***Original Research Article***

# Knowledge and attitude of health care workers towards Hepatitis B infection and vaccination in a Federal Teaching Hospital in South Western Nigeria


## ABSTRACT

This study was carried out to determine the knowledge and attitude of health care workers in Federal Teaching Hospital Ido Ekiti towards Hepatitis B vaccination and infection. This study employed a quantitative descriptive survey design which employed a stratified random sampling technique and the sample size was calculated using leslie and Kish formula for descriptive studies. Data was collected using structured self-administered questionnaire administered to 139 health care workers. Data was analyzed using descriptive statistics. The age distribution of respondents' showed 41% and 48.9% of the respondents were in the age range of 20-30 years and 31-40 years, respectively. Only 30.2% of the respondents believe that it is vital to recap needles after use while 79.9% believe that Hepatitis B can be transmitted as a nosocomial infection. A total of 38.8% of the respondents believed that after vaccination for Hepatitis B, it is not necessary to have a blood test to confirm immunity against Hepatitis B while 61.9% of them affirmed that 90% of adults and children who are vaccinated achieve 100% protection against Hepatitis B virus. The majority of the respondents (87.1%) were of the opinion that Hepatitis B virus is about 100 times more infectious than HIV. Almost half (48.9%) of the participants indicated that a person who has been vaccinated or recovered from previous Hepatitis B infection can still infect other. Also, 44.6% of the respondent strongly agreed that vaccination against Hepatitis B virus should be made available to all healthcare workers for free. About half (48.2%) of the respondents indicated they have not been vaccinated against Hepatitis B virus and of these only 10.8% received the completed 3 dose series. Although the health care workers claimed knowledge of Hepatitis infection, their practice of preventive measures was not commensurate with their knowledge. It is therefore imperative to improve their knowledge to influence their practice. Resources for practice of Hepatitis B preventive measures should be made regularly available to the health care workers in various health institutions to reduce the transmission of Hepatitis B among the health care workers decrease medical as well as financial burden, hence improving the management of cirrhotic patients. These predictors, however, need further work to validate reliability.



*Keywords: Attitude, Hepatitis B, knowledge, health care workers*


## 1. INTRODUCTION

Hepatitis B virus (HBV) is a global public health problem and one of the most common viruses in the modern world and ranked by the World health organization (WHO) as one of the top ten killers. The virus is responsible for approximately 1.5 million deaths worldwide each year, two thirds of which are attributable to primary hepatic carcinoma following HBV infection [1]. About 360 million people are chronically infected with HBV and these chronically infected persons are at higher risk of death from HBV-related liver cancer or cirrhosis by approximately 25% [2, 3].

HBV is preventable with a safe and effective vaccine, it is a well-known occupational hazard of health care workers and they are considered to be at substantial risk for acquiring or transmitting the virus because of their occupational contact with blood, blood products and other body fluids. The occupational risk for HBV acquisition varies according to the work place in the health care setting and time of exposure to the agent [4].

The route of infection of HBV include vertical transmission (such as through child birth) and horizontal transmission (occupational exposure, sexual contact and intravenous drug use). In low prevalence area, drug abuse and unprotected sex are the primary mode of transmission, although other factors may be important while in high prevalence areas, transmission during child birth is most common. In hospital setting, transmission of HBV can be from patient to patient, which presents the greatest risk, followed by patient to health care worker and health care worker to patient infections. However, because HBV is

blood borne and healthcare workers handle blood and other body fluids, this puts them at considerable risk of acquiring it if prevention and control measures are not adequate in hospitals. Needle stick injuries are common and it poses a significant risk of exposure to potentially fatal blood-borne viruses [5, 6].

The prevalence rate of HBV infection is high among health care workers because of the occupational contact with blood, blood product and body fluids as well as other procedures which often put them at risk of needle stick injury. HBV presents an occupational risk of infection for health care workers. Although HBV vaccine and safe working practices present an opportunity to prevent infection of health care workers risk, infections are still occurring in healthcare settings all around the world. It is reported that Nigeria is among the group of countries endemic for HBV infection, with about 18 million infected persons [7]. Since patients and healthy individuals report to health care facilities for medical investigation and care, health care workers attending to them in these health facilities are thus greatly at higher risk of acquiring HBV. Health care workers in Nigeria share the same fate with their clients even though it is assumed that they are well informed of the infection [3, 7, 8]

This study was therefore aimed at assessing the knowledge and attitude of health care workers in a Federal Teaching Hospital in South West Nigeria towards HBV infection and vaccination. The study findings may lead to a review of work place related occupational health and safety regulations and policy such as introduction of a compulsory provision for vaccination by the employer for HCWs identified to be at risk at the employers cost, the study may indirectly lead to safer work place practices by introduction of safer working methods and monitoring of HCWs compliance to safer practices.

