PATTERN OF ACCEPTANCE OF HEPATITIS B VACCINATION AMONG CLINICAL STAFF OF THE UNIVERSITY COLLEGE HOSPITAL, IBADAN.

BY

ADEBOWALE OYEBANJI ADETULE
MATRIC NO: 30415
B.Sc. Hons. (Ibadan), MBA (Ljubljana)

A DISSERTATION SUBMITTED TO THE DEPARTMENT OF HEALTH PROMOTION AND EDUCATION, FACULTY OF PUBLIC HEALTH, COLLEGE OF MEDICINE, UNIVERSITY OF IBADAN IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER OF PUBLIC HEALTH (HEALTH PROMOTION AND EDUCATION) OF THE UNIVERSITY OF IBADAN

JULY, 2012

DEDICATION

This dissertation is dedicated to

Emeritus Professor O.O. Akinkugbe

for his encouragement and support.

ABSTRACT

Hepatitis B infection is one of the most important occupational hazards for clinical staff of hospitals. Despite the availability of an effective hepatitis B vaccine, information is scanty on the acceptance of this vaccine and factors influencing decision to accept it. This study was therefore carried out to identify pattern of acceptance of hepatitis B vaccination among clinical staff at the University College Hospital, Ibadan, Nigeria.

A cross-sectional survey involving 438 clinical staff members who have regular contact with blood and other body fluids and by implication have had possible exposure to hepatitis B infection were carried out. The instrument was a semi-structured questionnaire which was self-completed by the respondents. Data analysis was done using the Statistical Package for Social Sciences (SPSS) version 11. The respondents comprised of nurses (96), physicians (145), dentists (39), laboratory scientists (37), surgeons (67), obstetricians and gynaecologists (54).

The ages of the respondents ranged between 21 and 65 years with a mean score of 39 (±9). All respondents had worked for at least one year in the hospital. Majority of the respondents (69.9%) had history of needle-prick injury. More than two-third (79.7%) had frequent accidental exposure to blood or other body fluids. Three hundred and seventy-two respondents (84.9%) agreed to being more at risk of HBV infection than other persons.

Overall, the respondents scored an average of 22.3 points (±2.82) on a 27-point hepatitis B knowledge scale with those specializing in obstetrics and gynaecology having a significantly higher mean score of 23.7 ($p< 0.05$). Most of the respondents (78.8%) agreed that hepatitis B infection is a serious disease. Out of 411 respondents who answered the questions on vaccination status, only (56.0%) were vaccinated. The physicians had the highest acceptance rate (61.9%) followed by the surgeons (57.6%), obstetricians and gynaecologists (55.1%), nurses (51.7%), dentists (51.3%), and laboratory scientists (47.2%). Ninety-three (40.4%) of those who had accepted the vaccine were persons aged between 31

and 40 years of age, who had spent less than 10 years in the profession. The commonest reasons for accepting the vaccine were awareness of the importance of Hepatitis B vaccination and fear of hepatitis B virus infection. The factors strongly associated with the acceptance of the vaccination were type of specialty, age of personnel (≤ 40 years), number of years spent in the profession (≤ 10 years), and knowledge of hepatitis B virus infection. Among those that were not immunized, concern about side effects of the vaccine (39.2%), and lack of time (36.5%) were the major reasons given for not receiving the vaccination. A good number of the respondents suggested free offer of vaccination (32.6%) and more education on the efficacy of the vaccine (31.3%) as best ways of encouraging better acceptance of the vaccine.

The study shows that knowledge about hepatitis B was high, attitude was positive but uptake was low. There was still considerable gap in adoption of this preventive behaviour. Health education is needed to encourage compliance.

Key Words: Vaccination, Hepatitis B Virus Infection, Occupational Hazard, Acceptance, Clinical Staff

Word Count: 483

ACKNOWLEDGEMENTS

I acknowledge God's love and faithfulness to me throughout my programme. I am indebted to my Supervisor, Professor Oladimeji Oladepo for his exceptional and meticulous supervision in the course of this work. I am also indebted to Dr. Fred Oshiname for his brotherly role during critical periods of my studies. Also the fatherly attention of Professor J.D. Adeniyi can hardly be forgotten. The useful contribution of Dr. Ajuwon in terms of advice is also still fresh in my memory. I am particularly grateful to Emeritus Professor O.O. Akinkugbe for his dedication to my progress.

I thank all that God used to support me at various stages of this programme. Special mention must be made of my darling wife, Mrs. Adedoyin Abolaji Debo-Adetule. She has been a formidable pillar of support and encouragement. With the level of her encouragement, it was as if further social progress of the family depended upon my successful completion of this MPH Programme. My profound gratitude goes to all members of staff of the Dean's Office, Faculty of Basic Medical Sciences especially the secretaries for making their services available to me. In this regard, I also thank my former Dean, Professor F.A.A. Adeniyi and the current Dean, Professor O.D. Olaleye for their encouragement and my colleagues in the MPH Class (2002/2003 Academic Session) for their moral support .

CERTIFICATION

I certify that this study was carried out by Adebowale Oyebanji Adetule in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Nigeria.

.....

Supervisor

Professor Oladimeji Oladepo, MPH, Ph.D (Ibadan)

Department of Health Promotion and Education,
Faculty of Public Health,
College of Medicine,
University of Ibadan,
Ibadan.

TABLE OF CONTENTS

CHAPTER THREE:METHODOLOGY

CHAPTER FOUR: RESULTS

CHAPTER FIVE: DISCUSSIONS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

GLOSSARY OF ABBREVIATIONS

AIDS	– Acquired Immunodeficiency Syndrome
CDC	– Center for Disease Control
DNA	– Deoxyribonucleic Acid
EASL	– European Association for the Study of the Liver
HB	– Hepatitis B
HBsAg	– Hepatitis B Surface Antigen
HBV	– Hepatitis B Virus
HCV	– Hepatitis C Virus
MMWR	– Morbidity, Mortality Weekly Report
OSHA	– Occupational Safety and Health Administration
RNA	– Ribonucleic Acid
SPSS	– Statistical Programme for Social Scientists
UCH	– University College Hospital
WHO	– World Health Organization

CHAPTER ONE

INTRODUCTION

Background of the Study

Hepatitis B and C viruses are particularly unique due to their ability to cause persistent infection in chronic carriers and progressively cause terminal liver disease (Aken'Ova, Olasode, Ogunbiyi, Thomas, 1993). Epidemiological stratification has shown that Nigeria belongs to the high endemic zone with a carrier rate in the range of 8 – 22% (Olaleye, Ekweozor, Lizi, Opala, Sheng, Onyemenem, Rasheed, 1996; and Harry, Bajani, Moses, 1994) with an estimated exposure rate of up to 70% (Bojuwoye 1996).

Hepatitis B Virus (HBV) infection is a major occupational hazard of health care workers (Shaw, 2000). The risk of acquiring HBV infections from occupational exposures is dependent on the frequency of percutaneous and permucosal exposures to blood or blood products (Sebastian, 2001). Any health care worker may be at high risk of HBV exposure depending on the tasks that he or she performs and workers performing tasks involving exposure to blood or blood contaminated body fluids should be vaccinated against the infection (Rosen, 2000).

Clinical Staff are at high risk of occupational acquisition of HBV infection (Lewy, 1987). Findings from a sero-prevalence survey of a random sample (n = 75) of doctors and dentists working at the University College Hospital, (UCH), Ibadan, Nigeria showed that there was a high prevalence of HBV infection (39%) with a high potential of transmissibility among clinical staff at the hospital. Infection with HBV was found to be associated with some specialties such as surgery and dentistry. Hepatitis B Surface Antigen (HBsAg) which indicates HBV infection was detected in serum of ten out of 22 (45%) dentists, compared to nineteen out of fifty-three (35.8%) physicians ($p < 0.05$). Prevalence rate for physicians, surgeons and dentists are 28%, 44%, and 45% respectively and another reason for the infection was lack of HBV vaccination ($P<0.05$) (Olubuyide, Ola, Aliyu, Dosumu, Arotiba, Olaleye, Odaibo, Odemuyiwa and Olawuyi (1997).

Previous studies have identified lack of infrastructure, equipment and non-practice of universal safety precaution as causes of high prevalence of HBV infection among clinical staff at the UCH, Ibadan (Olubuyide *et al*., 1997). It has been said that due to economic reasons, most hospitals could not always provide materials needed for universal precautions (Odaibo, Arotiba, Fasola, Obiechina, Olaleye, Ajagbe, 2003). According to Olubuyide *et al.*, (1997) dentists and physicians were able to adhere to universal precautions in less than 50% of the occasions whenever clinical procedures were being carried out on patients in the UCH.

Vaccination is the most effective way of preventing HBV transmission (Centre for Disease Control,1989). All health care-givers should be vaccinated preferably at the beginning of their training period (Odaibo et al., 2003). The Centre for Disease Control (CDC) in America recommended in 1990 that all clinical staff should be vaccinated to prevent exposure to infectious diseases which could reduce productivity and constitute loss of revenue due to costs of treating infected employees. Despite the promotion of vaccination of staff against hepatitis B, vaccination rates among clinical staff remain low (Helcl, 2000; Nafziger and Herwaldt, 2000).

Doebbeling and Ferguson (1996) surveyed a stratified random sample of clinical staff at the University of Iowa Hospital, USA in 1992 to identify the factors influencing their likelihood of accepting vaccination against Hepatitis B. At the time of the survey, vaccination of hospital staff was voluntary and it was found that only 54% of the sample had completed the three-dose vaccination series, although 70% had received one or more doses. The same percentage (54% vaccinated) was found in a 1989 survey of members of staff at an unnamed University Medical Center in the United State (Murata and Young, 1993).

Doebbeling *et al*., (1996) reported that among those remaining un-immunized, concern about vaccine-related side-effects, knowledge about the disease and occupational risk, and access to vaccination were the major factors associated with non-uptake. Social influence (by peers, supervisors, role models, friends, spouses) conversely, was the main factor associated with vaccine acceptance, although perception of risk and disease knowledge was also important.

Murata *et al*, (1993) had shown that younger doctors (either in training or at an early career stage) were more likely to be vaccinated than older ones and this

was confirmed for the physicians in Doebbeling's study (Doebbeling, 1996). As part of a more general survey of attitudes towards self-protective precautions among nurses and physicians at five St Louis, USA Hospitals, Jeffe and Mutha, (1997) noted that 85% overall were already vaccinated against hepatitis B. With regards to doctors, this was almost certain (according to Monk, 2000), because they were vaccinated during their time as medical students or house officers.

Reliance on this vaccination may engender a false sense of security. Oates (2004) reported that, two years after being vaccinated, 38% of students at a United Kingdom medical school had failed to request measurement of their antibody levels suggesting that many were unaware of the risk of vaccine failure. It was reported that some of them wrongly believed that the immunity conferred by vaccination would be life-long.

Also in the United Kingdom, a study of surgeons at a leading London Teaching Hospital found that 59% had proven vaccine-induced immunity despite their frequent exposure to needle-stick injuries (Smith, Bonatvala, Tilzey (1996). Liewellyn and Harvey (1993) investigated hospital medical staff at three sites in South Wales and found a 71% overall uptake of hepatitis B vaccination, although only 27% had completed the three doses. In agreement with other studies, junior doctors were found to have the highest percentage of completed vaccination, and this figure declined with seniority. It was suggested that this trend was partly due to the fact that more experienced doctors had a perception that they were at low risk (even though this perception was incorrect).

Lin and Bali (1997) surveyed attitudes towards Hepatitis B Virus immunization amongst Nurses in Taiwan. Although this country has a relatively high rate of chronic HBsAg carriage, vaccination rates among clinical staff (nurses, dental and medical staff)at high risk of infection are low and annual rates of infection of hospital staff are high. Fear of pain from repeated injections, time needed and cost of vaccination and concerns about efficacy of the vaccine were identified as the major factors influencing Taiwanese nurses' decisions about Hepatitis B vaccination. Lin and Bali further reported that the lowest vaccination rate was found amongst the most experienced nurses and the researchers suggested that a specific intervention programme targeted at this group was needed in order to improve vaccine uptake. Thus, studies from other parts of the world have addressed issues pertaining to acceptance and non-acceptance of hepatitis B

vaccination. However, due to differences in sero-prevalence rates and culture amongst other factors, the result of studies conducted in one environment cannot be extrapolated to others.

Statement of the Problem

According to Igetei (2009), hepatitis B virus and hepatitis C virus have been found to be the most important causes of chronic liver diseases leading to cirrhosis and liver cancer and ; ultimately resulting in premature death. Igetei further explained that the liver disease caused by these two viruses was usually silent and unrecognized. It was also stated that the impact was often underestimated by both the sufferers and the health care professionals. Consequently, most patients present very late with advanced liver cirrhosis and cancer. Adelakun (2009) described hepatitis B infection as major cause of end stage liver disease and hepatocellular carcinoma.

Adelakun further explained that the term 'dynamic, controllable but not curable' were applied to the disease because of the ability of the virus to remain in the hepatocyte nuclei thus posing a lifelong threat of disease reactivation to the patient.

According to Ola (2010), the prevalence of HBsAg among the patients at the different hospitals in Nigeria as shown in table 1 is high and is in endemic proportions in Ibadan(84%), Kano(70.3%), Ile-Ife (62%), Lagos(52%),Maiduguri (49%) and Benin(41%) in descending order. Unfortunately these are the places where there are tertiary healthcare institutions for expert medical services in the care of ailments of both the adult and paediatric populations. The researcher explained that since the patients and the healthy Nigerians reported in these different health care facilities for care and medical examination reports respectively, the health care workers were therefore highly at higher risk of acquiring HBV.

Table1: Prevalence Of HBsAg In Adults and Children at the Health Care Centres of

Different Locations In Nigeria

Zone	Location	Prevalence%
North Central States	Abuja	27.8
	Jos	15.1 - 25.9
	Keffi	17.1 - 23
	Makurdi	11
North East State	Maiduguri	38 - 49
North West States	Kano	70.3
	Gombe	26.5
South East State	Enugu	9 - 18.4
South South States	Benin	11
	Calabar	26
	Port-Harcourt	9.7
South West States	Ibadan	10.3 - 84
	Ile-Ife	62
	Lagos	18 - 52
	Shagamu	16.8
Children	Benin	19.3 - 41.4
	Jos	19.6 - 22.7

Source: Ola (2010)

Igetei (2009) disclosed that many people had never been screened and many people might not know about the effect of the virus or how it could be transmitted. Hepatitis B viral infection is a highly infectious disease and can infect people regardless of age (Wolski, 2007). 'Health workers in Nigeria are particularly at increased risk of contracting hepatitis B viral infection' (Ibekwe and Ibeziako, 2006). According to Igetei, hepatitis B virus belong to the same class as HIV/AIDS. Igetei further explained that while HIV/AIDS did not live longer than 24hours outside the body, hepatitis B virus could live in the blood that had been shed for days and had dried up and if somebody with an open wound came in contact with such blood, the person would be infected immediately.

Hepatitis B infection is largely asymptomatic with long term complications like liver cirrhosis and hepatocellular carcinoma (Sherman, 2000). Though, occurring after many years, hepatitis B has not received the attention it deserves (Damme, Kane, Meheus, 2005). Despite the availability of effective vaccine in the United States since 1982, administration of the vaccine commenced at UCH only in 1997 (Olofin, 2007). Despite that, there is no information on the level of acceptance of the vaccine at the Hospital. The UCH policy on hepatitis B states that all UCH staff should be educated on HBV infection as well as other infections prevailing in the settings.

Similarly, every health care worker should have personal hygiene prior to ingestion of food and drink at work. Sharing of sharp objects has been discouraged and every staff members has been advised to know his or her HBV,HCV, and HIV status and that of his spouse, children and household members. They have also being advised to avoid contact with blood and blood products. The policy also emphasizes the need for health care workers to wear clean and disinfected protective clothing and to compulsorily have hepatitis B vaccination with three full doses (UCH Workplace Policy,2005) . Despite the availability of this policy however, many clinical staff members of the hospital have not received hepatitis B vaccination.

The register at the Central Immunization Unit of the Hospital indicated that only four hundred and fifty health care workers out of three thousand and fifty nine have been vaccinated in the past ten years. According to discussion with Dr. Olofin, the Head of the UCH Staff Clinic, the current policy of the hospital stipulates that staff members should be tested for evidence of hepatitis B virus infection.

In a previous study by Olubuyide et al (1997), it was discovered that there is a high sero-positivity (45%) for HBsAg among some of the clinical staff (Dentists and Doctors) at U.C.H and 80% of them had not been previously vaccinated against HBV. Unfortunately, records of staff death due to hepatitis B infection were not available from the medical records of the hospital. This highlights the need for a review of the knowledge and acceptability of the hepatitis B virus vaccine in this hospital.

Justification for the Study

This study was planned to ascertain the pattern of acceptance of hepatitis B vaccination among the clinical staff of U.C.H, Ibadan. It was necessary to carry out this study to raise awareness of the hospital staff to the reality of the infection and possibly encourage them to take the vaccination. The resultant effect of this would be a reduction in the incidence of hepatitis B virus infection. As a result of this, the society would most likely benefit through healthy living, increased labour productivity, reduced costs of healthcare and increasing longevity. The reason for acceptance or non-acceptance of hepatitis B vaccine would identify what should be the focus of health education intervention.

Furthermore, maintaining a complete vaccination status for the clinical staff is important to minimize morbidity among staff and patients. Clinical staff members have a duty to place their patients at reduced risk of infection and they have an obligation to their patients to take all reasonable precautions to prevent transmission in the course of patient care (Tierney, 2000). This can be achieved if they are vaccinated against hepatitis B virus infection. The overall result of this project when published would also be useful to hospital communities in developing countries like Nigeria and it is expected to influence the process by which effective policy reforms to reduce deaths and loss of work force as a result of HBV infection can be attained. This study also has the potential of increasing awareness of the danger of hepatitis B infection and possibly increase uptake of hepatitis B vaccination of hospitals among clinical staff.

Research Questions

(i) What do the clinical staff members at the University College Hospital, Ibadan know about hepatitis B infection?

ii) What is the attitude of the clinical staff of the University College Hospital, Ibadan towards hepatitis B vaccination?

iii) How many of the UCH clinical staff members have accepted hepatitis B vaccination?.

iv) What are the factors influencing acceptance of Hepatitis B vaccination among clinical staff at the University College Hospital, Ibadan?

Hypotheses

The following hypotheses were formulated for the study:

(i) There is no association between respondents' socio-demographic characteristics (age, years of experience in the profession and specialty) and knowledge of hepatitis B infection.

