaw, D., Hailemariam, K., Mengistu, A., & Binyam, A. (2009). Health of Institutions and Persons. *Ethio. J. Health Dev*, 23 (especial issue), 173–223.

Zanetti A. R, Van Damme P., & Shouval, D. (2008). The global impact of vaccination against hepatitis B: a historical overview. *Vaccine*; 26, 6266-6273

Ziraba, A. K., Bwogi, J., Namale, A., Wainaina, C. W., & Mayanja-Kizza, H. (2010). Sero- prevalence and risk factors for hepatitis B virus infection among health care workers in a tertiary hospital in Uganda. *BMC Infectious Diseases*, 10(1), 191.



APPENDIX

A: QUESTIONNAIRE

Presbyterian University College Ghana

I am a student of the above university working on my Thesis for the award of Master of Science (Environmental Health and Sanitation). As part of my academic work, I am conducting a research on assessing the Knowledge, Attitude, and Perception concerning Hepatitis B infection among Healthcare workers in Ghana. The research work is strictly for academic purpose and the information provided will be treated with the necessary confidentiality. I would therefore be grateful if you could kindly answer the following questions.

Kindly respond to the questions by ticking the appropriate option.

Section A: Demographic Characteristics

1. Age: Less than 20 21 to 30 31 to 40 41 to 50 51 to 60
2. Gender: Male Female
3. Educational level: Diploma Degree Masters PhD
4. Work experience in current hospital?
 Less than 1 1 to 4 5 to 9 10 to 14 15 or more
5. Occupation Doctor/Physician Assistant Nurse/Midwife
 Laboratory Personnel Janitorial Personnel Others

Section B: Knowledge of Hepatitis B Infection

Please indicate your response on the following about the Knowledge of Hepatitis B infection by ticking one of the options in the following five-level scoring scale:

1 = [Strongly agree], 2 = [Agree], 3 = [Neutral], 4 = [Disagree], and 5 = [Strongly disagree].

#	Knowledge of Hepatitis B Infection					
		1	2	3	4	5
6	Have you heard of hepatitis B (HB) infection before?					
7	People get HB infection from genes (heredity)					
8	People get HB infection through the air (coughing or staying in the same room)					
9	People get HB infection from sexual relationships					
10	Do you agree that people get HBV infection during birth?					
11	Do people get HB infection by sharing spoons or bowls for food?					
12	Do people get HB infection by sharing a toothbrush with an infected person?					
13	People get HB infection by shaking hands with an infected person					
14	HB infection present with signs like fever, weakness, jaundice (yellowish coloration of the eyes), right sided abdominal pains					
15	HB infection cause liver cancer					
16	If someone is infected with hepatitis B infection but he or she look and feel healthy, do you think that person can spread hepatitis B					
17	Do you agree that hepatitis B virus more infectious and deadly than human immunodeficiency virus (HIV)?					

Section C: Attitude and Practices of people towards Hepatitis B Infection

Please indicate your response on the following about the Attitude and Practices of people towards Hepatitis B infection by ticking one of the options in the following five-level scoring scale: **1 = [Strongly agree], 2 = [Agree], 3 = [Neutral], 4 = [Disagree], and 5 = [Strongly disagree].**

#	Attitude of people towards Hepatitis B Infection					
		1	2	3	4	5
18	Have you heard of hepatitis B vaccine before?					
19	Do you agree that healthy people need vaccination?					
20	Would you agree to go for the hepatitis B vaccine?					
21	Have you ever received a hepatitis B vaccine before?					
22	Would you be willing to be tested for hepatitis B infection?					
23	Will you like to eat, sleep or shake hands a person infected with hepatitis B?					

Section D: Perception of Hepatitis B Infection among Healthcare workers

Please indicate your response on the following about the Perception of Hepatitis B Infection among Healthcare workers by ticking one of the options in the following five-level scoring scale: **1 = [Strongly agree], 2 = [Agree], 3 = [Neutral], 4 = [Disagree], and 5 = [Strongly disagree].**

#	Perception of Hepatitis B Infection among Healthcare workers					
		1	2	3	4	5
24	Do you think there is efficient treatment of hepatitis B virus infection?					
25	Hepatitis B infected person should be isolated away from people to prevent them from infecting others					
26	Do you agree that regular exercise and eating healthy food can prevent hepatitis B virus infection?					

Adopted from: Green et al. (2014)

Thank you for your participation.