## 2. THEORETICAL FRAME WORK

The health belief model was developed to help in determining whether an individual is likely to participate in disease prevention and health promotion activities. This model is useful in developing programs that help engage in healthier lifestyles and more positive attitudes towards preventive health measure [9]. In this study, Health Belief Model was applied to help understand the human behaviour towards the knowledge, attitude and practice of health care workers towards Hepatitis B infection and vaccination.

The concern with health behaviour developed in the early 1950's. Behavioural scientists and health care workers were seeing an increasing need to understand why and under what conditions people will take action to prevent, detect, or treat diseases. The health belief model (HBM) is a psychosocial formulation that was developed to explain health-related behaviour at the level of individual decision making [9]. The model, as described by Rosenstock (1974), was developed by a group of social psychologists. They were working for the U.S. Public Health Service and were interested in why some people used health services or complied with a health regime while other people did not. They were also interested in what factors prevented or interfered with a person following health care recommendations.

In this study, only three concepts (perceived susceptibility, perceived severity and perceived benefits) will be used because they are the most relevant and most appropriate to topic of study. Every person perceives the severity or seriousness of a health problem differently; the preventive behaviours are a function of individuals' belief about their susceptibility to the health problem, the severity of the health problem and the benefits of adopting the preventive behaviour. In applying this model to the knowledge and attitude of health care workers towards HBV infection and vaccination, the health care workers need to perceive themselves as susceptible to the infection, perceive that it is a deadly disease and preventive measures are available that can reduce the risk of being infected and also perceive that through proper prevention and vaccination, HBV Infection can be reduced.

For perceived susceptibility, it is assumed that the health care workers who feel they are at risk of being infected with HBV and other blood-borne virus will likely adopt healthy behaviours that will prevent the occurrence of the condition. Health care workers who perceived themselves as susceptible may possibly comply more by adopting all necessary universal precautions. With regards to perceived severity, the study assumed that health care workers who recognize the severity and seriousness of HBV infection may probably engage in health promoting and illness prevention activities (like the use of universal precautions, prevention of needles stick injury and vaccination) that will improve their health status. y.

## 3. METHODOLOGY

This study employed a quantitative descriptive survey design. The hospital is a 280 bedded tertiary institution comprising of 24 functional wards with other ancillary units such as radiology department, laboratory and pharmacy.

The target population for this study were health care workers (Nurses, Doctors and Medical Laboratory Scientist) working in the hospital. Stratified random sampling technique was adopted in the study as the target population were divided into three strata of Health Care Professionals and the sample size was calculated using Leslie and Kish formula for descriptive studies which is stated as follows:

$$N=\frac{Z^2PQ}{D2}$$

Where N= the desired sample size
Z=the standard variate corresponding to confidence level. At confidence level of 95%, Z=1.96
P=estimated prevalence rate of good knowledge from previous study =0.87
Q=1-p
D= is the level of error that can be tolerated (0.05 chance of error)

$$=\frac{(1.96)2*0.87*(1-0.87)}{(0.05)2}$$

$$=\frac{3.8416*0.87*0.13}{0.0025}$$

N= 174

The total number of the target population (Doctors, Nurses and Medical Laboratory Scientists) in Federal Teaching Hospital Ido-Ekiti was 745, and the pre-determined size (number of staff in each group) was obtained from each stratum. The sample proportional to each professional group was calculated using the following formula:

$$\frac{\text{Number of staff in each profession}}{\text{Total number of staffs in professional groups}} * \text{estimated sample size}$$

The sample size for each professional group was therefore calculated thus:
Doctors =200/745 x174
=47 doctors
Nurses =500/745 x174
=116 Nurses
Medical laboratory scientist = 45/745 x 174
=11 medical laboratory scientists

A total of 174 questionnaires were administered to the participants but only 139 questionnaires were fully completed.