(ii) There is no association between adoption of hepatitis B vaccination and respondents' socio-demographic characteristics (age, years of experience in the profession and specialty).

Objectives of the Study

The objectives of this study were to:

(i) Determine the level of knowledge of clinical staff of the University College Hospital, Ibadan about hepatitis B infection;

(ii) Ascertain the attitude of the clinical staff of the University College Hospital, Ibadan towards hepatitis B vaccination;

(iii) Determine the proportion of clinical staff that have been vaccinated with the hepatitis B vaccine and;

(iv) Document the factors influencing acceptance of hepatitis B vaccination among the clinical staff at the University College Hospital, Ibadan.

Limitation of the Study

A major limitation of this study is that it covered only the skilled staff in clinical departments who were expected to show above average knowledge of hepatitis B virus infection. Inadvertently, the study did not cover other critical segments of workers in the Departments such as ward maids, cleaners, mortuary attendants and other unskilled hospital workers whose knowledge of hepatitis B virus infection might be even much less than that of the study population. Regardless of this, more than the minimum sample size was used. Furthermore, the reliability coefficient of the instrument was not done due to an oversight. A larger, broad based study will be required in the future to address these limitations.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Hepatitis B Virus infection is a significant public health problem in the world. It has been estimated that 2 billion people worldwide have been infected with HBV and 350 million are chronically infected (CDC, 2002). In view of the fact that HBV substantially increases the risk of hepatocellular carcinoma, it is the second infective cause of cancer worldwide (Lavanchy, 2004). Occupational hepatitis B infection remains a thre at to health care workers worldwide, even with availability of an effective vaccine (Hell, 2000).

According to Maddrey (2001), hepatitis B is one of the most common infectious diseases in the world. Three hundred and fifty million (350,000,000) people worldwide have been estimated to be chronic hepatitis B carriers. The global prevalence of chronic HBV infection varies widely, from high (>8%, in Africa, Asia and the Western Pacific) to intermediate (2 – 7%) in Southern and Eastern Europe) and low (< 2%), in Western Europe, North America and Australia). Nigeria is regarded as a region of high endemicity (Collin, Edgar, Lyn, Anthony, and Beth 2006). Acute hepatitis is common in Nigeria and hepatitis B virus (HBV) infection has been a major aetiological factor (Ola, Otegbayo, Odaibo, Olaleye, Olubuyide 2002). Approximately, 60% of the world's population lives in areas where HBV infection is highly endemic, such as China (total population 1.3 billion), Indonesia (223 million), Nigeria (140 million) and much of the rest of Asia and Africa (Ayoola 2003). According to Brasil, da Fonseca, de Souza, (2003), most of the Central and South America is considered a region of low endemicity. Western Amason basin, including Brazil and Peru is a highly endemic area with observed HBsAg sero-prevalence rate greater than 10%. Many developed nations, including the United States, fall into the low endemicity category (McQuillan, 2004). Asia and Africa have previously been classified as areas of high endemicity for hepatitis B Virus, but in some countries, highly effective vaccination programmes have shifted this pattern towards intermediate or

low endemicity (Andre 2006). Thus, China is now the only country in Asia where HBV endemicity is high. Countries with intermediate endemicity include India, Korea, the Phillippines, Taiwan and Thailand while those with low endemicity include Japan, Pakistan, Bangladesh, Singapore, Sri Lanka and Malaysia. Most countries in Africa with the exceptions of Tunisia and Morocco have high endemicity (Lavanchy, 2004).

According to Tachet (2001), the incidence of viral hepatitis has decreased as a result of improved sanitation, living conditions and the adoption of childhood vaccination. However, in some countries, the incidence of viral hepatitis remains higher than it should be and this and other preventable infections still account for thousands of deaths and tens of thousands of acute episodes of viral hepatitis each year. Hepatitis B is particularly a serious public health concern because of the high risk of maternal to infant transmission, chronic infection that may lead to progressive liver disease and eventual liver cancer or liver failure.

Iom (2002) reported that despite the understanding of patient risk factors and the development of safe and effective vaccines, many people remain at high risk of contracting viral hepatitis. Children and adults at risk of infection are often not recognized, and many individuals have never received effective counseling about reducing their risk of infection. Efforts to vaccinate at risk adults, adolescents and even children have produced limited success.

Viral Hepatitis with Special Reference to Hepatitis B

Hepatitis is an inflammatory state of the liver that may be caused by exposure to toxic materials, autoimmune disease or by infection (Gladwin, 1996, Beeson, 1979). The viral infections most commonly associated with inflammation include hepatitis A, B, C, D and E (Dienstag, 1998). The general term viral hepatitis refers to infections caused by at least six different viruses. Indeed, viral hepatitis has emerged as a major public health problem which is endemic in all parts of the world (Lemon 1995).

According to Blumberg (1999), viral hepatitis can be classified by mode of transmission, type of virus and chronicity. Hepatitis A and E are both transmitted by fecal-oral route while B, C, D and G are considered blood-borne pathogens. Hepatitis B is a DNA and a hepadnavirus while hepatitis A, C, D, E and G are RNA viruses. All of these viruses can cause acute diseases lasting several weeks

including jaundice; dark urine, nausea; vomiting and abdominal pain. Though viral hepatitis can occur without the presence of jaundice, jaundice has historically been considered a diagnostic marker for hepatitis. This virus can also cause chronic infection of which the patient never gets rid and may develop cirrhosis of the liver or liver cancer. Hepatitis B Virus (HBV) is the most serious type of viral hepatitis causing chronic hepatitis for which a vaccine is available.

Blumberg (1999) further reported that Hepatitis B infection was not seen as a particularly threatening disease, an attitude rooted in its history as a stigmatized disease affecting only marginal members of the society. Education about the disease was also not very prevalent, and this factor, coupled with the view of hepatitis B as a disease only affecting homosexuals and intravenous drug users, created a general public that did not see hepatitis B as personally dangerous.

Mode of Transmission of Hepatitis B

Routes of transmission include vertical (mother to child or generation to generation through close contact) and early life horizontal transmission (through human bites, lesions, and sanitary habits), and adult horizontal transmission (through sexual contact, intravenous drug use, and medical procedure exposure) (Brian, Sean, Thomas, Uchenna, David, Kris 2004).

In developing countries, the risk of occupational transmission of blood-borne pathogens is increased by the inappropriate handling of contaminated needles that result into some common unsafe practices. (Simonsen, Kane, Lloyd, Zaffran, Kane, 2001). These include the administration of unnecessary injections on demand, the reuse of non-sterile needles when supplies are inadequate, and the unregulated disposal of hazardous waste. Such practices pose risks of disease transmission to health care workers, patients, and communities at large.

In many developing countries, the high demand for injections derives from the belief that injections are more effective than other forms of treatment. In Ghana, 80 – 90 percent of the patients who visited a health centre received one or more injections per visit (Van and Hardon, 1997). Similar findings have been reported in Uganda and Indonesia (Van et al, 1997). Although data on Nigeria are not available, the results are likely to be similar. A correlation has been documented between the frequency of injections and the prevalence of HBV, HCV, and HIV in the population (Kane, Lloyd, Zaffran, Simonsen, Kane, 1999).

Although many developing countries are replacing sterilizable syringes and needles with "auto-disable" and standard disposable syringes, where sterilization is still the practice, it is often incomplete (Battersby, Feilden, Stilwell, 1998). Improperly sterilized injection equipment has been associated with outbreaks of HBV infection, Ebola fever, Lassa fever, and Tetanus (Kane, et al 1999). Further exacerbating the risk to health care workers in developing countries is the fact that there is a shortage of gloves, gowns, masks, and goggles to protect them from contact with blood (Moses, 2000).

In the United States, the most important route of transmission is by sexual relationship with an infected person. However, transmission among homosexual men occurs possibly via contamination from asymptomatic rectal mucosal lesions at sites of sexual contact (EASL, 2002). Contamination of mucosal surfaces with infective secretions other than serum or plasma could occur with contact involving semen (Briggs, 1994).

According to CDC (2000), HBV is transmitted horizontally by blood and blood products and by sexual transmission. It is also transmitted vertically from mother to child in the prenatal period which is a major mode of transmission in regions where hepatitis B is endemic. The risk of HBV infection is notably high in promiscuous homosexual men, but it is also transmitted sexually from men to women and from women to men. Health care workers and patients receiving hemodialysis are also at increased risk of infection.

McQuillan (1999) reported that, transmission of HBV by the parenteral route was well documented. This is a hazard among recipients of transfused blood, pooled plasma, fibrinogen factor VIII concentrate and acute vaccine contaminated with human serum (Mc Mahon, 1995). Inoculation with minute amounts of infected blood may transmit HBV infection, inadequately sterilized syringes, hypodermic needles, dental and surgical instruments, tattoo needles, and razors have all been implicated in the transmission of infection.

A high frequency of parenteral drug abuse is a major cause for infection in the young adult population and majority of patients transfused

with HBsAg positive blood have developed HBV infection. A large community study conducted by the CDC over a 17-year period found that heterosexual exposure accounted for 27.4% of all observed cases (Goldstein, Alter, Williams, 2002). Other common risk factors included intravenous drug use (18.2% of cases)

and male homosexual activity (13.5% of all cases). Exposure to an infected household member through body fluids such as serum, saliva and semen accounted for 3.6% of cases and occupational exposure to blood accounted for another 1.6%. For about one third of patients, no particular high-risk behaviour could be identified. In many cases in which a risk factor is not identified, it is important to note that the patient might be unable to recall or unwilling to report their high-risk behaviour (Goldstein, 2002).

Epidemiology of Hepatitis B Infection

According to Sheen, Tsou, Lin, Lin, Hsu, Chen, Chang and Yeh, (2006), hepatitis B Virus infection is the tenth leading cause of death worldwide. HBV infection results in 500,000 to 1.2 million deaths per year caused by chronic hepatitis, cirrhosis, and hepatocellular carcinoma which account for 320,000 deaths per year (Gadi Lalazar, Deborah Rund and Daniel Shouval (2006).

According to Brian, Ward and Pierre Plourde, (2006), the only important source or reservoir of virus for human infections remains interpersonal. Although some higher primates other than humans may be infected, there is no evidence that they are important sources for human infection. If non-human primates are infected in nature, it is unlikely they would infect humans because transmission requires intimate contact. Some environmental surfaces such as toothbrushes, razors, needles, and toys may cause person to person transmission in some cases, but there is no important environmental reservoir such as water or food. There is no evidence for fecal-oral transmission (Takeda, Jones, Shepherd, Davidson, 2005). Takeda et al further reported that features of hepatitis B virus infection and the kinds of close contact required for transmission, probably accounted for the infrequent epidemic pattern of spread. Persistent infections in which infectious HBV may be present in the blood and certain other body fluids represent a stable human reservoir of virus, so HBV can be maintained, even in small isolated population (Audre, 2006).

Although blood and blood products are the best documented sources of infectious viruses, HBsAg has also been found in faeces, urine, bile, sweat, tears, saliva, semen, breast milk, vaginal secretions, cerebrospinal fluid, synovial fluid and cord blood. However, only serum, saliva, semen have actually been shown to contain infectious HBV in experimental transmission studies. The report of

transmission through the bite of an infected patient is consistent with the presence of HBV in saliva (Bader 1998).

Health care personnel have been shown to be at greater risk for HBV infection than the general public and this is undoubtedly caused by their frequent exposure to infected patients. The specific routes of transmission from patients to medical and dental workers are not known although it appears that the greater the direct exposure to blood and serum – for example, as for surgeons and workers in renal dialysis units, the greater the risk of HBV infection (Kohrt, 2006).

According to Robinson (1999), a few persistently infected physicians, dentists and surgeons as well as acutely infected health care personnel had adduced their infection to multiple patient contacts. Robinson further reported that most health care personnel, who were carriers, as well as those with acute infection, appeared to present little risk to their patients. Transmission of virus from chronic carriers via administration of their blood products or via accidental needle puncture in a medical setting has been observed frequently. The dose of virus needed for successful infection by the oral route appears to be higher than that needed for parenteral infection (Audre, 2006).

Prevention of Hepatitis B Infection

Lavancy (2004) reported that in Western countries, the disease was relatively rare and acquired primarily in adulthood, whereas in Asia and most of Africa, chronic HBV infection was common and usually acquired parentally or in adulthood. More efficacious treatments, mass immunization programme, and safe injection techniques are essential for eliminating HBV infection and reducing global HBV-related morbidity and mortality. Implementation of mass immunization programme, which had been recommended by the World Health Organization since 1991, had dramatically decreased the incidence of HBV infection among infants, children, and adolescents in many countries (Sheen *et al* 2006). However, not all countries have adopted these recommendations and there remains a large number of persons that were infected with HBV prior to the implementation of immunization programme. Antiviral treatment is the only way to reduce morbidity and mortality from chronic HBV infection (EASL, 2002).

Groups at Risk of Hepatitis B Viral Infection

For chronic infection, high risk groups include recent immigrants from regions where HBV is endemic, patients with blood clotting disorders or who are undergoing cancer chemotherapy or dialysis; male homosexuals and heterosexuals with multiple sexual partners and medical professionals (Blumberg, 1999). Risk of infection varies with occupation, life style or environment. Generally, the highest risk for HBV infection is associated with lifestyle, occupation or environments in which contact with blood from infected persons is frequent (Doebeling *et al*, 1996).

The risk of health care workers contracting Hepatitis B Virus infection depends on how often they are exposed to blood and blood products through percutaneous and permucosal exposures. Any health worker may be at risk for HBV exposure depending on the tasks performed. If those tasks involve contact with contaminated body fluids, then such workers should be vaccinated. Risk is often highest during training periods. Therefore, it is recommended that vaccination is done during training in schools of medicine, dentistry, nursing, laboratory sciences and other health professions (Lanphear, 1994; Thomas, 1992).

The risk of HBV infection for hospital personnel varies from one hospital to the other. Groups shown to be at increased risk in some hospitals include emergency room staff, nurses and physicians (Margolis, 1977). Other healthcare workers that have frequent contact with blood or blood products are also at increased risk of acquiring HBV infection. These include dentists, laboratory and blood bank technicians, dialysis centre staff, emergency medical technicians and morticians. Healthcare workers are five to ten times more likely than the general population to be hepatitis B carriers (Helcl, 2000).

Most reported needle stick injuries involve nursing staff, but laboratory staff, physicians, housekeepers, and other healthcare workers are also injured. Some of these injuries expose workers to blood borne pathogens that cause infection, the most important being HBV, HCV and HIV. Infections with each of these pathogens are potentially life threatening but preventable (McQuillan, 1999).

Hepatitis B Virus Carriers

HBV has an average incubation period of 75 days. Acute HBV infection can produce symptoms resembling those of other forms of viral hepatitis (e.g.

fatigue, jaundice, and abdominal pain). About one third of infected persons report no symptoms (CDC, 2003). Approximately 1% of infected persons develop fulminant hepatitis characterized by coagulopathy, encephalopathy and cerebral edema (Lee, 2004). People who do not recover from hepatitis B infection after six months are said to have chronic infection (Wexler, 2003). Many people infected with HBV develop chronic infection lasting years or decades. Patients who are jaundiced during the acute stage are less likely to progress to the chronic carrier state, therefore many individuals who have chronic HBV infection have never manifested clinically notable symptoms and are unaware of their infection. The disorder is often found when the virus is identified during blood tests for another purpose such as blood donation (Alter, 2003). In the absence of treatment, 8% to 20% of patients with chronic HBV infection progress to cirrhosis within five years (Fattovich, 2003).

Hepatitis B Vaccine

Hepatitis B vaccine first became available in the United States in 1982 (MMWR, 2005) but became officially available at the University College Hospital, Ibadan in 1997.The Advisory Committee on Immunization Practices (ACIP) of the CDC initially recommended a strategy of vaccination that focused on adults at high risk of contracting HBV. When it became apparent in 1991 that this strategy was not resulting in a marked reduction in HBV infections, the ACIP revised their recommendation to encourage universal childhood vaccination. In 1995, the recommendations were amended to include adolescent vaccination (CDC, 2003). The use of this vaccine has resulted in substantial reductions in viral hepatitis B transmission in both adults and children in the United States (Brian *et al*, 2006).

Side Effects of Hepatitis B Vaccine

The hepatitis B vaccines have been more thoroughly evaluated and intensively monitored than any vaccine in the history of medicine. The most common adverse event reported with HBV vaccination is injection site soreness which occurs in about 20% of hepatitis B vaccine (Engerix, 2001). Other side effects such as fatigue, headache and fever occur in fewer than 10% of those vaccinated (Mitko, 2000). Because the original HBV vaccine was manufactured using human plasma, some clinicians raised concerns that vaccination could

potentially lead to HIV infection. However, no cases of HIV infection from HBV vaccination have ever been confirmed (MMWR, 2002). Vaccines currently in use are manufactured using cell culture techniques that do not rely on human blood products and there is no risk of HIV infection with these vaccines.

Rate of HB Vaccination Acceptance and its Determinants

Vaccination programmes against hepatitis B was offered to 1,299 hospital personnel of Chulalongkorn University Hospital, Thailand (Israsena, 1992) and it was found that the initial acceptance rate for vaccination was 65.7%, with 10% non-acceptance and 24.3% undecided. The researchers found that the highest rates of acceptance were among medical students (75.5%), nursing students (68.8%), newly graduated nurses (63.6%), and the lowest of acceptance was among physicians (48.2%).

Burden and Whorwell (1991) assessed the uptake of hepatitis B vaccine amongst 100 medical and 100 nursing staff members in a teaching hospital in the United States of America. The researcher found 16% of nurses and 31% of doctors had completed a course of immunization with confirmation of sero-conversion. An additional 9% and 18% respectively had been immunized without post-immunization serology. Seventy-five percent (75%) of nurses and 51% of doctors had not been immunized.

According to Tawk, Vickery, Bisset, Lo, Selby (2006), people's behaviours when ill or seeking to prevent illness and their attitude to the need to maintain health are important in studying factors effecting utilization of health services generally. Suchman (2006) placed great reliance on social group influences, stating that very different levels of knowledge and attitude to disease and illness would exist among ethnic, social or professional groups.

According to Israsena (1992), factors strongly associated with the acceptance of hepatitis B vaccine by the hospital personnel in an area of hyperendemic for hepatitis B were nature of work, age of personnel (≤40 years), number of years spent on the profession (≤ 15 years), knowledge of hepatitis B, confidence in vaccine and contact with blood or blood product. It was concluded that fear, as well as knowledge were the main reasons responsible for 46.2% of all results.