The instrument used in this study was a well-developed questionnaire designed according to the variables been tested in the study and consist of 41 questions, which answers relevant and current question. It consists of four sections; section A is the demographic which consists of the respondents' bio data i.e. age, educational level, marital status, years of experience, religion. Section B assessed their knowledge about Hepatitis B infection and vaccination, section C is designed to assess their attitude towards Hepatitis B infection and vaccination and section D assessed their practice in the prevention of Hepatitis B infection. Each respondent was informed about the purpose of the study and were given instruction on how to complete the questionnaire.

A total of 139 health care workers participated in the study. Guidelines for completion of the questionnaire were provided and respondents were informed to tick where appropriate. Completed questionnaires were collected and collated. The data collected were analyzed using descriptive statistics.

For ethical considerations, the research proposal was approved by the Department of Nursing Science, Afe Babalola University, Ado-Ekiti. Before the commencement of the study, approvals were obtained from The Research Ethics Committee of Afe Babalola University and from the Research Ethic Committee of the Federal Teaching Hospital Ido- Ekiti, both in Ekiti State. Participants' rights were explained and informed consent was obtained. Also, to ensure confidentiality and anonymity, the names of respondents or any form of identity were not required on the questionnaire, thereby protecting the respondents' privacy.

## 4. FINDINGS AND DISCUSSION

The demographic data of respondents revealed that with respect to gender distribution of the respondents' shows that 41% were males while 59% are females. The age distribution of respondents' showed 41% and 48.9% of the respondents were in the age range of 20-30 years and 31-40 years, respectively. The marital distribution of respondents showed that 46.8% and 49.6% of them were married and single, respectively. The majorities of the respondents were nurses (51.8%) and doctors (40.3%). A total of 66.2% of the respondents had work experience in their profession between 1-10 years of experience (Table 1).

**Table 1: Socio demographic profile of the respondents**

| | Frequency | Percentage |
|---|---|---|
| **AGE** | | |
| 20-30years | 57 | 41.0 |
| 31-40years | 68 | 48.9 |
| 41-50years | 14 | 10.1 |
| **Total** | 139 | 100 |
| **RELIGION** | | |
| Christian | 95 | 67.6 |
| Muslims | 45 | 32.4 |
| Other | 0 | 0 |
| **Total** | 139 | 100 |
| **GENDER** | | |
| Male | 57 | 41.0 |
| Female | 82 | 59.0 |
| **Total** | 139 | 100 |
| **MARITAL STATUS** | | |
| Married | 65 | 46.8 |
| Single | 69 | 49.6 |
| Divorced | 5 | 3.6 |
| **Total** | 139 | 100 |
| **OCCUPATION** | | |
| Nurses | 72 | 51.8 |
| Doctors | 56 | 40.3 |
| Medical scientist | 11 | 7.9 |
| **Total** | 139 | 100 |
| **YEARS OF EXPERIENCE** | | |
| 1-10 | 92 | |
| 11-20 | 47 | |
| 21-35 | 0 | |
| **Total** | 139 | |

### Knowledge of respondents regarding Hepatitis B virus infection and vaccination

When the respondents were asked if 'universal precautions' (infectious disease control techniques, such as hand washing, use of gloves and other barriers, and aseptic techniques) should be used only when dealing with known Hepatitis B virus positive patients) 8.6% indicated true and 91.4% indicated false.

When asked if the consumption of spoilt/old rotten food can result in Hepatitis B virus infection, 35.3% answered true while 61.2% answered false. Only 30.2% of the respondents believe that it is vital to recap needles after use while 79.9% believe that Hepatitis B can be transmitted as a nosocomial infection (Fig. 1).

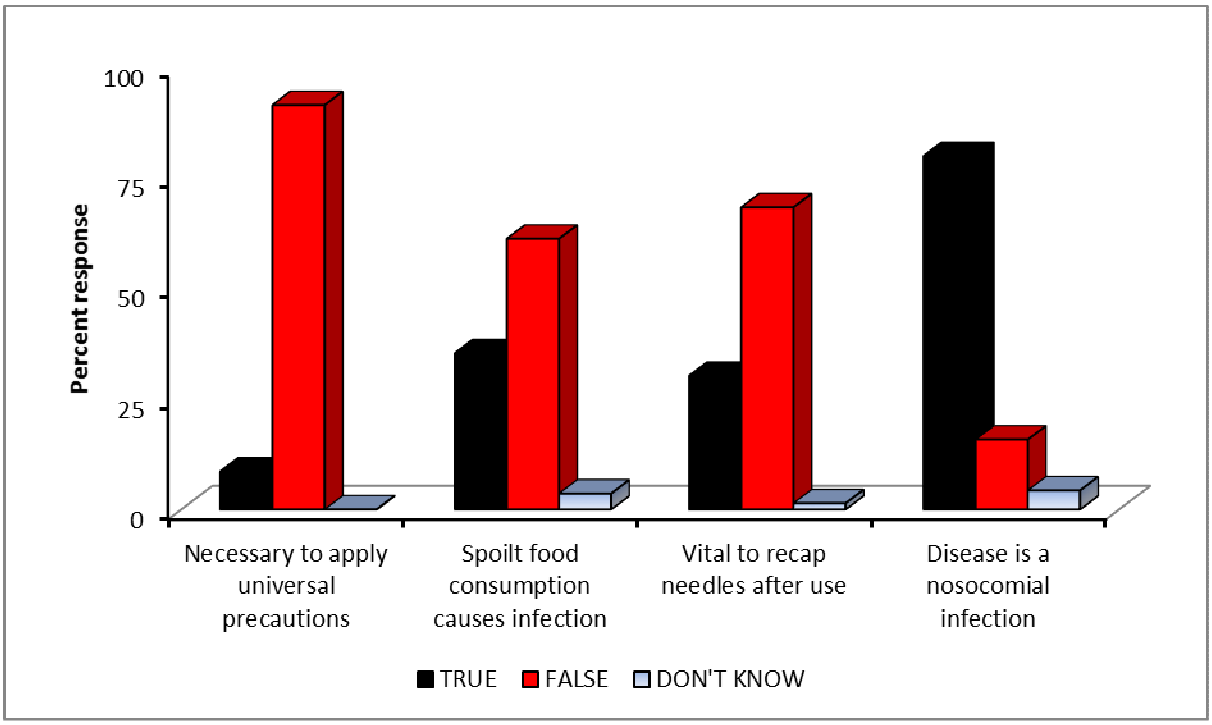


**Fig. 1: Knowledge of the respondents regarding HBV infection**

A total of 38.8% of the respondents believed that after vaccination for Hepatitis B, it is not necessary to have a blood test to confirm immunity against Hepatitis B while 61.9% of them affirmed that 90% of adults and children who are vaccinated achieve 100% protection against Hepatitis B virus. The majority of the respondents (87.1%) were of the opinion that Hepatitis B virus is about 100 times more infectious than HIV. Only of few of the respondents indicated that a titre of at least 10mIU/ml of antibodies against Hepatitis B is considered essential for protection against the virus. Also, the majority of the respondents believe that after exposure to Hepatitis B infection, receiving the first dose of Hepatitis B vaccine and Hepatitis B immunoglobulin within a week can reduce chances of infection (Fig. 2).