Social influence (by peers, supervisors, role models, friends, spouses), was the main factor associated with vaccine acceptance although perception of risk and disease knowledge were also important in the study by Doebbeling *et al*., 1996) on the predictors of hepatitis B

vaccine in healthcare workers. Murata *et al* (1993) had earlier shown that younger doctors (either in training or at an early career stage) were more likely to be vaccinated than older ones and this was confirmed for the physicians in Doebbeling's (1996) study (which did not include a significant number of medical students).

As part of a more general survey of attitudes towards self-protective precautions amongst nurses and physicians at St. Louis hospital in the United States of America, Jeffe *et al* (1997) reported that 85% overall were already effectively vaccinated against hepatitis B and concluded that in the case of the doctors, it was almost certain because they were vaccinated during their time as medical student or house staff.

Factors that Hinder Acceptance of Hepatitis B Vaccination among Health Care Workers

The factors that hinder the acceptance of hepatitis B vaccination differ from culture to culture. Studies have shown that factors that affect acceptance of hepatitis B vaccination among health care workers include characteristics such as age, time and financial considerations.

Age has been found to be an important factor that influences adoption of an innovation. Murata and Young (1993) showed that younger health care workers, either in training or at an early stage of their career were more likely to accept hepatitis B vaccination than older ones and this was also confirmed by Doebbeling (1996).

One of the factors that has been found to play a crucial role in the pattern of utilization of health services or adoption of an innovation is time. Studies have shown, for instance, that office waiting time is one of the major impediments to the utilization of health services. Adekunle (1978) in a study conducted in Ibadan, Nigeria to determine what are the militating factors against the desire to attain set objectives on child immunization, cited time as one of such factors. Lin and Bali

(1997) also mentioned time as one of the factors that influenced health workers decisions relating to hepatitis B vaccination.

Burden and Whorwell (1991) in a study carried out in Saudi Arabia on the major impediments to the effective use of public health services - found the commonest reasons for non-immunization amongst nurses were fear of vaccine and lack of advice, and among doctors, apathy and difficulty in obtaining the vaccine.

Briggs and Thomas (1994) in a study carried out in the United States on the obstacles to hepatitis B vaccine uptake by healthcare staff found that the reasons given by staff for non-uptake included fear of side-effects of injections, misconceptions about hepatitis B transmission, the alternative use of homeopathic vaccine, pressure of work, difficulties in arranging vaccination, forgetfulness and inertia. Briggs and Thomas further reported that of the 54 unvaccinated staff members, 55.6% believed themselves to be at high risk of contracting hepatitis B as a result of their occupation; 33% of 200 fully vaccinated staff members were unaware of the use of booster doses of vaccine to maintain long-term immunity. In a system that relies on voluntary vaccination, attitude towards immunization of both healthcare personnel and patients are of prime importance (Spier, 1999). In the survey earlier reported, Doebbeling *et al* (1996) stated that occupational risk and access to vaccinations were the major factors associated with non-uptake.

Summary

Health care delivery, like any professional enterprise, has job hazards for its work force. These occupational hazards are of different categories depending on the location of a worker in the system as well as his job description. The hazard may involve spillage of human products to the skin, eyes, mouth or nose especially during endoscopy procedures, operations and wound dressings, care of patients who are vomiting or bleeding. It may be percutanous when it involves piercing the skin as in intra-dermal, subcutaneous, intramuscular, intravenous, intra-arterial, intra-peritoneal, intra-pleural or intra-ventricular injections or punctures. Hazards are more likely to occur in the wards where injections are administered as well as in the theatres or procedure rooms.

The health care workers may be injured because of lack of appropriate safety equipment or ignorance of the personnel on the use of necessary protective wares when they are available. Exposure of the health care workers to blood, body

fluids, tissues and wastes carrying pathogens makes them vulnerable and thus become infected patients themselves and thereafter become reservoirs of germs for further transmission back to the patients as well as the community. Apart from exposure to hazards in the health care setting is the issue of vaccination of health care workers against hepatitis B virus infection at their respective work places. Although, the immunization of health care workers against this infection has commenced in many health care institutions in Nigeria, there is usually no prescreening of the subjects prior vaccination using the sensitive and specific HBsAg assay method, no compliance with vaccination schedule, no supervision of the vaccination programme by the appropriate authority and no plan and facilities for assay of sero-response to HBV vaccine in order to detect the non-responders.

Furthermore, there is no facility in place for monitoring the immunized subjects in order to determine if such subjects are safe and protected against HBV infection or whether they will need administration of booster doses of the vaccine. The defects in the implementation of the vaccination programme in the various institutions have exposed the health care workers to infection. Although, there is an existing hepatitis B policy at UCH, acceptance of the hepatitis B vaccination has been constrained by time factor, financial constraints and negative misconception about the vaccine. The hazards associated with the spread of HBV infection in the Nigerian health care delivery is similar to what prevails in many other nations of the world.

Conceptual Framework: Health Belief Model (HBM)

Acceptance or rejection of vaccination services by individuals may depend largely on beliefs and past experiences. Some theories in social and educational sciences can be used to explain individual's behaviour towards utilization of health service especially vaccination. One of such is the Health Belief Model (HBM) which posits that individual will take preventive health action based on four interrelated variables (Rosenstock, 1974):

i. Perceived susceptibility which refers to the subjective perception of risk or vulnerability to a health threat;

ii. Perceived severity which consists of one's perception of the seriousness of the health threat;

iii. Perceived benefits which consist of the efficacy of an action

designed to prevent or reduce the threat of illness and;

iv. Perceived barriers which refers to the assessment of the negative consequences that might be associated with the preventive or ameliorative behaviour (side effects, inconveniences etc.)

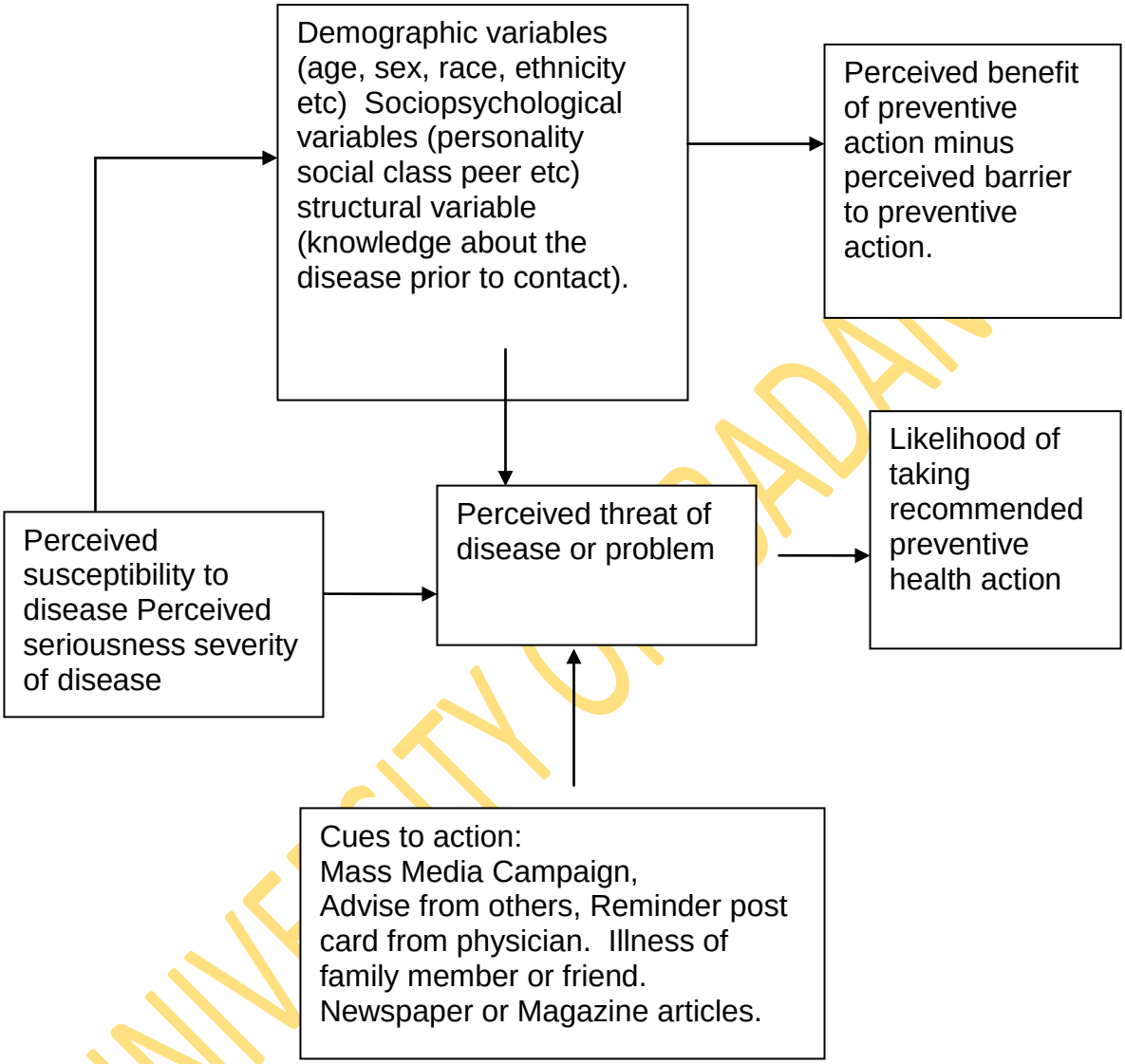
In respect to hepatitis B vaccination, the probability of a person obtaining the vaccine is a function of the level of perceived threat (determined by beliefs and vulnerability to hepatitis B infection) and beliefs about the likely benefits from proposed actions to counter the threat (healthy life, increased productivity) and; the estimated level of cost or inconvenience.

The cues to action likely to affect the behaviour of individuals to hepatitis B vaccination may include their awareness and knowledge of periodic hepatitis B vaccination programme or counseling from peers. However if people do not value hepatitis B vaccination, they may not take most of the campaign seriously, therefore resulting in low utilization of services.

In respect to modifying factors, demographic variables such as age, ethnicity and social-economic variables like social status, might affect the perceived seriousness and the likelihood of taking preventive action. Rogers and Shoemaker (1971) observed that people of higher socio-economic status are more likely to adopt innovations faster than people of low socio-economic status. This implies that greater efforts need to be directed to understanding the various variables that can affect people's use of hepatitis B vaccination services.

Figure 1

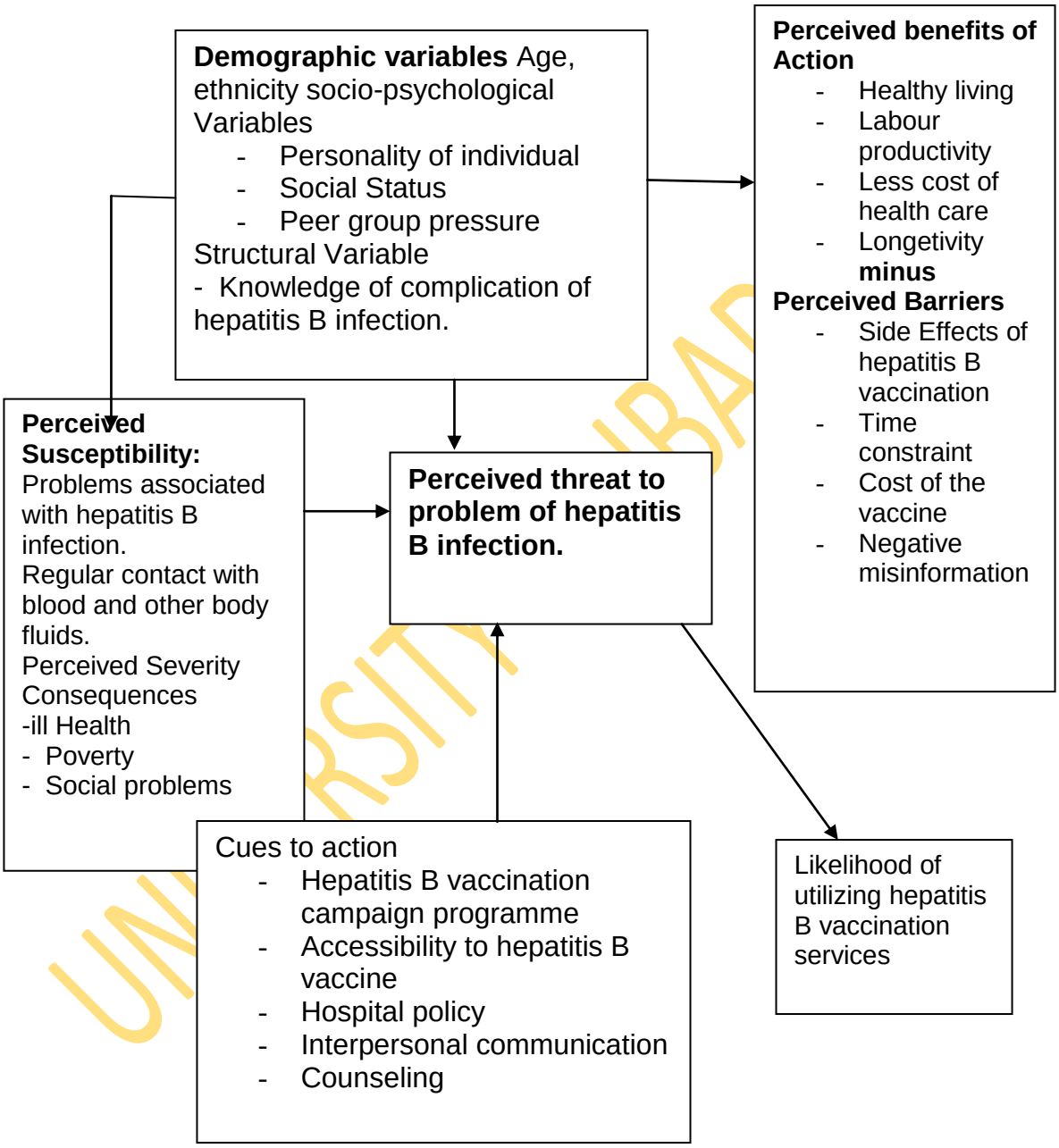
THE HEALTH BELIEF MODEL



Source: Resentock,(1974)

Figure 2

Application of Health Belief Model to Explain Pattern of Acceptance of Hepatitis B Vaccination Among Clinical Staff of the University College Hospital, Ibadan, Oyo State, Nigeria



CHAPTER THREE

METHODOLOGY

Description of the Study Area

The University College Hospital, Ibadan, the site for this study, was established in 1957 as a tertiary health facility and a medical educational institution. According to the College Prospectus (2008), the physical developments of the hospital were commenced in 1953 and the hospital was formally commissioned in November 1957. The symbiotic relationship between the Hospital and the University of Ibadan was a success story not only in the quality of health care available and the medical education provided, but also in its research output. Over 12 million patients have been treated here, while thousands of nurses and midwives, laboratory scientists, radiographers, medical records officers and several cadres of health teachers have passed through it in the past 51 years.

In 1986, UCH was designated as a National Centre of Excellence in Neurosciences by the Federal Government of Nigeria. By this designation, the hospital is expected to develop and provide the ultimate facilities for service, research and training in neurosciences.

In addition to undergraduate medical programmes based in the College of Medicine of the University of Ibadan, the U.C.H. also provides facilities for Post-graduate Residency Programmes in all specialties of Internal Medicine, Dentistry, Surgery, Anaesthesia, General Practice, Laboratory Medicine and Pathology, Paediatrics, Community Medicine, Radiology and Radiotherapy, Trauma and Orthopaedic Department, Nuclear Medicine Department, School of Nursing, School of Midwifery, School of Medical Laboratory Technology, Health Officers Tutors Course, Primary Health Care Tutors Course, Nurse/Midwife/Public Health Nurse Tutors Course: Post-registration Courses in Nursing e.g. Peri-Operative Nursing, Family Planning Programmes etc and Continuous Education Programmes for Nurses and Midwives in Administration and Management (CEPNAM), Occupational Health Nursing Training programme, Anaesthetic Assistant Technician Course and Orthopaedic Plaster Technician Course.

The hospital has 53 service and clinical departments and runs 75 consultative outpatient clinics a week in 45 Specialty and Sub-specialty disciplines. In addition to the College of Medicine, the hospital houses a Virus Research Laboratory, a World Health Organization (WHO) Collaborating Center in Immunology and an Institute for Advanced Medical Research and Training. The Hospital also houses the Special Treatment Clinic which is the only standard clinic in the country for research, training and treatment of Sexually Transmitted Diseases. Quality Assurance in drugs is in place by the establishment of a Quality Control Laboratory in the Pharmacy Department.

The clinical staff in the following departments are at high risk of contracting hepatitis B virus because they all have contact with blood and other fluids: Anaesthesia (anaesthetics during surgical operations), chemical pathology (blood sample taken for clinical tests); General out-patient Department (contacts with patients and injection procedure); Haemotology (contacts with patients and blood sample taken for clinical tests); Medical Microbiology (blood sample taken for clinical tests); Medicine (contacts with patients and injection procedure); Nursing (contacts with patients and injection procedure); Obstetrics and Gynaecology (contacts with patients before and during delivery); Oral Maxillofacial Surgery (dental incision and other surgical operations); Oral Pathology (contacts with oral cavity); Paediatrics (contacts with patients); Preventive Dentistry (scaling and polishing); Restorative Dentistry (contacts with oral cavity); Surgery (surgical procedures) and Virology (contacts with blood samples for clinical tests). The daily activities of clinical staff from these Departments in operating room, dialysis unit and laboratories expose them to regular contact with blood and other body fluids.

Research Design and Scope

The study was a cross-sectional survey. It was designed to assess and document pattern of acceptance of hepatitis B vaccination and factors influencing it among clinical staff at the UCH. The study also explored the relationship between adoption of hepatitis B vaccination and demographic variables like age, professional background and years of working experience among others. It assessed the association between the dependent variables (utilization of hepatitis B

vaccination services) and independent variables like level of knowledge of hepatitis B virus infection, and professional status.

Respondents' level of knowledge of hepatitis B virus infection was assessed using a set of twenty-seven question items with the aim of assessing the respondent's knowledge on causation, prevention, transmission, susceptibility and diagnosis of hepatitis B (see appendix II).

Variables

Dependent Variable: Acceptance of hepatitis B vaccine

Independent Variables: Barriers (safety and effectiveness), perceived risk of contracting hepatitis B virus infection, severity, perceived risk of serious illness after contracting hepatitis B virus infection. The other independent variables are socio-demographic characteristics such as age, sex, years of experience and types of profession.

Study Population

The study sample consisted of 438 clinical staff that have had frequent contact with blood and blood products, and by implication had possible exposure to hepatitis B infection. Thus, consultants, resident doctors, laboratory scientists and nurses from the Departments where clinical staff have regular contact with blood and blood products in their daily operations were covered. The Departments are: Anaesthesia, Chemical Pathology, Histopathology, General out-patient Department, Haematology, Medical Microbiology, Medicine, Nursing, Obstetrics & Gynaecology, Oral Maxillofacial Surgery, Oral Pathology, Paediatrics, Preventive Dentistry, Restorative Dentistry, Surgery, and Virology (see Table 1).

Table 2

Distribution of the Respondents by Departmental Affiliation

Department		
Anaesthesia	36	8.2
Chemical Pathology	14	3.2
General out-patient Department	10	2.3
Haematology	8	1.8
Medicine	51	11.6
Medical Microbiology	9	2.1
Nursing	96	21.9
Obstetrics & Gynaecology	49	11.2
Oral Maxillofacial Surgery	10	2.3
Oral Pathology	12	2.7
Paediatrics	48	11.0
Preventive Dentistry	11	2.5
Restorative Dentistry	8	1.8
Surgery	67	15.3
Virology	9	2.1
Total	438	100

Instrument for Data Collection

A quantitative method was used to collect data. The quantitative method comprised a self-administered structured questionnaire. The fifty-five item questionnaire consisted of three sections (A – C). Section A covered demographic information such as sex, age, marital status, current Department and professional status. Section B dealt with knowledge of hepatitis B virus infection, while Section C explored the general attitude of the respondents towards hepatitis B vaccination. Three statements were formulated to glean information on attitude of respondents to hepatitis B (level of seriousness, making hepatitis B vaccination compulsory for workers and provision of equipment for prevention by the institution).

Procedure for Recruitment of Study Participants

All the four hundred and thirty eight clinical staff in all the clinical departments aforementioned accepted to participate in the study. Four hundred and thirty eight questionnaire copies were produced and distributed to the respondents who completed them before they were later analyzed.

Reliability

The reliability of a research instrument concerns the extent to which the instrument yields the same results on repeated trials.

The following procedures were adopted to ensure the reliability of the questionnaire used for data collection. There was a review of pertinent literature in the area of study and useful pieces of information (key variables, target groups) were teased out of the literature used, to facilitate the design of the questionnaire. The draft questionnaire was then given to experts in the fields of virology, pathology, chemical pathology, haematology, medical microbiology and parasitology, medicine, surgery, obstetrics and gynaecology, nursing, laboratory sciences, and dentistry independently to ensure the relevance, appropriateness, and adequacy of the items in each of the sub-test. The feedback was used to improve the first draft. Revised instrument was then given to experts in the field of health promotion and education for construct and content validity. The final form of the instrument reflected the expert judgement of the supervisor.

Secondly, a draft of the questionnaire was pre-tested among 40 clinical staff members at the Obafemi Awolowo University Teaching Hospital in Ile-Ife, Osun State with similar characteristics as those of the University College Hospital, Ibadan. The pretest questionnaire copies were administered on 40 clinical staff in the Departments of Surgery, Obstetrics and Gynaecology, Anaesthesia, Haematology, Chemical Pathology, Medical Microbiology, Medicine and Paediatrics. The pretest questionnaires copies were distributed by a trained research assistant to the respondents who were available in their offices at the time of visit and a return visit was made after one week to collect the instrument. Of the 40 questionnaire copies distributed, 35 (87.5%) were retrieved. The remaining five could not be retrieved.

Validity

Validity can be defined as the degree to which the test measures what it is supposed to measure (Key, 1997). The content of the questionnaire was thoroughly read to ensure that the questions were not out of content. The final form of the instrument reflected the expert judgement of the supervisor. The questionnaire was pre-tested as described above.

Method of Data Collection

There was a discussion with each clinical staff member during which the purpose of the study was explained and mutual agreement was reached that the questionnaire copies be dropped in their offices. This was followed by an explanation in a covering note indicating that completion and return of the questionnaire copies would constitute consent.

The questionnaire copies were distributed to each category of clinical staff the same day and each respondent was given a maximum of one week to return it. All the 438 questionnaire copies distributed were returned. Upon their collection, they were verified immediately for completeness. The mode of distribution of the questionnaire copies depended on the respondents' position within the hospital hierarchy and the nature of job. For example, the questionnaire copies for the consultants were dropped inside their pigeon-hole, the resident doctors were given theirs through the Presidents of the respective clinical groups. The nurses among them were given theirs through the matrons in the ward, while the laboratory

scientists were given directly in their laboratories. The questionnaire copies placed inside the pigeon-holes had the advantage of being more secured in the sense that only the owner of the pigeonhole is expected to take a document from it.

The questionnaire copies were self-administered. Although the respondents were literate and medical professionals, efforts were made to ensure that the questions were simple enough for quick understanding. Covering letter was included with the questionnaire copies to state the reason for the study and respondents were persuaded to be very honest to ensure that their responses were reliable. They were also assured of confidentiality of the information divulged to ensure trust. Identification marks were not made on the instrument.

Data Analysis

The questionnaire copies were collated and numbered serially. Responses to the open-ended questions were coded. They were later edited and entered into computer for statistical analysis. Frequency distribution, means and percentages were computed for data description. Statistical tests (X^2) of association and significance were carried out to draw inferences and give meaningful description to the data analysis. The Statistical Package for Social Sciences- SPSS version 11 was used for data analysis. Knowledge of hepatitis B was tested with a set of twenty-seven multiple choice questions (MCQ). Those who provided correct answer to these questions were given one mark leading to the creation of a 27-point knowledge score. Data for attitudinal questions were analyzed using frequency distribution and percentages.

CHAPTER FOUR

RESULTS

The findings are presented under the following sections:

- Socio-demographic characteristics of the respondents
- Level of knowledge of respondents on hepatitis B
- Attitude of respondents toward hepatitis B vaccination
- Factors affecting acceptance of hepatitis B vaccination

Demographic Characteristics of the Respondents

The demographic profile of respondents is shown in Table 3. Majority of the respondents (52.5%) were males and most (81.5%) were married while 18.0% were single. The age of the respondents ranged from 21 to 65 years, with a mean of 39.0 years S.D of ± 9 years). One hundred and eighty-two (41.6%) of the respondents fell within the 31-40 years age bracket while (2.7%) of the respondents were between 61 and 65 years. Other age brackets are shown in Table3.

Professional and Educational Background

The respondents were categorized into two groups based on their basic qualifications viz: MBBS (63.7%) and non-MBBS (36.3%). The medical degrees(qualifications) were MBBS, BDS and Postgraduate Medical Fellowship while the non-MBBS qualifications include the following: professional nursing certificate (NRN), professional degree in laboratory sciences (BMLS) and Fellowship in medical laboratory sciences (FMLS). Forty percent(40%) had MBBS only, while 23.7% had Postgraduate Medical Fellowship in addition to MBBS. Clinical nursing staff (NRN) accounted for 17.6% (See Table 3 for details).

Table 3: Socio-demographic Characteristics of the Respondents

Characteristic			Number N = 438	
	Male	Female	Total	Percentage
Age (yrs)				
21 – 30	69	10	79	18.0
31 – 40	90	72	162	37.0
41 – 50	80	24	104	23.7
51 – 60	60	6	66	15.1
61 – 65	20	7	27	6.2
Marital Status				
Married	200	159	359	82.0
Single	49	30	79	18.0
Profession				
Nurses	4	92	96	22.0
Physicians	100	45	145	33.1
Dentists	15	24	39	8.9
Laboratory Scientists	14	23	37	8.4
Surgeons	62	5	67	15.3
Obstetricians & Gynaecologists	40	14	54	12.3
Highest Academic Qualification				
MBBS	69	10	79	18.1
BDS	2	7	9	4.6
B.Sc	2	1	3	2 .5
BMLS	2	1	3	0.4
Masters	6	0	6	1.4
Ph.D				
Highest Professional Qualification				
NR/RM	4	92	96	22.0
FMLT	2	1	3	2.3
Medical Fellowship	133	54	187	1.9

Respondents' Knowledge of Hepatitis B, Causation, Transmission, Susceptibility, Diagnosis and Prevention

Causation

In relation to knowledge of causation of hepatitis B, 420 (96%) respondents knew that hepatitis B is not a bacterial infection (See item 1 in appendix 3). A hundred and forty-five(34.5%) among these were physicians followed by nurses (20.7%) and the surgeons (16.0%) (See table 4 and figure 4 for details). Furthermore, frequency distribution in respect to gender shows that male respondents (55.5%) were more knowledgeable on causation of hepatitis B infection than their female counterparts (See table 5 and figure 5 for details).

Transmission

In respect to knowledge of transmission of hepatitis B infection, 368(84%) respondents got all the questions on transmission right (see item 9,10,14,15,16,17,18,20.21 and 23 in appendix 3). Among these respondents were physicians (34.5%), followed by nurses (19.8%) and the surgeons (15.2%). (See table 4 and figure 4 for details). Furthermore, frequency distribution in respect of gender shows that more male (57.3%) are knowledgeable on transmission of hepatitis B infection (See table 5 and figure 5 for details)

Susceptibility

Assessment of knowledge of susceptibility shows that 394(90%) respondents got all the questions on susceptibility right (see item 2,3,25,26 and 27in appendix 3). Among these were physicians (33.2%), followed by nurses (20.3%) and surgeons(16.8%). (See table 4 and figure 4 for details). Furthermore, frequency distribution in respect of gender shows that more male (57.4%) were knowledgeable on susceptibility of hepatitis B infection. (See table 5 and figure 5 for details).

Diagnosis

To further measure the knowledge of diagnosis of hepatitis B infection, 342(78%) respondents got all the questions on diagnosis right (see item 7,8,13 and 22 in appendix 3). Among these were physicians (30.7%), followed by nurses (19.6%) and surgeons (19.6%). (See table 4 and figure 4 for details). Furthermore, frequency distribution in respect to gender shows that more male (65.8%) were knowledgeable on diagnosis of hepatitis B infection. (see table 5 and figure 5 for details).

Prevention

Assessment of knowledge of prevention of hepatitis B infection shows that 350(80%) respondents got all the questions on prevention right(See item 4, 5,6, 11, 12, 19and 24 in appendix 3). Among these were physicians (30.9%), followed by nurses (22.6%) and surgeons (16.9%). (See table 4 and figure 4 for details). Furthermore, frequency distribution in respect to gender shows that more male respondents (62.3%) are knowledgeable on prevention of hepatitis B infection. (See table 5 and figure 5 for details).

TABLE 4: FREQUENCY DISTRIBUTION OF OVERALL KNOWLEDGE OF RESPONDENTS ON CAUSATION, TRANSMISSION, SUSCEPTIBILITY, DIAGNOSIS AND PREVENTION OF HEPATITIS B INFECTION BASED ON PROFESSION

PROFESSIONS	NUMBER OF RESPONDENTS WHO GOT ALL QUESTIONS RIGHT (%)				
	CAUSATION	PREVENTION	TRANSMISSION	SUSCEPTIBILITY	DIAGNOSIS
NURSES	87 (20.7)	79 (22.6)	73 (19.8)	80 (20.3)	67 (19.6)
PHYSICIANS	145 (34.5)	108 (30.9)	127 (34.5)	131 (33.2)	105 (30.7)
DENTISTS	37 (8.8)	24 (6.9)	30 (8.2)	35 (8.9)	27 (7.9)
LAB. SCIENTISTS	30 (7.1)	27 (7.7)	29 (7.9)	31 (7.9)	26 (7.6)
SURGEONS	67 (16.0)	59 (16.9)	56 (15.2)	66 (16.8)	67 (19.6)
O & G	54 (0.23)	53 (15.1)	53 (14.4)	51 (12.9)	5.0 (14.6)
TOTAL	420 (100.0)	350 (100.0)	368 (100.0)	394 (100.0)	342 (100.0)

FIG 4; FREQUENCY DISTRIBUTION OF OVERALL KNOWLEDGE OF RESPONDENTS ON CAUSATION, TRANSMISSION, SUSCEPTIBILITY, DIAGNOSIS AND PREVENTION OF HEPATITIS B INFECTION

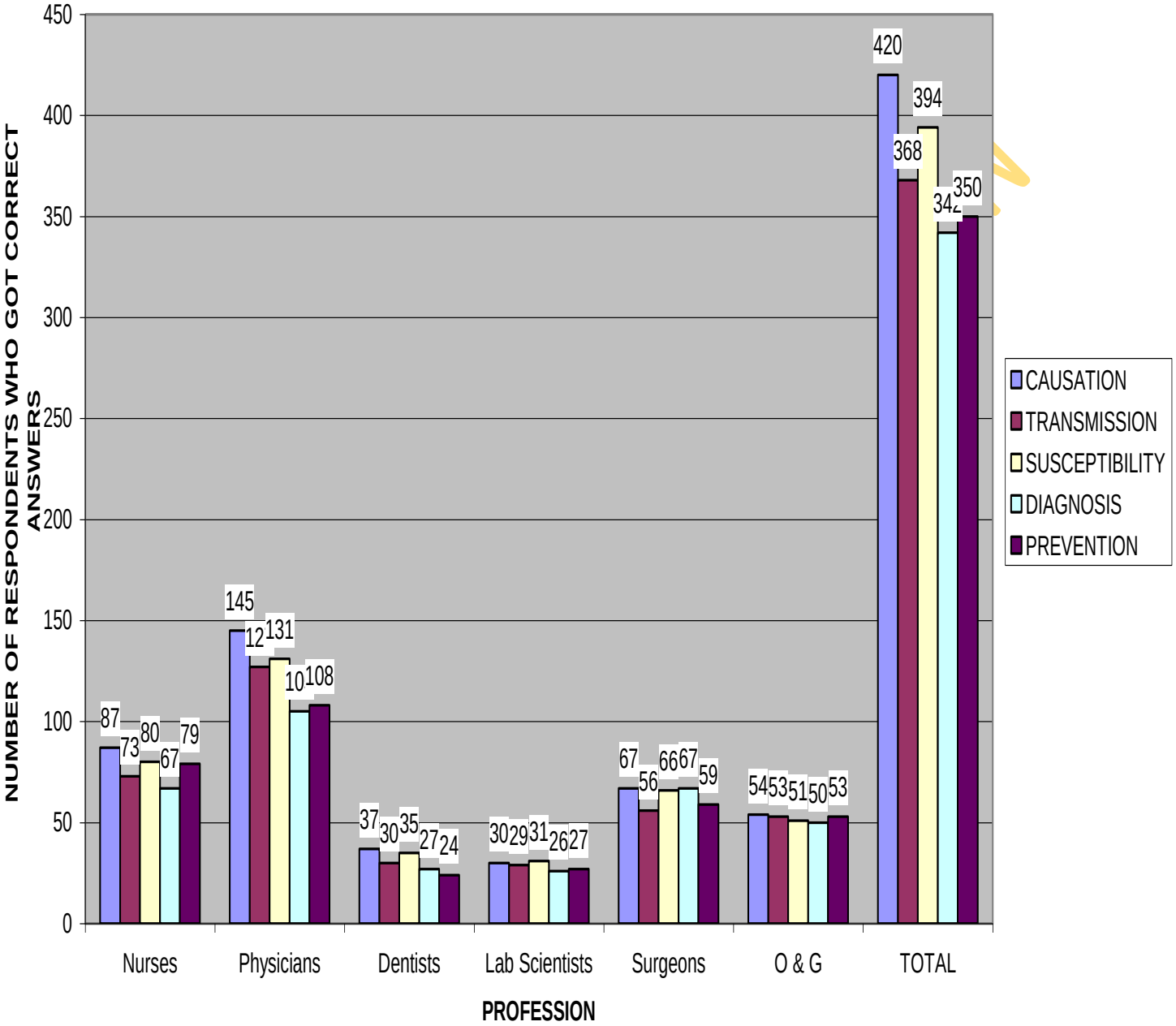
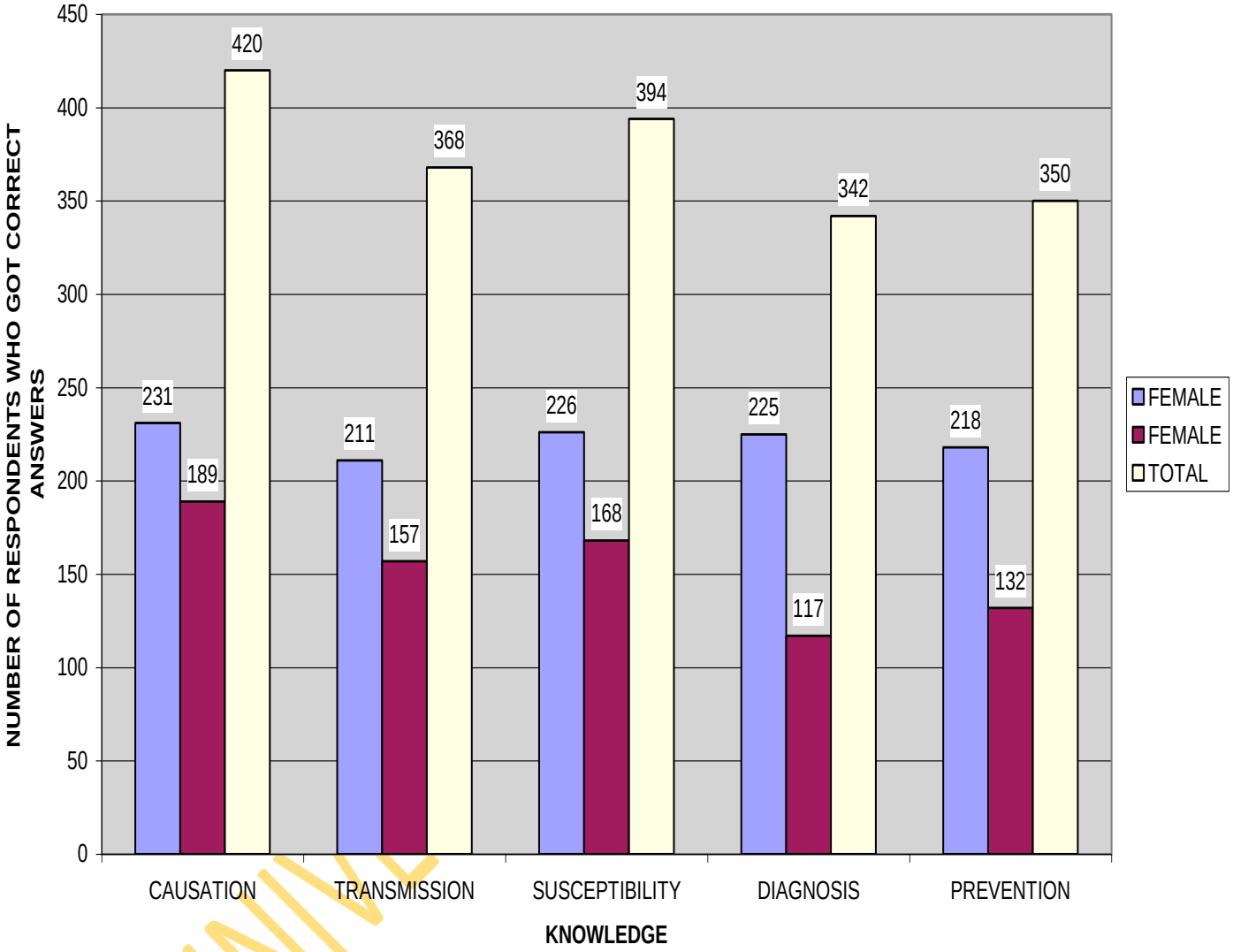