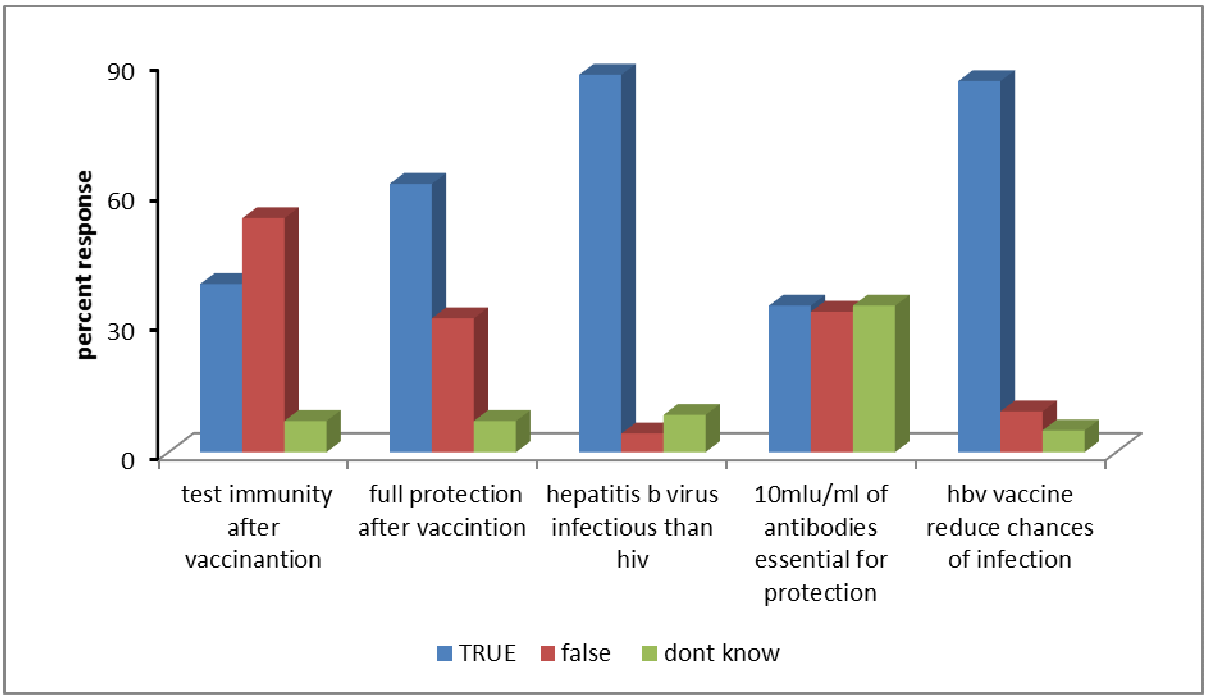


**Fig. 2: Knowledge of respondents regarding HBV vaccination**

As shown in Fig. 3, most of the respondents (55.4%) were of the view that once a patient has been vaccinated against Hepatitis B, they should not be considered possible sources of the virus while 48.9% of them indicated that a person who has been vaccinated or recovered from previous Hepatitis B infection can still infect others. An overwhelming majority of the respondents (83.5%) agreed that three doses of Hepatitis B vaccine are required for complete vaccination, with 33.8% of them indicating that the duration of protection after successful vaccination is at least 15 years. Also, the majority (87.1%) of the respondents believed that Hepatitis B virus can be sexually transmitted (Fig. 3).

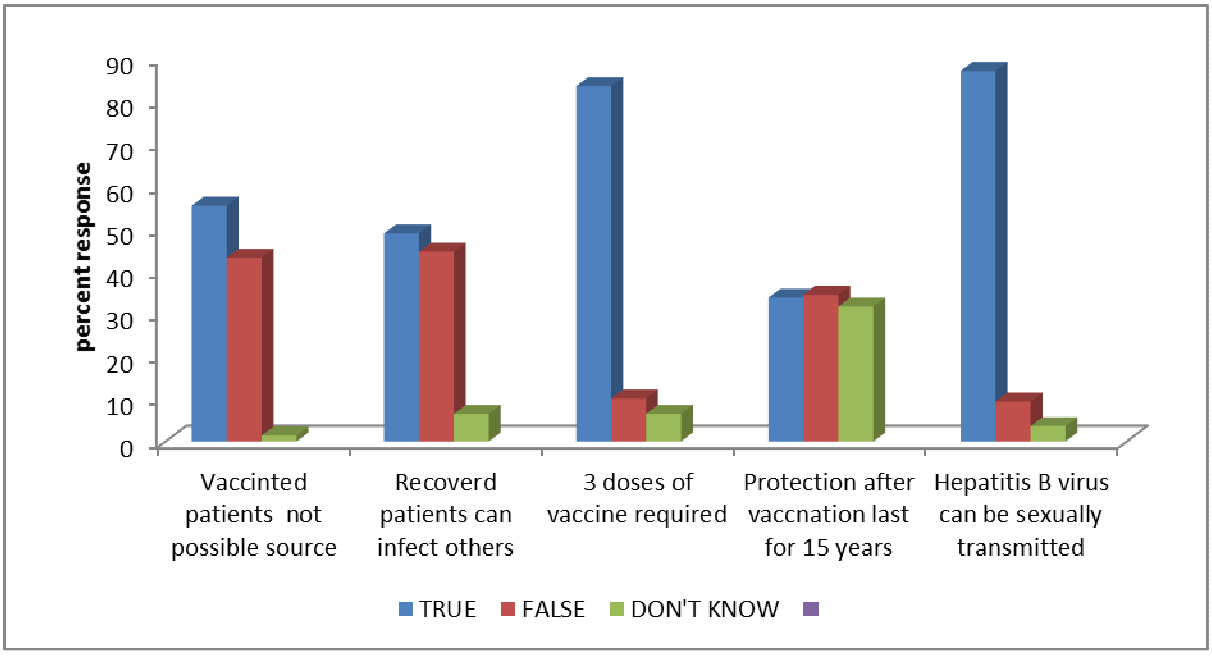

**Fig. 3: Knowledge of the respondents towards the prevention of HBV infection**

## Attitudes of respondents towards HBV prevention

When the respondents were asked if vaccination against Hepatitis B virus should be made available to all healthcare workers for free, 44.6% of the respondent strongly agreed, 25% of them agreed and 22.3% of then disagreed. The majority of the respondents (66.2%) disagreed that with the assertion that Hepatitis B vaccination is too expensive to purchase, hence if not given for free, they will not purchase it. A total of 15.8% and 20.1% of the respondents strongly agreed and agreed, respectively with the statement that 'I do not trust vaccination' with 5.85% and 12.9% strongly agreeing and agreeing, respectively that vaccination is against their religious or traditional beliefs (Fig. 4).