TABLE 5: FREQUENCY DISTRIBUTION OF OVERALL KNOWLEDGE OF RESPONDENTS ON CAUSATION, TRANSMISSION,SUSCEPTIBILITY, DIAGNOSIS AND TRANSMISSION OF HEPATITIS B INFECTION BASED ON GENDER

PROFESSIONS	NUMBER OF RESPONDENTS WHO GOT ALL QUESTIONS RIGHT (%)				
	CAUSATION	PREVENTION	TRANSMISSION	SUSCEPTIBILITY	DIAGNOSIS
MALE	231 (55.0)	218 (62.3)	211 (57.3)	226 (57.4)	225 (65.8)
FEMALE	189 (45.0)	132 (37.7)	157 (42.7)	168 (42.6))	117 (34.2)
TOTAL	420 (100.0)	350 (100.0)	368 (100.0)	394 (100.0)	342 (100.0)

FIG 5: FREQUENCY DISTRIBUTION OF OVERALL KNOWLEDGE OF RESPONDENTS ON CAUSATION,TRANSMISSION, SUSCEPTIBILITY,DIAGNOSIS AND PREVENTION OF HEPATITIS B INFECTION BY GENDER



Attitudinal Disposition of Respondents to Hepatitis B Vaccination

Findings revealed that there were significant differences ($p < 0.05$) in respondents' perceptions of severity of HBV infection. The physicians had the lowest mean rank (1.48) on a scale of 1 (strongly disagree) to 5 (strongly agree) thereby showing their strong disagreement with the statement that the disease is not severe. On the other hand, the dentists had the highest mean rank (1.92) and therefore perceived the hepatitis B infection as unsevere.

Furthermore, there were no significant differences ($p > 0.05$) in the respondents' response to the statement that hepatitis B vaccination should be made compulsory for health workers. The surgeons had the lowest mean rank (3.81), an indication of a strong disagreement with the statement that the vaccination should be made compulsory compared to the physicians with the highest mean rank (4.13) depicting a stronger agreement. Also, there were no significant differences in the respondents' perception of being more exposed to the risk of hepatitis B infection than other persons. The laboratory scientists had the lowest mean rank (3.9) showing more disagreement that they were more at risk than other persons. Contrarily, the surgeons with the mean rank (4.4) depicting more agreement about being more at risk. The obstetricians and gynaecologists, mean rank (3.9) also showed more disagreement with the statement that HBV infection was an occupational hazard compared with stronger agreement from the laboratory scientists (mean rank 4.5). Furthermore, there was also no significant differences in the response of the respondents to the statement that hepatitis B can be prevented by vaccination. Comparatively, the surgeons showed more disagreement (mean rank 4.2) while more agreement with the statement came from the physicians (mean rank 4.8) (See tables 6a and 6b for details).

Table 6:

ATTITUDINAL DISTRIBUTION OF RESPONDENTS TO HEPATITIS B VACCINATION

FREQUENCY DISTRIBUTION

		HBV infection is not severe				HB vaccination should be compulsory for all health workers				Health care workers are more at risk of HBV infection than other persons				HBV infection is an occupational hazard				HBV can be prevented with vaccination			
Profession	**No.**	**Frequency (%)**				**Frequency (%)**				**Frequency (%)**				**Frequency (%)**				**Frequency (%)**			
		SD	D	A	SA	SD	D	A	SA	SD	D	A	SA	SD	D	A	SA	SD	D	A	SA
Nurses	96	51 (53.1)	40 (41.7)	4 (4.2)	1 (1.0)	2 (2.1)	6 (6.3)	58 (60.4)	30 (31.3)	4 (4.2)	2 (2.1)	51 (53.1)	39 (40.6)	1 (1.0)	4 (4.2)	71 (74.0)	20 (20.8)	0 (0.0)	2 (2.1)	60 (62.5)	34 (35.4)
Physicians	145	76 (52.4)	69 (47.6)	0 (0.0)	0 (0.0)	3 (2.1)	8 (5.5)	90 (62.1)	44 (30.3)	0 (0.0)	0 (0.0)	116 (80.0)	29 (20.0)	0 (0.0)	0 (0.0)	102 (70.3)	43 (29.7)	0 (0.0)	0(0.0)	36 (24.8)	109 (75.2)
Dentists	39	5 (12.8)	33 (84.6)	1 (2.6)	0 (0.0)	1 (2.6)	4 (10.3	27 (69.2)	7 (17.9)	0 (0.0)	4 (10.3)	22 (56.4)	13 (33.3)	0 (0.0)	2 (5.1)	28 (71.8)	9 (23.1)	1 (2.6)	0(0.0)	23 (59.0)	15 (38.5)
Lab. Scientists	37	7 (18.9)	29 (78.4)	1 (2.7)	0 (0.0)	1 (2.7)	3 (8.1)	25 (67.6)	8 (21.6)	0 (0.0)	2 (5.4)	33 (89.2)	2 (5.4)	0 (0.0)	1 (2.7)	16 (43.2)	20 (54.1)	0 (0.0)	0(0.0)	16 (43.2)	21 (56.8)
Surgeons	67	13 (19.4)	54 (80.6)	0 (0.0)	0 (0.0)	3 (4.5)	6 (9.0	50 (74.6)	8 (11.9)	0 (0.0)	0 (0.0)	42 (62.7)	25 (37.3)	0 (0.0)	0 (0.0)	40 (59.7)	27 (40.3)	0 (0.0)	0(0.0)	51 (76.1)	16 (23.9)
O&G	54	7 (13.0)	47 (87.0)	0 (0.0)	0 (0.0)	6 (11.1)	4 (7.4)	23 (42.6)	21 (38.9)	0 (0.0)	0 (0.0)	34 (63.0)	20 (37.0)	1 (1.9)	6 (11.1)	40 (74.1)	7 (13.0)	0 (0.0)	0(0.0)	23 (42.6)	31 (57.4)
Total	438	159 (36.3)	272 (62.1)	6 (1.4)	1 (0.2)	16 (3.7)	31 (7.1)	273 (62.3)	118 (26.9)	4 (0.9)	8 (1.8)	298 (68.0)	128 (29.2)	2 (0.5)	13 (3.0)	297 (67.8)	126 (28.8)	1 (0.2)	2(0.5)	209 (47.7)	226 (51.6)

KEY: SD – Strongly disagree; D – Disagree; SA – Strongly agree; A - Agree

Table 6b:

ATTITUDINAL DISPOSITION OF RESPONDENTS TO HEPATITIS B VACCINATION

		HBV infection is not severe	**HB vaccination should be compulsory for all health workers**	**Health care workers are more at risk of HBV infection than other persons**	**HBV infection is an occupational hazard**	**HBV can be prevented with vaccination**	
Professions							
	Number	Mean Rank	Mean Rank	Mean Rank	Mean Rank	Mean Rank	Total
Nurses	96	1.58	4.42	4.24	4.09	4.31	18.34
Physicians	145	1.48	4.13	4.2	4.29	4,75	18.64
Dentists	39	1.92	3.89	4.13	4.13	4.31	18.38
Lab. Scientists	37	1.86	3.97	3.95	4.48	4.57	18.83
Surgeons	67	1.8	3.9	4.37	4.4	4.24	18.56
O &G	54	1.87	3.8	4.37	3.85	4.57	18.61
Total	**438**	**10.6**	**23.8**	**25.3**	**25.3**	**26.8**	**111.36**

Factors Associated with the Adoption of Hepatitis B Vaccination

This section focuses on the reported factors affecting the adoption of hepatitis B vaccination.

- The knowledge of HBV infection is the same among respondents with various age groups : F(4,433)= 0.545; P=0.703

- The knowledge of HBV infection is significantly different among respondents with various years of experience: F(5,432); P=0.000

- The knowledge of HBV infection is not significantly different among respondents with different professions: F(2,408); P=0.384. See table 7 for details.

Table 7: Association between Age, Year of Experience and Specialty and Knowledge of Hepatitis B Infection

	N	Mean	SD	SE	F. ratio	P(Sig)
Age groups	411	1.86	0.8	0.054	0.545	0.703
Year of experience	438	2.54	1.1	0.040	29,02	0.000
Professions	438	2.99	1.7	0.083	0.959	0.384

Hypothesis 2(a): states that there would be no association between age of respondents and the adoption of hepatitis B vaccination. Of the 24 respondents within the 21 to 30 age group, those who had been vaccinated included 7 nurses, 4 physicians, 6 dentists, 7 laboratory scientists, and none of them belonged to the group of surgeons and obstetricians and gynaecologists. Of the 132 respondents within the 31-40 age group who had been vaccinated, there were 26 nurses, 56 physicians, 7dentists, 6 laboratory scientists, 19 surgeons and 18 obstetricians and gynaecologists (see table 8 for details).The utilization of hepatitis B vaccine dropped among the respondents in higher age groups. These differences in the level of acceptance of hepatitis B vaccination among different age groups were statistically significant ($p < 0.05$). Therefore, there is statistically significant difference in the age ranges of those who have accepted hepatitis B vaccination and those who have not. Thus hypothesis 2(a) is rejected.

Table 8: Association between age of respondent and adoption of hepatitis B vaccination

	Previous Vaccination against HBV (%)												
Age Group	**Nurses**		**Physicians**		**Dentists**		**Lab Scientists**		**Surgeons**		**Obstetrics & Gynaecologists**		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Grand Total
21 -30	0	7	0	4	5	1	4	3	0	0	0	0	24
31 – 40	0	26	30	26	3	4	3	3	10	9	8	10	132
41-50	2	3	10	8	4	3	0	4	10	2	7	0	53
51 and above	2	5	2	3	0	0	0	0	6	1	2	0	21
Total	4	41	42	41	12	8	7	10	26	12	17	10	230

X^2= 19.707

P > 0.05

Hypothesis 2(b): states that there would be no association between years of experience in the profession of the respondents and the adoption of hepatitis B vaccination. Out of a total of 230 respondents who claimed to have been vaccinated, 39 had spent less than ten years in the profession while 128 had spent between eleven and twenty years and; 63 had spent over twenty-one years (see table 9 for details). The level of acceptance of hepatitis B vaccine decreases with the number of years spent in the profession by the respondents. These differences in the level of acceptance of hepatitis B vaccination with respect to years of experience in the profession were statistically significant ($p< 0.05$). Therefore, there is statistically significant difference in the years of professional experience of those who have accepted hepatitis B vaccine and those who have not. Thus hypothesis 2(b) is rejected.

Table 9: Association between years of professional experience of respondents and adoption of hepatitis B Vaccination

Previous Vaccination against HBV (%)													
Years of Experience	**Nurses**		**Physicians**		**Dentists**		**Lab Scientists**		**Surgeons**		**Obstetricians & Gynaecologists**		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Grand Total
Less 10	0	10	11	9	3	2	2	7	0	0	0	0	39
11-20	4	24	19	26	5	4	5	3	15	8	13	10	128
21 and Above	0	7	12	6	4	2	0	0	11	4	4	0	63
Total	4	41	42	41	12	8	7	10	26	12	17	10	230

X^2=4.415

P > 0.05

Hypothesis 2(c): states that there would be no association between field of specialty of the respondents and the adoption of hepatitis B vaccination. Among the respondents 230 who claimed to have accepted vaccination, majority (83) are physicians while 45 are nurses and 38 are surgeons (`See Table 10 for details). These differences in the level of acceptance of hepatitis B vaccination among different professional groups were statistically significant ($P<0.05$). Therefore, there is significant difference in the profession of the respondents who claimed to have accepted hepatitis B vaccine and those who claimed to have not. Thus hypothesis 2(c) is rejected.

Table 10: Association between field of specialty of respondents and adoption of hepatitis B vaccination

Profession	Previously Vaccinated Against HBV		Total N = 411 (%)
	Yes N = 230 (%)	No N = 181 (%)	
Nurses	45 (19.6)	42 (23.2)	87 (21.2)
Physicians	83 (36.1)	51 (28.2)	134 (32.6)
Dentals	20 (8.7)	19 (10.5)	39 (9.5)
Laboratory Scientists	17 (7.4)	19 (10.5)	36 (8.8)
Surgeons	38 (16.5)	28 (15.5)	66 (16.1)
Obstetricians & Gynaecologists	27 (11.7)	22 (12.2)	49 (11.9)

X^2 = 44.997

P < 0.05

Risk of Accidental Exposure

The male respondents 174(64.9%) reported more exposure to needle prick injury during the twelve months preceding the survey than their female counterparts 94(35.1%). The nurses (mean=1.5) reported highest exposure to needle prick injury, followed by the laboratory scientists (mean=1.1) and the dentists (mean=0.9). (See table 11 for details).

In respect to gender exposure to blood and other body fluids while providing medical services, the female recorded higher exposure(mean=2.2) compared to male (mean=1.9).

Table 11: Mean Number of Needle Prick Injury Among Respondents while Providing Medical Services in the Last Twelve Months by Profession

MEAN NUMBER OF EXPOSURE		
PROFESSION	**AVERAGE NUMBER**	**STD. DEVIATION**
NURSES	1.5	0.10
PHYSICIANS	0.2	0.01
DENTISTS	0.9	0.10
LAB. SCIENTISTS	1.1	0.01
SURGEONS	0.2	0.01
OBSTETRICS & GYNAECOLOGISTS	0.2	0.01
TOTAL	**4.1**	**0.2**

Awareness of hepatitis B vaccination policy at UCH

143(35.0%) respondents reported awareness of hepatitis B vaccination policy at UCH. Among these were the female 91(63.6%) compared to the male 52(36.4%).

Furthermore, physicians 54(37.8%) were in the majority among the respondents who reported awareness of hepatitis B vaccination policy at UCH followed by the nurses 43(30.1%) and the surgeons 22(15.4%) (See table 12 for details).

Table 12: Are you aware of Hepatitis B Vaccination Policy at UCH?

Profession	**Level of Awareness of Hepatitis B Vaccination**		
	Aware		
Profession	**Yes (%)**	**No (%)**	**Total (%)**
Nurses	43 (30.1)	44 (16.5)	87 (21.3)
Physicians	54 (37.8)	80 (30.1)	134 (32.8)
Dentists	11 (7.7)	28 (10.5)	39 (9.5)
Laboratory Scientists	8 (5.6)	26 (9.8)	34 (8.3)
Surgeons	22 (15.4)	44 (16.5)	66 (16.1)
Obstetrics & Gynaecologists	5 (3.5)	44 (16.5)	49 (12.0)
Total	**143 (35.0)**	**266 (65.0)**	**409 (100.0)**

Respondents Reasons for Receiving Hepatitis B Vaccination

The 230 respondents who reported being vaccinated gave various reasons for their action. About two-thirds of the respondents (149) who are mostly male respondents (55.7%) said they took the action because of their awareness of the importance of hepatitis B vaccination. Among those were physicians (52), Nurses (31), surgeons (22), obstetricians and gynaecologists (18), laboratory scientists (13), and dentists (13).

About one-third of the respondents (72) who are mostly female (66.7%) stated fear of hepatitis B viral infection as their reason for receiving the vaccination. Among these respondents were physicians (26), surgeons (16), nurses (14), obstetricians and gynaecologists (9), dentists (6) and laboratory scientists (1). Nine (3.9%) respondents reported advice from family members and professional colleagues (Tables 13 and 14).

Table 13: Respondents' reasons for receiving hepatitis B vaccination based on gender

Adduced Reason	Male (%)	Female (%)	Total (%)
Advice from family members and professional colleagues	1(11.1)	8(88.9)	9(100.0)
Awareness of importance of HB vaccination	83(55.7)	66(44.3)	140(100.0)
Fear of HBV infection	24(33.3)	48(66.7)	72(100.0)
Total	108(47.0)	122(53.0)	230(100.0)

Table 14: Respondents' reasons for receiving hepatitis B Vaccination based on profession

	Nurses N = 45 (%)	Physicians N= 83 (%)	Dentists N =20 (%)	Lab. Scientists N =17 (%)	Surgeons N=38 (%)	Obstetricians & Gynaecologists N =27 (%)	Total N= 230
Adduced Reasons							
Advise from family members and professional colleagues	0 (0.0)	5 (55.6)	1 (11.1)	3 (33.3)	0 (0.0)	0 (0.0)	9 (3.9)
Awareness of importance of HB Vaccination	31 (20.8)	52 (34.9)	13 (8.7)	13 (8.7)	22 (14.8)	18 (12.1)	149 (64.8)
Fear of HBV infection	14 (19.4)	26 (36.1)	6 (8.3)	2 (2.8)	16 (22.2)	9 (12.5)	72 (31.3)

Previous vaccination against HBV infection based on profession

The physicians reportedly had the highest adoption rate of hepatitis B vaccination. The physicians had 36.1% adoption rate followed by their counterparts in nursing profession who recorded 19.6% (See table 15 for details).

Table 15: Previous vaccination against HBV infection among Respondents based on profession.