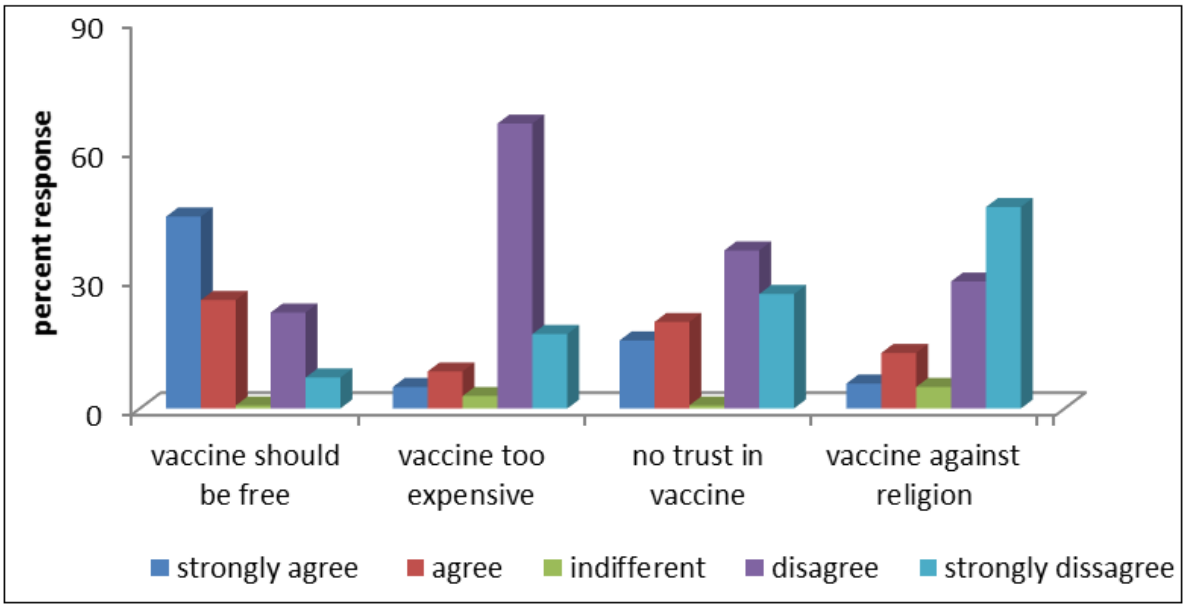


**Fig. 4: Attitude of respondents towards the HBV vaccination**

## Prevention measures by respondents against Hepatitis B virus infection

On the prevention strategies for Hepatitis B virus infection, the majority (over 82%) of the respondents were of the view that every patient should be treated as one carrying a blood pathogen while 78.4% strongly agreed that it is important to undertake handwashing after any contact with a patient. About 24% and 16% of the respondents strongly agreed and agreed that they are not at risk of Hepatitis virus infection because they are health. When the respondents were asked if their job put them at risk of HBV infection, 45.3% of them strongly agreed, 49.6% of them agreed and 1.4% of them disagreed (Fig. 5)