	YES (%)	NO (%)	TOTAL (%)
Nurses	45(19.6)	42(23.2)	87(21.2)
Physicians	83(36.1)	51(28.2)	134(32.6)
Dentists	20(8.7)	19(10.5)	39(9.5)
Laboratory Scientists	17(7.4)	19(10.5)	36(8.8)
Surgeons	38(16.5)	28(15.5)	66(16.1)
Obstetrics & Gynaecologists	27(11.7)	22(12.2)	49(11.9)
Total	230(100.0)	181(100.0)	411(100.0)

X^2= 44.997

P < 0.05

ii. Reasons for not receiving Hepatitis B Vaccination

Un-immunized respondents who were mostly female (69.0%) stated fear of side effects (71) followed by lack of time (66) had female in majority(51.4%) as the major reasons for not being vaccinated. Other reasons included lack of awareness (16), lack of money (15), fear of HIV/AIDS infection (3), perception of the disease as not dangerous (2) and the belief that vaccination induced hepatitis B infection (2)(see table 16).

Majority of those who cited fear of side effects were among the physicians (18) and the least number came from the group of surgeon (28.6%). Those who cited lack of time drew largest number from the Physicians (18) and the least number from the obstetricians and gynaecologists (4)(See table 17 for details).

Table 17: Respondents Reasons for not receiving hepatitis B Vaccination based on gender

*Multiple responses

Adduced Reason	Male (%)	Female (%)	N=181
There was no time	32 (48.5)	34 (51.4)	66 (36.5)
Fear of side effects	22 (31.0)	49 (69.0)	71 (39.2)
There was no awareness	9 (53.0)	8 (47.0)	17 (9.4)
There was no money	6 (37.5)	10 (62.5)	16 (18.8)
Disease is not dangerous	3 (100.0)	0 (0.0)	3 (1.7)
May consequently develop HBV infection	4 (50.0)	4 (50.0)	8 (4.4)

Table 18: Respondents Reasons for not receiving hepatitis B Vaccination based on profession

*Multiple responses

	No. of respondent by profession (%)						
	Nurses N = 42 (%)	Physicians N= 51 (%)	Dentists N =19 (%)	Lab. Scientists N =19 (%)	Surgeons N=28 (%)	Obstetricians.& Gynaecologists N =22 (%)	Total N= 181
Adduced Reasons							
There was no time	19 (45.2	21 (41.2)	9 (47.4)	7 (36.8)	6 (21.4)	4 (18.2)	66 (36.5)
Fear of side effects of HB vaccination	13 (31.0)	18 (35.3)	9 (47.4)	11 (57.9)	8 (28.6)	12 (54.5)	71 (39.2)
There was no awareness of the availability of the vaccine	4 (9.5)	3 (5.9)	0 (0.0)	1 (5.3)	4 (14.3)	4 (18.2)	16 (18.8)
There was no money	4 (9.5)	8 (15.7)	1 (2.0)	0 (0.0)	0 (0.0)	2 (9.1)	15 (8.3)
Hepatitis B infection is not dangerous	0 (0.0)	0 (0.0)	0 (0.0)	0(0.0)	3 (10.7)	0 (0.0)	3 (1.1)
May consequently be infected with HIV/AID	1 (2.4)	0 (0.0)	0 (0.0)	0(0.0)	7(25.0)	0 (0.0)	8 (4.4)

Suggested ways of Encouraging Clinical Staff to Accept Hepatitis B Vaccination

The respondents were asked to suggest ways by which the uptake of hepatitis B vaccine could be improved. About a third (32.6%) who were mostly male respondents (60.8%) suggested free offer of vaccination, followed by more education on efficacy of the vaccine (31.3%), more publicity on the availability of the vaccine (23.5%), assurance of effective and efficient service delivery (7.1%) and assurance that it would not cause HIV/AIDS transmission (5.5%) (Tables 19 and 20 for details).

Table 19: Suggested ways of encouraging clinical staff to accept hepatitis B vaccination based on gender

	Male (%)	Female (%)	N=438
Free offer of vaccination	87 (60.8)	56 (39.2)	143 (32.6)
More publicity on availability	51 (49.5)	52 (50.5)	103 (23.5)
More education on efficacy	64 (46.7)	73 (53.3)	137 (31.3)
More assurance that it will not be a source of HIV/AIDS	13 (54.2)	11 (45.8)	24 (5.5)
More Assurance of Effective and Efficient Service Delivery	14 (45.2)	17 (54.8)	31 (7.1)

Table 20: Suggested ways of encouraging clinical staff to accept Hepatitis B vaccination based on profession

	No. of respondent by profession (%)						
	Nurses N = 96 (%)	Physicians N= 145 (%)	Dentists N =39 (%)	Lab. Scientists N =37 (%)	Surgeons N=67 (%)	Obstetricians. & Gynaecologists N =54 (%)	N=438 (%)
Free offer of vaccination	34 (35.4)	56 (38.6)	10 (25.6)	7 (18.9)	29 (43.3)	7 (13.0)	143 (32.6)
More publicity on availability	30 (31.3)	38 (26.2)	4 (10.3)	15 (40.5)	11 (16.4)	5 (9.3)	103 (23.5)
More education on efficacy	24 (25.0)	43 (29.7)	20 (51.3)	12 (32.4)	18 (26.9)	20 (37.0)	137 (31.3)
More assurance that it will not be a source of HIV/AIDS transmission	0 (0.0)	4 (2.8)	0 (0.0)	1 (2.7)	6 (9.0)	13 (24.1)	24 (5.5)
Assurance of effective and efficient service delivery	8 (8.3)	4 (2.8)	5 (12.8)	2 (5.4)	3 (4.5)	9 (16.7)	31 (7.1)

CHAPTER FIVE

DISCUSSIONS AND RECOMENDATIONS

The importance of hepatitis B as a major occupational hazard of health care workers has received considerable attention in the literature and the medical world. Immunization against hepatitis B infection has significant implications for the health and well-being of health care workers and, ultimately, their families and the health system. While it is tempting to assume that health workers will likely show a high level of compliance with regards to beneficial health procedures and programmes, evidence from literature cautions otherwise. In the case of hepatitis B vaccination, significant level of non-compliance has been reported among various groups of health care workers and in different settings. A low vaccine acceptance situation has been recorded even among the health care workers that have greatest risk of contact with infected fluid such as those of the accident and emergency units (Dancocks et al, 1994), dental practitioners (Echavez et al, 1987) and surgical residents (Harward et al, 1988).

Interestingly, this is also a group of workers that should be more knowledgeable about hepatitis B infection and its significance by virtue of their professional training. The result from the current study generally indicates an average uptake of 56% for hepatitis B vaccine by doctors, nurses and laboratory scientists at UCH and this is slightly higher than that recorded in a similar study conducted at the Obafemi Awolowo University Teaching Hospital, Ile-Ife by Fatusi et al in 1995. The result obtained in this study is comparable to 56.9% obtained in a similar study by Kamolratanakul et al in Thailand in 1994 and 58.1% obtained by Jepsen and Thomsel in Copenhagen, Denmark in 1994. The reasons for the observed trend in our setting should be a matter of serious concern to UCH Management.

Respondents who thought the vaccine was safe and effective, those who felt susceptible to infection, as well as those who felt vulnerable to serious illness or death following infection were more likely to receive hepatitis B vaccine at the hospital in which they are employed when compared to others outside the medical profession. In this study, majority (97.3%) of respondents perceived that their

occupation made them more susceptible to infection than other persons. Moreso, 98.4% of them also perceived the disease as severe and that it could be prevented by vaccine. Slightly more than half of the respondents who had received hepatitis B vaccination were females and more than half of them cited awareness of the importance of hepatitis B vaccination as a reason for taking the vaccine.

Since most of the females were married, they also had more additional opportunity than their male counterparts in that after delivery, i.e. post partum, four weeks after delivery of a new baby, they and their new babies were given hepatitis B vaccination (Olofin, 2007). Almost half of those who had not taken the vaccine were not sure if the benefits of the vaccine outweighed its risk. An important source of concern is that majority of the respondents were married and sexually active. Since HBV infection is sexually transmitted, there is a risk of transmission to their spouses who might not be exposed to occupational risk of hepatitis B virus infection.

More than a third of those who had received the vaccine were between the age range of 31 to 40 years and had spent less than ten years in the profession. Health workers in this group were in their most productive period when training is being done and a lot of skills acquired. This is the group that actively attended to patients and had regular contact with blood. Thus they were likely to feel more susceptible with a high perceived threat of contracting hepatitis B infection and therefore had motivation to take the vaccine.

It was also observed from the study that though the hospital had hepatitis B policy, most clinical staff members were not aware of its existence. This might be a serious gap in the effort to promote the acceptance of hepatitis B vaccination.

Reasons cited for acceptance of the Hepatitis B Vaccination

This study endeavored to explore those factors which independently influenced a health professional's intention to be vaccinated against hepatitis B infection. Health workers who perceived the vaccine as safe and effective, and those who felt susceptible to infection as well as those who felt vulnerable to serious illness or death following infection were more likely to receive hepatitis B vaccine at the hospital. Of these three groups, concern regarding vaccine safety and efficacy was of paramount importance. Programmes to vaccinate health care

workers at risk of contracting hepatitis B infection should focus on forming or reforming beliefs about the safety and efficacy of the vaccine.

Factors Responsible for Non -Acceptance of Hepatitis B Vaccination

Time constraint was cited in this study as a reason for non-acceptance of hepatitis B vaccination. In the face of inadequate staffing and a highly demanding patient load, the average Nigerian doctor and nurse working in an urban public sector health facility face severe work pressure in the course of their daily clinical schedules. Report from the study conducted by Briggs et al (1994) on health workers in Croydon health district of South London supported this opinion. The time fixed for hepatitis B vaccination for healthcare workers must be mutually convenient. The respect for the individual and their ability to make decisions with regards to their own health and future should not be compromised. However, as plausible as this reason might be, it could not be justified under the basis of cost and benefit analysis. This line of thought might also be due to low perception of the severity of the disease. Acceptance of hepatitis B vaccination is a preventive measure and prevention is cheaper than treatment. Treatment is known to be more expensive and might eventually not succeed. Hepatitis B infection may lead to primary liver cancer which is not curable. Therefore health education should emphasize prevention as a cheaper and better alternative to any other form of treatment.

Briggs et al (1994) and Jepsen et al (1994) in separate studies cited fear of side effects and safety of hepatitis B vaccine as reason for failure to accept it. This was also a factor of non acceptance in this study. Those who decided against HB vaccination tended to believe that the vaccine itself was unsafe. While the recombinant hepatitis B vaccine is regarded as safe and adverse reactions to it usually described as mild in nature, serious reactions such as neurological effects have been documented (Feely,1997). It is a concern that widespread reporting of such ‘scare’ may have a detrimental effect on efforts to eliminate this vaccine-preventable disease and the health burden it imposes on the society.

It is also noteworthy that some respondents expressed fears of contracting HIV and hepatitis B through vaccination as a barrier. Therefore fear of poor injection practices is real. According to the World Health Organization report (2007) it was estimated that annually, twenty-one million hepatitis B infection

cases may be caused by unsafe practices such as the re-use of syringes and needles without sterilization. Many Nigerians prefer injections to oral medication because they believe injections are more effective. The more injections are given, the more people are exposed to needles and syringes.

In addition, if the use of injections exceeds the availability of injection equipment, reuse of syringes and needles are likely to occur. Thus blood borne pathogens like hepatitis B could be contracted through unsterilized sharp instruments and shared syringes. Ideally, syringes are supposed to be used fresh, not to be shared but to be disposed off immediately after use.

It is noted that some respondents cited lack of awareness of the availability of the vaccine. The hospital management should address this issue through provision of adequate publicity emphasizing the importance of hepatitis B vaccination in the wards, laboratories, common rooms, seminar rooms, theatres and also in the cafeteria.

Even if the vaccine is not free, this should not be an excuse for its non-acceptance. The medical profession has long subscribed to a body of ethical statement developed primarily for the benefit of the patient. As members of a medical team, respondents must recognize responsibilities to patients first and foremost, society, other professionals and self. In line with this principle, it is the responsibility of any member of the health team to make sacrifice that will make them infection free so that patients will not be infected in the course of receiving medical care. This sacrifice will involve expenditure of human and material resources, which may not bring direct personal gain and results.

Pattern of Acceptance of Hepatitis B Vaccination

The findings of this study have shown that the respondents were generally vulnerable to hepatitis B infection in view of their experiencing needle prick injury and exposure to blood and other body fluids of their patients. Although, the respondents generally had positive attitude towards adoption of hepatitis B vaccination, attitude was not translated into practice as barely over an average, who were mostly female respondents, had been vaccinated.

The perception of severity of hepatitis B infection was highest among the physicians while the surgeons had strongest perception of being more at risk than other persons. The perceived benefit of hepatitis B vaccination was also strongest

among the physicians. Therefore, acceptance rate was highest among the physicians. Comparatively, the least level of acceptance of hepatitis B vaccination was observed among the Laboratory Scientists whose findings revealed a comparatively weaker strength of agreement about being more at risk than non-health workers. These laboratory scientists believed that the disease is an occupational hazard. These findings have confirmed Israsena (1992), Murata et al.; (1993) and Doebbeling (1996) who reported that nature of work is one of the factors strongly associated with the acceptance of hepatitis B vaccination.

Respondents with less than 10 years of professional experience accepted the vaccination more than their older colleagues. This is probably because more experienced doctors have the perception that they are at low risk of infection even though this perception is incorrect. The older doctors may play more supervisory roles and only attend to special cases thus having comparatively less contact with patients. This may give them the impression that they are less vulnerable than their junior colleagues. At UCH, resident doctors attend to most of the cases while special cases are referred to the consultants. This finding agrees with Murata *et al* (1993) and Dobelling (1996) who had reported that younger doctors either in training or at an early career stage were more likely to be vaccinated than older ones. Liewellyn and Harvey (1994) reported that junior Doctors were found to have the highest percentage of completed vaccination, and this rate declined with seniority.

Health policy makers should be aware that if any of the clinical staff members should contract hepatitis B infection, the hospital management will be called upon to bear the cost of treatment which may be more expensive than the cost of hepatitis B vaccine. Thus, efforts must be made to encourage health care workers to take preventive measures against the disease. Such encouragement could be in form of subsidy or free provision of the vaccine. They could also be requested to do this on assumption of duty.

Acceptance of hepatitis B vaccination could be improved through the involvement of the association and leadership of the relevant professional groups within the hospital setting in the planning and implementation of hepatitis B vaccination programme. These associations should have specific roles; including organizing specific organizational activities, mobilizing their members to participate in the programme and deciding together with the vaccination team the

best time and suitable logistics for their group. Educational sessions incorporated as part of vaccine programmes should ensure that persons who are candidates for vaccination have access to complete information. The proper formation of beliefs regarding safety and efficacy of hepatitis B vaccine may be the most important factor in determining its acceptance.

Conclusion

In this study younger healthcare workers were found more likely to have been vaccinated for HBV and this may be related to the younger healthcare workers' expectations of remaining in medical, paramedical, and nursing as a career for more years than older healthcare workers. Fear concerning the safety and effectiveness of the HBV vaccine was a major reason for non-acceptance of HBV vaccine, whereas, the vaccinated respondents indicated that hepatitis B vaccine is very safe and effective.

The result of this study shows that the physicians had the highest acceptance rate. The commonest reasons for accepting the vaccine are awareness of the importance of the hepatitis B vaccination and fear of hepatitis B virus infection. The factors strongly associated with the acceptance of the vaccination are type of specialty, age of personnel, number of years spent in the profession and knowledge of hepatitis B virus infection. Among those that were not immunized, concern about the side effects of the vaccine and lack of time were the major reasons cited for reluctance and inability to receive the vaccination.

It was also observed from the study that majority of the respondents were not aware of hepatitis B policy at UCH. This might weaken cue to action.

Implications for Health Education

The aim of education about hepatitis B is to prevent the transmission of hepatitis B from one person to another by influencing behaviours that favour the acceptance of the preventive measure. The findings from this study indicate that the majority of the health workers had good knowledge base. However, the minority must be remembered. More education about hepatitis B vaccine is warranted to clear up some of the misconceptions and to promote good health. To improve acceptability, periodic awareness programme aimed at improving acceptance of hepatitis B vaccination could be arranged especially among

laboratory scientists who had the least percentage among those who had accepted the vaccine. In the programme, health professionals who are acceptors of the vaccine should be recruited as educators since they can talk in the language that their peers will best understand. The messages to be emphasized during the programme will include the risk posed by hepatitis B to health care workers, the benefits derivable from acceptance of hepatitis B vaccination and where the vaccination could be obtained. Another strategy is to organize informal meetings; it may be in the club, resident doctors' lounge, consultants' common room where health workers who have accepted the vaccination will endeavour to persuade other health workers who have not accepted it. The discussion should also entail the identification of the best ways to deal with utilization barriers. Such forum can also be used to address their misconceptions. Also, health practitioners could be invited to give talks on prevention of hepatitis B infection in a common room that is strategically located within the study area.

Effective one to one counseling at the clinic level and group counseling at the community level of non-acceptors is crucial as an educational approach. In this regard, more health practitioners need to be trained on how to effectively conduct counseling. Health education should focus on the misconception associated with the vaccine such as its perceived side effects and risk of contamination with blood pathogens like HIV and hepatitis B.

Movies on the effects of hepatitis B can also be shown to health care workers in a selected location in the study area so as to help them further internalize the hepatitis B vaccination messages. Leaflets, stickers and hand bills should be distributed using appropriate concepts and messages. Healthcare workers need to be aware of the greater likelihood that they may be HBV carriers compared to the general population, therefore are at risk for occupational exposure to HBV when their position involves giving injections, treating injuries, and performing phlebotomies. Increasing perceived susceptibility can be addressed through the professional literature and educational seminars for healthcare workers.

Recommendations

From the findings in this study, it is recommended that the hepatitis B vaccine should be provided to healthcare workers early in their careers. Education programmes for health care workers should focus on increasing awareness of healthcare workers' overt occupational exposure to hepatitis B virus and stress the need for safety and the effectiveness of the synthetic hepatitis B vaccine. Enhancing accessibility may be another effective method for increasing acceptance of the hepatitis B vaccine. Universal healthcare workers vaccination programmes should be introduced as they have been successful in greatly reducing seroprevalence where they have been introduced.

REFERENCES

Adebamowo, CA (1998), Knowledge, attitude, and practices related to hepatitis B virus infection among Nigerian obstetricians and midwives: Journal of Obstetrics and Gynaecology; 85(4), pg 14-16.

Adetule A.O. (1993), Marketing Strategy for Pharmaceutical Products in Nigeria, MBA Dissertation pg. 2.

Aken'Ova Y.A. Olasode B Ogunbiyi J.O. Thomas J.O. (1993): Hepatobiliary changes in Nigerians with Sickle Cell Anaemia. Annals of Tropical Medicine and Parasitology. 87 (6): 603-606.