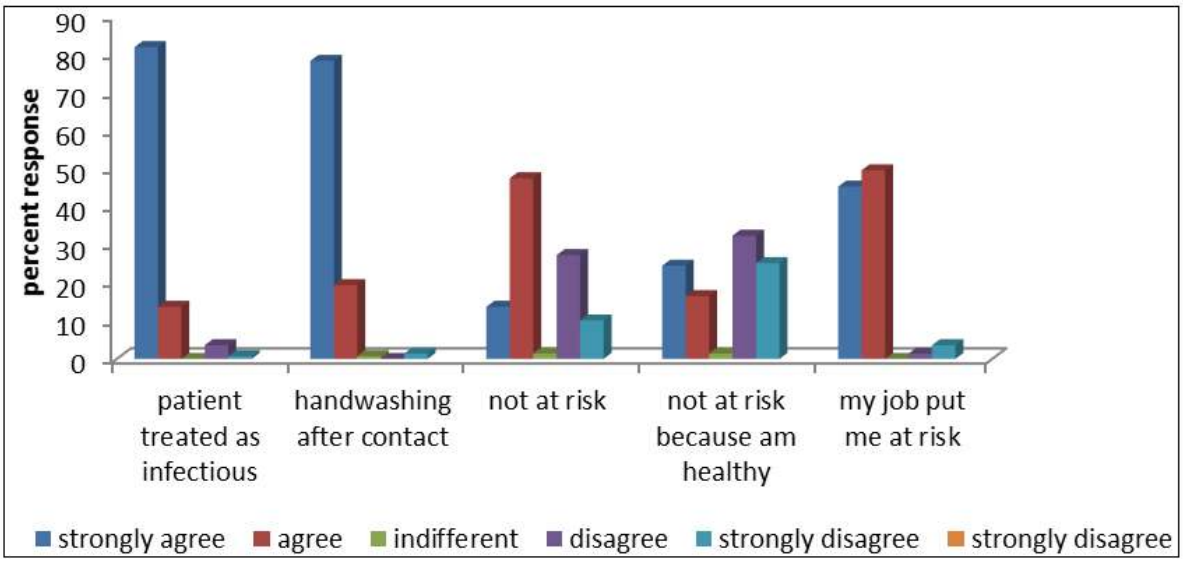


**Fig. 5: Prevention measures by respondents against Hepatitis B virus infection**

Generally, 51.1% and 48.2% of the respondents indicated they have been vaccinated and have not been vaccinated against Hepatitis B virus, respectively. Only 0.7% of them could not remember if they had ever been vaccinated or not. Of the total number of respondents that has had vaccination against the virus, 20.9%, 15.8% and 10.8% had received 1, 2 and 3 vaccine doses, respectively. None of the respondents had received more than 3 doses while 3.6% of them could not remember the number of vaccine they had received.

Also, when the respondents that had received vaccination against the Hepatitis B virus were asked if they got tested afterwards to establish if they have Hepatitis B antibodies, 42.3% of them indicated they were tested, 50.7% indicated they were not tested while 7.1% of them indicated they don't know if they had been tested or not. When the respondents were asked if they resheath needles manually (using the cap in one hand to cover the used needle held in the other hand) following taking blood, 14.4% choose always, 10.8% choose almost always, 34.5% choose sometimes, 2.2% choose almost never and 38.1% choose never. On whether they place disposable sharps in sharps' containers immediately after use, 62.6% of the respondents indicated they do that always, 12.9% indicated they do that almost always, 15.1% indicated they do that sometimes, 7.2% indicated they almost never and 2.2% indicated they never do.

About 56.8% of the respondents indicated they have had needle stick/sharps injury with a used needle or other sharp instrument that had been used on a patient in the course of their work while 43.3% of them they had never experience needle stick injury. Of the number of respondents that have had needle stick injuries 46.8%, 38% and 15.2% indicated they reported the injury, they never reported and they cannot remember if they reported the injury or not. About 60.8% of respondents were have had a needle stick injury indicated they received post exposure prophylaxis for Hepatitis B while 39.2% of them did not.

A total of 15.8% of the respondents indicated they had experienced blood or body fluid splash on their eyes or mouth during the course of their work while 82.7% of them indicated they have never had such an experience and 1.4% of them indicating they cannot remember. Only 37,5% of respondents who indicated they had experienced body fluid splash on their eyes or mouth, only 37.5% of them indicated they received post exposure prophylaxis against Hepatitis B while 62.5% of them indicated they never received any form of post exposure prophylaxis

Respondents were asked if they wear protective clothing when handling blood or body fluids, the majority of them (71%) indicated they always do. On the use wearing of gloves in procedures where there are possibilities of blood or body fluid exposures, 66.9% of them indicated they always do (Fig. 6).