Al Faleh FZ(1988): Hepatitis B infection in Saudi Arabia. Annals of Saudi Medicine, 96(2), pg 504-505.

Al Faleh FZ, Ramia S. (1997): Hepatitis C virus (HCV) infection in Saudi Arabia: a review. Annal of Saudi Medicine; 122(2), pg 412-417.

Andre F. "Hepatitis B epidemiology in Asia, the Middle east and Africa". Smith Kline Beecham Biologicals, Rue de L'Institute 89, B-1330, Rixensart, Brussels, Belgium.

Angelillo IF, Ricciardi G, Rossip et al. (1999) Mothers and vaccination; knowledge, attitudes, and behaviour in Italy. Bulletin WHO, Vol. 5, pg 224 – 229.

Ayoola E.A. Viral Hepatitis in Africa. Viral Hepatitis and liver diseases (2003) pg. 381-384. CA: Jossey-Bass Publishers.

Bartlett MJ, Burgess MA, Mcintye PM, et al. (1999) parent and general practitioner preferences for infant immunization. Reactogenicity or multiple injections? Australian Family Physician, (supplement 1): S22 – S27.

Betel, Michael (Webmaster). (1999). "Hepatitis B Vaccine is Life-Saving (Online) Available: http://www.hepnet.com/heppb/new012599.html

Blumberg, Baruch (1998) "Hepatitis B Virus and the Carrier Problem" in *Social Research*; pg 201-203.

Brasil L.M., da Fonseca JC, de Souza RB, et al. Prevalence of hepatitis B virus markers within household contacts in the State of Amazonas. Review of Social Medicine in the Tropics. 2003; 36: 565-70.

Brian J, Ward, MDCN, and Pierre Plourde, MD (2006): Travel and Sexually Transmitted Infections. Journal of Travel Medicine 13:5, 300-317.

Briggs MJ, Thomas J. (1994) Obstacles to hepatitis B vaccine uptake by health care staff. Public Health; 108: 137 – 148.

Calver J. Occupational Health Services (1999): American Journal of Infection Control; volume 2, pg 51-57.

Colin WS, Edgar PS, Lyn F, Anthony EF, and Beth PB (2006); Hepatitis B virus infection: Epidemiology and vaccination, Department of International Health, The John Hopkins University, USA (1999) Social and Behavioural; pg 24.

Dancocks, A., Hewitt, S. Hepatitis immunization status of a A and E health workers. Occupational health, London,1994;46:20-23

Department of International Health, The John Hopkins University, USA (1999) Social and Behavioural Foundations of Primary Health Care; 20-24.

Doebbeling B.N, Ferguson, R (1996): Predictors of hepatitis B Vaccine in healthcare workers. Medical Care. 34: 58 – 72.

Doebeling BN, Ferguson KJ, Kohout FJ. (1996) Predictors of hepatitis B vaccine acceptance in health care workers. Medicare Care; 34: 58 – 72.

Dolin, R (1999): AIDS Therapy. New York: Churchill Livingstone; pg 9

Echavez, M.I., Shaw, F.E., Scarltt, M.I. and Kane M.A. Hepatitis B vaccine usage among dental practitioners in the United States: an epidemiology survey.J.Public Heath Dentistry 1987;47:182-185

Erinle O.O (1989). A Comparative Study of Factors Affecting The Expanded Programme on Immunization Coverage In Three Local Government Areas Of Ogun State. MPH Dissertation.

Fasola FA, Odaibo GN, Aken'Ova YA, Olaleye OD. (2003) Hepatitis B and viral markers in patients with sickle cell disease in Ibadan, Nigeria. African Journal of Medicine and Medical Sciences; 32(3), Pg. 293 – 295.

Fathalla SE, Namnyak SS, Al Jama A, Rabaria Bautista MM (1985). The prevalence of hepatitis B surface antigen in health subjects resident in Eastern Province of Saudi Arabia; Saudi Medical Journal. Pg 30.

Fatusi A.O, Fatusi O A, Esimai AA, Onayade A,Ojo,OS :Acceptance of hepatitis B vaccine by workers in a Nigerian Teaching Hospital. East African Medical Journal, vol77,No 11,2000

Feely, M Hepatitis and hepatitis immunization. Journal of social health, 1997:117: 41-46

Ferson, M.J. (1997): Fragmentation of scheduled visits and missed infants receiving multiple injected vaccine. Public Health; 21:735 – 738.

Foster G. (2000). Pegylatede interferon for hepatitis C. Retrieved on January from http;//id.medscape.com/Medscope/gastro/Treatment Updated 2002 tuo3.html

Francis D.P. (1995). "The Public health unprotected: reversing a Underutilization of hepatitis B vaccine." JAMA, The Journal of the American Association. 274(15): 1242-1243

Freed, G. L., Clark, S.J. (1997). Factors affecting physicians' early combined DTP-Hib vaccine. Ambulatory Child Health; 3: 27 – 33.

Freed, G. L., Pathman, D.E. Konrad, T. R. et al (1998). Adopting recommendation: a new dissemination model. Maternal and Child Health; vol. 29(2), 231-239.

Freed, G.L., Abu-Saad, K. (1995): Reform of child immunization service in Israel. J. Amer. Med. Assn. 273: 1909 – 1912.

Fulton, J. Bodenheimer, H., and Kramer, P (1986). Acceptance of hepatitis vaccine among hospital workers. "American Journal of Public Health; vol. 7, pg 111-118.

Gadi Lalazar, Deborah Rund and Daniel Shouval (2006): Screening, prevention and treatment of viral hepatitis B reactivation in patients with heamatological malignancies. British Journal of Haematology; vol. 9: 71-108.

Glans, K, Francis, N (1990. Health behaviour and health education. CA: Jossey-Bass Publishers; 238: G376-G383.

Goldman, L., and Bennett, C. (2000). Cecil Textbook of Medicine W Company, Philadelphia; pg 28.

Goldstein, S (2002). Incidence and risk factors for acute hepatitis B infection. 11982 – 1988: Implication for vaccination programs. The Journal of Infection 1856:713 – 719.

Grace E. G., and Cohen, L.A. (1991). Attitude of dentists concerning hepatitis vaccination. Continuous Education for Dentists; 12 Edition, pg 97 – 200.

Guyton, A. C. (1991). Textbook of Medical Physiology. 8th Edition. Philadelphia Saunders; pg 547.

Hall, A, Kane, M, Roure, C et al. (199). Multiple sclerosis and hepatitis vaccine; 17:2473 – 2475.

Halsey, N. A., Duclos, P., Van Damme, P, et al (1999). Hepatitis B virus central nervous system demyelinating diseases. Paediatrics Infecteous Diseases; 3L 71-77.

Handelman, E. Y. (1992). "Hepatitis B vaccine education programs, AAOHN Journal; 40 (6): 263 – 270.

Harry T.O.; Bajani MD; Moses AE. "Hepatitis B virus infection among blood donours and pregnant women in Maiduguri, Nigeria". East African Medical Journal, 1994 Sep.70(9): 596-7.

Harward, M.P, Kaiser D.L and Fedson D.S. Acceptance of hepatitis B vaccine by medical and surgical residents. Journal of General internal medicine, 1988;3:150-155.

Helcl, J. (2000). Control of hepatitis B among healthcare workers in Republic, 1982 – 1995. an official Journal of the Society for healthcare of America; 21(5): 2-6.

Henderson, C (1992). Fee hepatitis B and C blood tests afforded to public. "American Liver Foundation, Cancer Weekly; 4(1): 5-7.

Henley, D. E. (1993). "Prevention of hepatitis B virus infection." American Physician, 47:739-40

Hurie, M. B., Saari, T. N, Proctor, M. E., et al. (1995). Attitude and Practices of obstetric providers regarding infant hepatitis B vaccination; 23: 1019-1023.

Iom, K. (2002). Institute of medicine report. Retrieved on October 11, http/www.nap.edu/books/0309084695/html/index/html.

Israsena, S (1992). Factors influencing acceptance of hepatitis B vaccine hospital personnel in an area of heperendemic for hepatitis B. American Gastroenterol: 87(12): 1807-9.

Jeffe, D. B., Mutha, S. (1997). Healthcare workers' attitude and complete universal precautions. Infection Control Hospital Epidemiology; 18: 71-75.

Jepsen, L.S and Thomsen A.C. Attitude of hospital personnel to the risk of hepatitis Band vaccination. A questionnaire study. UgekrLaeger 1994:156:5514-5518.

Johns, R. J. (1980). The principles and practice of medicine. New York Appleton-Century-Crofts; pg 78.

Kamolratanakul, P., Untavorn, P., Israsena,S and Samulramrung R. The influence of dissemination of information on the changes of knowledge , altitude and acceptance of hepatitis B vaccination among hospital personnel in Chulalongkorn Hospital. Public Health Journal 1994: 108:137-148

Kane, M, Alter, m. Haldler, S. et. Al. (1989). Hepatitis B infection in the States. American Journal of Medicine. 87: 115-135.

Kawai, H., and Feinstone, S (2000). Acute Viral Hepatitis. 5th edition Philadelphia Churchill Livingstone; pg 1279 – 1297.

Kew C. (1995). "Protective Efficacy of Hepatitis B Vaccination." 345:1065–66. British Journal of Haematology; vol. 9: 71-108.

Kinersley P. (1990) Attitudes of General Practitioners towards Hepatitis B Vaccination; British Medical Journal; 24th edition; pg 238 – 300.

Kinersley, P (1990. Attitudes of general Practitioners towards Hepatitis B Vaccination; British Medical Journal; 85th edition; pg 300 - 238.

Kohrt, H.E., Ouyang D. L., Keeffe E.B (2005): Systematic Review: lamivudine prophylaxis for chemotherapy-induced reactivation of chronic hepatitis B virus infection. Alimentary Pharmacology & Therapeutics 24:7, 1003-Lanphear, B. P. (1994). "Trends and patterns in the transmission of pathogens to healthcare workers. "Epidemiologic Reviews. 16(2): 43

Kolats, G. (1994). "The hepatitis scare: How serious is it? Cosmopolitan; 29: 105-110.

Larson, E. B (1979). "The relationship of health beliefs and a postcard influenza vaccination. Journal of Family Practice, 8:1207 – 1211.

Last J. M. (1987). Public health and human oncology. Connecticut: A Lange; pg 248.

Lavanchy D(2000). "Hepatitis B virus epidemiology, disease burden, treatment and current and emerging prevention and control measures". Journal of Viral Hepatitis Vol.11, Issue 2, pp. 97-107.

Lee, Samuel, MD. (1997) "Hepatitis Vaccination: Questions and Answers" (Online) Available: www.hepnet.com/update11.htm

Lemon, S (1995). Hepatitis C. virus. 4th ed. Churchill Livingstone; pg 147

Lewis E, Shinefield HR, Woodruff BA(2001) : Safety of neonatal hepatitis B vaccine administration. Pediatrics Infectious Diseases Journal ; 20: 1049-54

Lewy R.(1987): Immunizations among hospital personnel Journal of Occupational Medicine. 1987; 29:433-6

Liewellyn L.J, Harvey I. (1990) Hepatitis B vaccination: How many doctors are fully covered? Journal of Public Health in Medicine: 16: 352 – 356.

Liewellyn, L. J. (1994): Hepatitis B vaccination. Journal of Public Health Medicine; 29: 105-110.

Lin WC, Bali C. (1997) Factors affecting the decision of nursing students in Taiwan to be vaccinated against hepatitis B infection. Journal of Advanced Nursing; 25: 709 – 718.

Linder, N. (1999). Unexplained fever in neonates may be associated with vaccine. Fetal Neonatal; 81st edition; pg 206 – 207.

Maddrey WC: Hepatitis B an important public health issue, Clinical Laboratory 2001; 47(1-2): 51-5

Mahoney, F. Lawrence, M., Scott, C. et al. (1996). Continuing risk for virus transmission among infants in Lousiana. Pediatrics; 96:1113-6

Margolis, H. S, Alter, M. J. and Hadler, S. C (1991). Hepatitis B: Epidemiology and implications for control. Liver Disease. 11:8

Margolis, H. S. (1997). Viral Hepatitis. 4th ed. NY: Plenum Medical 363-418.

Marx J. (2000). Understanding the varieties of viral hepatitis. Retrieve 2003 From http://www.springnet.com/cep807a.htm.

Maynard, J. E. (1990). Hepatitis B: Global importance; 8th edition; pg 518-520

McKenzie, C. (1992). Hepatitis B vaccination: A survey of healthcare knowledge and acceptance. AAOHN Journal. 40(11):517-520

McMahon, E. (1995). Professional guide to diseases, 5th ed. Springhouse Corporation. CA; pg 51.

McQuillan G. (1999). Prevalence of Hepatitis B Virus Infection in USA. Health; 89th edition; pg14-18.

Michael, L. R. (1999). New trends in liver transplantation. The American for the study of liver diseases 50th Annual meeting. Dallas, Texas; pg 415

Miller, F. N (1978). Pathology: A dynamic introduction to medicine at Boston, MA. Little, Brown and Company; pg 25.

Mundt, D. B (1992). Hepatitis B Vaccine: Acceptance among Occupational Nurses Practicing in Hospital Employee Health Settings. AAOHN Journal 72; pg 513.

Muraskin, William (1995): The War Against Hepatitis B. Philadelphia, Pennsylvania: University of Pennsylvania Press; pg 29.

Murata, P.J., Young, L.C. (1993). Physician's attitudes and behaviours hepatitis B immunization. Journal of Family practice; 36:163-168.

Murray, Rsenthal, Kobayasi, and Pfaller (1998): Medical Microbiology, 3rd Edition. St. Louis, Misouri: Mosby Publishing Co.; pg 27-31.

Oates, B. C. (1993). Efficacy of hepatitis B vaccination: Knowledge and medical students. British Medical Journal; pg 307:310

Odaibo GN, Arotiba JT, Fasola AO, Obiechina AE, Olaleye OD, Ajagbe HA (2003): Prevalence of Hepatitis B Virus Surface Antigen (HbsAg) in patients undergoing extraction at the University College Hospital, Ibadan; 32(3); pg 243-245.

Ola SO, Otegbayo JA, Odaibo GN, Olaleye OD, Olubuyide OL Serum hepatitis C virus and hepatitis B surface antigenaemia in Nigerian patients with acute enteric hepatitis: West African Journal of Medicine, 2002

Olaleye O.D. Ekweozor CC, Lizl, Opala IE, Sheng Z, Onyemenem TN, Rasheed S (1996): Human T-Cell lymphotropic virus types I and 2 infection in subjects with leukemia/lymphoma and persons in a clinic for sexually transmitted diseases in Nigeria. Arch. Virol. 141: 345-355.

Olubuyide IO, Ola SO, Aliyu B, Dosumu OO, Arotiba JT, Olaleye OA, Odaibo GN, Odemuyiwa SO and Olawuyi F. (1997) Hepatitis B and C in doctors and dentists in Nigeria. Journal of Medicine, Pg. 412 – 422.

Otegbayo JA, Daramola OOM, Oguntoye OO, Yakubu A, Ogunlade OA, Muibi SA, Fasola FA.(2003). A review of infection of hepatitis B, Postgraduate Journal of Medical Science; 48: Pg. 21 – 26.

Palmer, D. L. (1983). Attitude towards hepatitis vaccination among employees. Journal of Infectious Diseases; 25: 709-718.

Peter J (1996). Use and interpretation of tests in infectious disease. Specialty Laboratories; pg 24

Raj V (2003). Treatment of hepatitis B. Journal of Tropical Paediatrics vol. 48; Pg. 241.

Rakel, R (2000). Saunders manual of medical practice. W. B. Saunders, Philadelphia; pg 28.

Rapoza, N (1989). HIV: Infection and disease. Chicago, IL: American Association; pg 55.

Rives, N. W. and Mooney, A. R (1978). Attitudes of non-participation swine influenza immunization programme in Southern Delaware. Delaware Journal, 50:533-549.

Robinson, W. (2000). Hepatitis B virus and Hepatitis D virus. 5th edition; Philadelphia: Churchill Livingstone 1652 – 1678.

Rosen, H. (2000). Hepatitis b and C in the liver transplant recipient. disease, British Medical Journal; 20: 465-480.

Rosenstock, I (1988). Social learning theory and health belief model. Education Quarterly. 15(2): 175 – 183.

Rosenstock, I.M. "The Health Belief Model and Personal Health Behaviour". Edited by M.H Becker, Health Education Monograph, 1974, Vol 2(4), pp.27-57.

Rosentock, I.M., Derryberry, M and Carriger, B.K. "Why people fail to seek poliomyelitis vaccination". Public Health Reports, 1959, Vol 74, pp 98-103.

Roup, J. B. (1993). OSHA's new standard: Exposure to blood borne pathogens, AAOHN Journal, 39(3): 128 – 135.

Roush, S., Birhead, G., Koo, D. et al. (1999). Mandatory reporting disease conditions by health care professionals. JAMA; 282: 164-70.

Rundall, T. G. (1979). Factors associated with utilization of the swine program among senior citizens in Tompkins County Medical Care, 17:1

Schulman, Stanford (1992). The biologic and clinical basis of infection, Philadelphia: W. B. Saunders; pg. 51.

Schumacher, K. (1999). Hepatitis B vaccine reaction report. Retrieved 2003 from http//:ww.909shoit. com/hepatitisb.htm.

Schumacher, Karin (Webmaster) (1999) "Hepatitis B Vaccine Reaction Reports outnumber Reported Disease Cases in children According to Vaccine Safety. Journal of Family Practice; 34: 174-176.

Sebastian, J (2001). Quantitative and genotypic analysis methods for Medical Laboratory professionals. Journal of Laboratory Medicine. 13:22-24.

Shaw, S (2000). Chronic hepatitis. 5th ed. Gerald Mandell. Philadelphia, Livingstone, 1297-1331.

Sheen Y.K, Tsou S.M, Lin C.J, Lin C.C, Hsu Y.C. Chen M.L, Chang and C.T, Yeh. Nuclear HBcAg and histology activity index as independent predictors of the expression of single spliced HBV-RNA. Journal of Viral Hepatitis; 108: 58-72.

Sherman, M (2000). Hepatitis A,D,E and G. Retrieved on October from http/www.hepnet.com/update 14.httml

Sherman, M (200) Management of viral hepatitis. Retrieved on October from Htt//ww.pulsus.com/GASTRO/1105/CASLED.htm

Simpson N, Lenton S, Randall R. (1995) Parental refusal to have children immunized: extent and reasons. British Medical Journal; 310: 225 – 227.

Smith ER, Bonatvala JE, Tilzey AJ. (1996) Hepatitis B vaccine uptake among surgeons at a London teaching hospital: How well are we doing? Annual of Royal College of Surgeon England: 78 : 447 – 449.

Smith, E. R. (1996): Hepatitis B vaccine uptake among surgeons at a teaching hospital. Ann Roy Coll. Surg. Engl; 78:447-449.

Smith, Sandra (2000). Clinical nursing skills, 5th ed. Prentice Hall, Inc; pg 58.

Spence, M. R. and Dash, G. P. (1990). Hepatitis B: Perceptions, knowledge of vaccine acceptance among registered nurse in high risk occupations in hospital. Infection Control and Hospital Epidemiology. Journal of Medical Science; 29: 105-111.

Spier R. E. (1999). Meeting report: Vaccine and Vaccination. Journal of Occupational Medicine; 32: 102-107.

Springhouse, H. (2000). Nurse Practitioner's Drug Handbook. 3rd edition. PA Springhouse Corporation; pg 51.

Takeda, Jones J., Shepherd J., Davidson Price A (2005): A systematic review and economic evaluation of adenovirus dipivoxil and pegylated interferon-alpha-2a for the treatment of chronic hepatitis B. Journal of Viral Hepatitis; 30: 712-718.

Taras, H. L. (1994). The hepatitis B occupational risk worksheet. Journal of Health. 64(3): 1221(1).

Tawk H.M, Vickery L, Bisset S.K, Lo W, Selby Y.E(2006) : Cossart and the infection in Endoscopy Study Group . The current pattern of hepatitis B virus; pg 51.

Tepper, M (1997). Viral hepatitis. Canadian Medical Association Journal 8 Thomas E. T.

Thomas, D. L. and Factor, S. H. (1992). Hepatitis B and C infection and healthcare providers. AIDS. 17(1).

Thorn, G. W., Adams, R and Braunwald, E (1977). Harrison's Principles New York NY: McGraq-Hill Book Company.

Tierney, L. (2000). Current medical diagnosis and treatment. 39th edition; Lange Medical Books.

Tyler, K. (1995). Viral hepatitis. 4th edition; Gerald Mandell. NY: Churchill 1314-1328.

U.S. Department of Labor (1991). Occupational safety and health. Fe 56(235): 64179.

Valenti, W. (1986). Hepatitis B. prevention part I: A review of APIC's new Infection Control, 7(2):74-77.

Wakefield, A. J. (1998). Non-specific Colitis, and pervasive development in children. Lacent; 351:637-641.

Wallach, J. (1982). Interpretation of diagnostic tests. 5th ed. Boston and Company. Wallis, D. E., and Boxal, E. H. (1999). Immunization of infants at risk of transmission of hepatitis B. BMJ; 318:1112-1113.

Wallis DE, Boxall EH. (1999). Immunization of infants at risk of prenatal transmission of hepatitis B. retrospective audit of vaccine uptake. British Medicine Journal; 318: 1112-1113.

Waterman, S. H. (1994). Hepatitis B immunization. The Western Journal of Medicine; 160(6): 567-68.

Weatherall, D. J., Ledingham, J. G. and Warrell, D. A. (1987). Oxford Medicine, 2nd edition, Vol. 1 New York NY: Oxford University Press; pg 25.

Wilkins, R. W. and Levinsky, N.G. (1978). Medicine Essentials of Clinical. 2nd ed. Boston MA: Little, Brown and Company; pg 38.

Wood A. (1989). Hepatitis B Vaccination and Groups Practitioner; Journal of Occupational Health; 20: 1066, 1068.

Wood, A. (1989). Hepatitis B vaccination GPs. Practitioner; 20:1.

Wood, D. L., Rosenthal, P., and Scarlata, D (1995). California pediatric knowledge of and response to recommendations for universal infant immunization. Arch Pediatrics Adolescent Medicine, 149:769-773.

Wood, K. A. (1995). Physician and parent opinions-are children become pincushions from immunizations? Arch pediatrics, Adolescent Medicine, 149:8

World Health Organization (WHO) (2001). Vaccines, Immunization, a Hepatitis A. Retrieved online on October 28th 2003 from http://www.who.int/vaccines/intermediate/hepatitis

Wright, T. L., and Johnson, Y. N. (1993). Clinical aspects of hepatitis infection, The Lancet. 342(8883):1340-44.

Zimmerman, R. K. (1998). How important is early childhood hepatitis Journal of Family Practice; 47:370-374.

Zola J. Smith, N. Goldman, S, et al. (1997). Attitudes and education of obstetric providers regarding infant hepatitis B vaccination. Obstetric 89:61-64.

Appendix I

Departments of participating doctors, dentists, laboratory scientists and nurses at the University College Hospital, Ibadan, Nigeria.

DEPARTMENTS		
Preventive Dentistry		
Consultants	-	8
Resident Doctors	-	3
Total	-	11
Oral & Maxillofacial Surgery		
Consultants	-	4
Resident Doctors	-	4
Nurses	-	2
Total	-	10
Oral Pathology		
Consultants	-	2
Resident Doctors	-	5
Laboratory Scientist	-	1
Total	-	8
Restorative Dentistry		
Consultants	-	4
Resident Doctors	-	4
Total	-	8
Chemical Pathology		
Consultants	-	10
Resident Doctors	-	3
Laboratory Scientist	-	1
Total	-	14
Haematology		
Consultants	-	6
Laboratory Scientists	-	2
Total	-	8

Medical Microbiology & Parasitology

Consultants	-	6
Laboratory Scientists	-	3
Total	-	9

Pathology

Consultants	-	3
Laboratory Scientists	-	1
Nurse	-	1
Total	-	4

Virology

Consultants	-	5
Laboratory Scientists	-	4
Total	-	9

Medicine

Consultants	-	14
Resident Doctors	-	35
Laboratory Scientists	-	2
Total	-	51

Obstetrics & Gynaecology

Consultants	-	14
Resident Doctors	-	35
Laboratory Scientists	-	1
Total	-	50

Surgery

Consultants	-	22
Resident Doctors	-	45
Laboratory Scientists	-	1
Total	-	68

Paediatrics

Consultants	-	16
Resident Doctors	-	30
Laboratory Scientists	-	2
Total	-	48

Anaesthesia		
Consultants	-	5
Resident Doctors	-	30
Laboratory Scientist	-	1
Total	-	36
Nurses on general duties	-	94
Central Phlebotomy		
Laboratory Scientists	-	5
General Out-Patient Department's Phlebotomy		
Laboratory Scientists	-	5
GRAND TOTAL	-	438

APPENDIX II

QUESTIONNAIRE TO EXPLAIN PATTERN OF ACCEPTANCE OF HEPATITIS B VACCINATION AMONG CLINICAL STAFF OF THE UNIVERSITY COLLEGE HOSPITAL, IBADAN, OYO STATE, NIGERIA

Good day. I wish to discuss or ask questions on a number of issues including your knowledge and opinion about hepatitis B viral (HBV) infection and the factors affecting its acceptance among health workers. Your answers will help us identify important issues that need to be addressed in the provision and utilization of hepatitis B (HB) vaccination among health professionals, at the University College Hospital, Ibadan.

I wish to assure you that all the information given to me is kept in confidence; therefore I will not write down your name on this form, or any other forms for this study. Your most open and sincere answers are needed to make this study successful; therefore I would like you to answer all the questions as completely and as honestly as possible.

Completion and return of this questionnaire will constitute consent.

Date: ---------- Department----------

SITE: University College Hospital, Ibadan

,SECTION A: DEMOGRAPHIC CHARACTERISTICS

I'm going to ask you some questions about yourself and household. Kindly answer as appropriate.

1. Sex i) Male ii) Female
2. How old were you at your last birthday_____
3. What is your marital status ?
   - i) married
   - ii) single
   - iii) widow/widower
   - iv) divorcee
4. When did you graduate?----------

5. Where did you study i) Home ii) Abroad

6. What is your profession? (i) Nursing ii) Physician
iii) Dentist (iv) Laboratory Technologist v) Surgeon
v) Obstetrician

7. What is your highest educational qualification?
i) OND ii) HND iii) B.Sc iv) MBBS
v) Masters Degree vi) B.M.L.S. vii) F.I.M.L.T
viii) Ph.D

8. What is your highest professional qualification?
i) NRN/SRN ii) SRM iii) Medical Fellowship iv) Others (specify) ----------

9. What is your current designation?
i) Consultant ii) Resident Doctor iii) Technologist iv) Staff
v) Nurse vi) Others (specify)----------

10. Year of assumption of duty in UCH? ---------- (years ago)

11. Which department are you working currently?----------
12. How long have you been working in this department ----------
(months or year)
13. Which other department (s) have you worked and for how long? -------
14. Apart from UCH, Which other hospital(s) have you worked with dates----------

SECTION B: INFORMATION ON KNOWLEDGE OF HEPATITIS B

Please respond to each of these statements (please tick ( ) the appropriate)

	STATEMENT	**True**	**False**	**Don't Know**
15	Hepatitis B is a bacterial infection?			
16	HBV has been linked to the upsurge of liver cirrhosis and liver cancer			

17	Health care workers are at special risk of infection of HBV			
18	The goal of treatment of HBV infection is to prevention progression to liver cancer.			
19	HB V cannot be prevented by vaccination alone.			
20.	Screening of blood products is a way of preventing HBV transmission			
21	Fever can be a symptom of HBV infection.			
22	Dark urine is not a symptom of HBV infection			
23	Healthcare workers cannot infect patients with HBV			
24.	Patients can infect healthcare workers with HBV			
25.	Prevalence of HBV infection is low in Nigeria			
26.	Hepatitis B vaccine is a natural drug.			
27	There is a cure for persons infected with HBV			
28.	One cannot get HBV from first sexual intercourse			
29.	One can get HBV from episode of intercourse without a condom			
30	HBV infected women can pass virus to their baby.			
31	HBV can spread through mosquito bites			
32	HBV can spread through kissing			
33	Family planning pills can prevent HBV			
34	One can get HBV through touching and hugging of infected persons			
35	One cannot get infected with HBV in a barbing saloon			
36	One can easily tell who has HBV by looking at peoples faces			
	STATEMENT	**True**	**False**	**Don't Know**
37.	One can get HBV by sharing needles and blade with others			
38	Hepatitis B vaccine is a stimulator of immune defense.			
39.	HBV infection is an occupational hazard			
40	People who have regular contact with blood are not at risk of HBV infection.			
41.	HCWs are more at risk of HBV infection than other persons			

SECTION C: PRACTICES AND ATTITUDE OF HEALTH WORKERS TOWARD HEPATITIS B VACCINATION

Below are statements about Hepatitis B viral infection and Hepatitis B vaccine, for each. Tick ( ) whether you agree or disagree with it or you are undecided.

	STATEMENTS	Agree	Disagree	Undecided
42	HBV infection is not a serious one.			
43.	HBV vaccinations should be compulsory for all health workers			
44	UCH makes adequate provision for sterilization of instruments, equipment, and surface as well as barrier methods gloves goggle, face mask			

45. Have you ever been previously vaccinated against HBV infection? Yes No

46 . If yes, when ----------

47. What is your most important reason for accepting Hepatitis B vaccination?

i) advice from family members and professional colleague
ii) have knowledge about hepatitis B vaccination and its effect
iii) do not expect any adverse side effects
iv) fear of hepatitis B infection
v) Others (specify) ----------

48. If no, what is the most important reason why you have not received the vaccination?

i) have no time
ii) afraid of side effect and not convinced of the efficiency of vaccination
iii) no awareness
iv) have no money
v) the disease is not dangerous and physician did not suggest vaccination
vi) may develop HBV infection afterwards
vii) may have HIV/AIDs consequently.
viii) others, state_____

49. The best way to encourage health workers to accept HBV vaccination in your opinion (Tick as applicable)

i) Active offer of vaccination free of charge

ii) More publicity on the availability of the vaccine

iii) More education on the efficacy and side effects

iv) More assurance that it will not be a source of HIV/AIDs transmission

v) Assurance of effective and efficient service delivery

vi) Others (specify) ----------

50. Do you think you have sufficient information about HBV vaccination?

Yes No.

51. If yes, what information do you have ----------

52. If no, what other information do you need?

53. Have you ever been recommended for HBV vaccination?

Yes No

54. If yes, what circumstances led to this recommendation?

55. Did you take the vaccine? Yes No

56. If yes, why?----------

57. If no, why? ----------

58. If there is an opportunity for HB vaccination today, will you like to be vaccinated?

59. If there is a opportunity for HB vaccination today, will you like to be vaccinated? Yes No

SECTION D: ABOUT YOUR WORKING ENVIRONMENT

60. Have you ever had accidental exposure to blood or body fluids of your patients during the course of your professional carrier? Yes No

61. If yes, how many times in the last twelve months ----------

62. Have you ever had puncture of the skin or the fingers during your professional practice? Yes No

63. If yes, how many times in the last twelve months? ----------

64. Have you ever performed any invasive procedure? Yes No

65. Do you think you are at risk of infection of HBV from your patients?

Yes No

66. If you have not been vaccinated recently and you learned that a patient with Hepatitis B had just been admitted to your unit, will you be willing to treat the patient? Yes No

67. If yes, why? ----------

68. If no, why? ----------

69. Is there HBV prevention or treatment policy yin your hospital?
Yes No

70. Are you aware of any policy on HBV in your hospital? Yes No

71. Do you think there should be a written policy on HBV in your hospital?
Yes No

APPENDIX III

Answers to the questions on the test of knowledge of hepatitis B

(Section B of the Questionnaire)

1. False
2. True
3. True
4. True
5. True
6. True
7. True
8. False
9. False
10. True
11. False
12. False
13. False
14. False
15. True
16. True
17. False
18. False
19. False
20. False
21. False
22. False
23. True
24. True
25. True
26. False
27. True

Level of knowledge of respondents about hepatitis B

		*Frequency of responses N = 438			
	Level of Knowledge	Correct		Incorrect	
		No.	%	No	%
*1	Hepatitis B is a bacterial infection?	415	94.7	23	5.3
+*2	HBV has been linked to the upsurge of liver cirrhosis and liver cancer	403	92.0	35	8.0
+*3	Health care workers are at special risk of infection of HBV	413	94.3	25	5.7
**4	The goal of treatment of HBV infection is to prevention progression to liver cancer.	322	73.5	116	26.5
**5	HBV cannot be prevented by vaccination alone.	220	50.2	218	49.8
**6	Screening of blood products is a way of preventing HBV transmission	423	96.6	15	3.4
++*7	Fever can be a symptom of HBV infection.	410	93.6	28	6.4
++*8	Dark urine is not a symptom of HBV infection	342	78.1	96	21.9
***9	Healthcare workers cannot infect patients with HBV	397	90.6	41	9.4
***10	Patients can infect healthcare workers with HBV	414	94.5	24	5.5
**11	Prevalence of HBV infection is low in Nigeria	298	68.1	140	31.9
**12	Hepatitis B vaccine is a natural drug.	322	73.5	116	26.5
++*13	There is a cure for persons infected with HBV	234	53.4	204	46.6
***14	One cannot get HBV from first sexual intercourse	337	76.9	101	23.1
***15	One can get HBV from episode of intercourse without a condom	346	79.0	92	21.0
***16	HBV infected women can pass virus to their baby.	347	79.2	91	20.8
***17	HBV can spread through mosquito bites	388	93.8	50	6.2
***18	HBV can spread through kissing	232	53.0	206	47.0
**19	Family planning pills can prevent HBV	404	92.2	34	7.8
***20	One can get HBV through touching and hugging of infected persons	381	87.0	57	13.0
***21	One cannot get infected with HBV in a barbing saloon	323	73.7	115	26.3
++*22	One can easily tell who has HBV by looking at peoples faces	397	90.6	41	9.4
***23	One can get HBV by sharing needles and blade with others	407	92.9	31	7.1
**24	Hepatitis B vaccine is a stimulator of immune defense.	329	82.0	79	18.0
+*25	HBV infection is an occupational hazard	401	91.6	37	8.4
+*26	People who have regular contact with blood are not at risk of HBV infection.	403	92.0	35	8.0
+*27	HCWs are more at risk of HBV infection than other persons	391	89.3	47	10.7

* Knowledge of causation of hepatitis B infection

** Knowledge of prevention of hepatitis B infection

*** Knowledge of transmission of hepatitis B infection

+* Knowledge of susceptibility of hepatitis B infection

++* Knowledge of diagnosis of hepatitis B infection

APPENDIX IV

UCH GUIDELINES FOR THE MANAGEMENT OF OCCUPATIONAL EXPOSURE

Health care workers are generally exposed bio harzardous substances in the course of their duty. There is a need to focus on the prevention and control of those biohazards in the work place, especially the hospital setting.

Every health worker should take adequate preventive measures to avoid occupational exposure to those bioharzards.

One of the hazards of medical practice is that a health care worker may inadvertently sustain a needle stick injury or other exposure or potentially infective material from an HIV or HB positive patient . The psychological trauma of this accident may be debilitating to the professional involved. It is therefore important that apart from chemoprophylaxis, the individual involved should receive counseling from an expert on the field.

The average risk for HB or HIV infection from all types of reported percutaneous exposures to HIV or HB infected blood is 0.3%. Exposures involving a high titre of HIV or HB or a large volume of infectious material are apt to be higher . After mucocutaneous exposure average risk is estimated at less than 1 in 1000. It is considered that there is no risk of HIV or HB transmission where intact skin is exposed to blood.

Information/ education:

Those at risk should know who to contact in case of accidental exposure. Post exposure prophylaxis(PEP) should be initiated promptly, preferably within 1-2 hours post exposure.

Immediate pre-test counseling by a trained counselor and rapid test for HIV will be done. If test is declined, counsel patient, document refusal and offer only supportive care. Base- line HIV antibody test should be performed.

Baseline Hepatitis B surface antigen test should also be done. Baseline full blood count, renal and hepatic function tests should be carried out and repeated two weeks after starting PEP. For all exposures repeat HIV antibody test at six weeks, twelve weeks and six months. Monitor for drug toxicity. If exposure was from patient on anti-HIV therapy, apart from AZT, use drugs different from that of the patient. Observe precautions regarding sexual contact; for example use condoms for at least 6-12 weeks and do not donate blood or tissue.

ALL UCH STAFF SHOULD COMPULSORILY HAVE HEPATITIS B VACCINATION WITH FULL 3 COMPLETED DOSES.