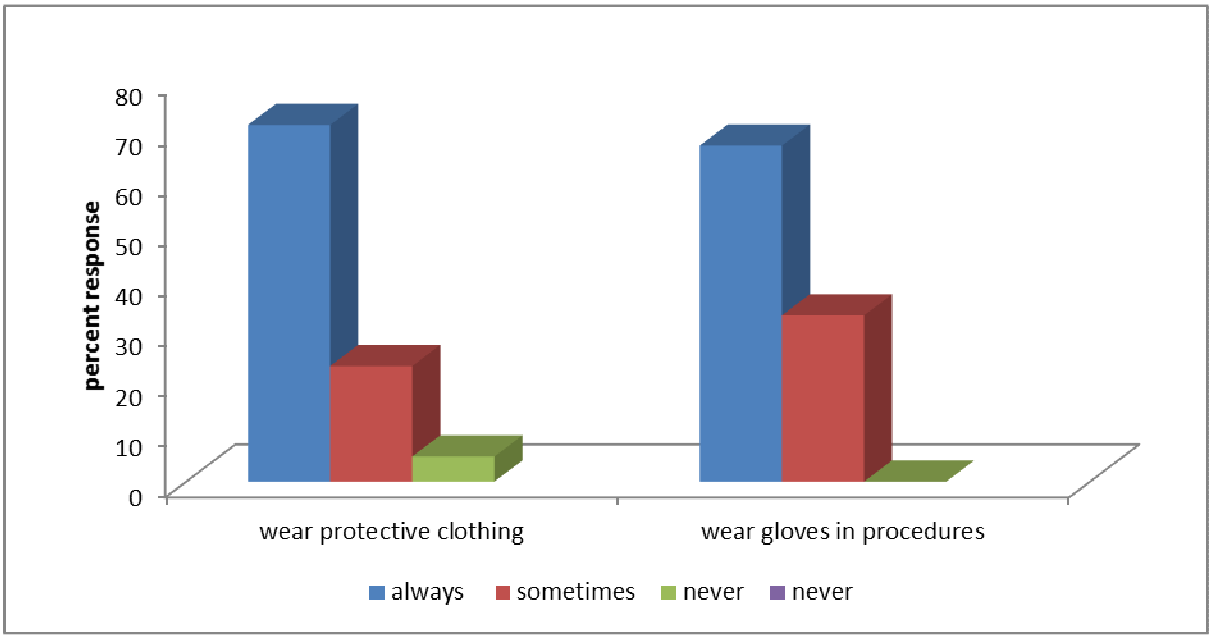


**Fig. 6: Protective practices of respondents against infection by Hepatitis B virus**

From the findings of this study, all the respondents have good knowledge on Hepatitis B infection and vaccinations. Samuel et al. [10] reported in their study that was carried out among health care workers in Irrua, Edo State, Nigeria that the majority of the respondents demonstrated a high level of knowledge of HBV infection, the routes of transmission of the infection, the ways of preventing the infection and the fact that the infection can be transmitted as a nosocomial infection. In the present study, participants' knowledge concerning the various aspects of HBV was generally high.

In this study, about two-third (66.9%) of the participants gave a history of wearing gloves during clinical procedures, this was consistent with the study conducted by Naz et al [11] among health care workers in Pakistan in which 53% of the participants gave a history of wearing gloves during procedures. Also findings revealed that about 56.8% of the respondents have experienced needle stick injury although only 26.6% reported the injury to the appropriate authority for effective post exposure prophylaxis. This finding is consistent with study of Alam [12] in Saudi Arabia which found out that 74% of the respondents have had history of needle stick injury and only 7% of the participants reported the injuries. Besides there are legal aspects to reporting, thus the event needs to be documented in order to establish a causal link between exposure and a subsequent complication claimed by the HCW [13].

Vaccination uptake was less than adequate in this study, with only 51.1% vaccinated against HBV, 20.9% having received at least one dose, and of these only 10.8% received the complete 3 dose series. This is inconsonance with Yacoub et al [14] who carried out a study in Syria and discovered that only 56.1% of the participants were vaccinated, and 20.6% had incomplete vaccination while 23.4% were never vaccinated. Poor compliance of health workers to Hepatitis B vaccination is an issue that deserves serious attention, with some authors advocating for mandatory vaccination program [15, 16].

## 5. CONCLUSION AND RECOMMENDATION

This study showed that despite the good knowledge of Hepatitis B preventive measures by the health care workers, their practice of preventive measures was low. Resources for practice of Hepatitis B preventive measures should be made regularly available to the health care workers in various health

institutions to reduce the transmission of Hepatitis B among the health care workers. All the respondents have good knowledge on HBV infection, vaccinations as well as the universal precaution to prevent infection but vaccination uptake was less than adequate in this study, with only a limited number indicating they had been vaccinated against hepatitis B. This lack of compliance to hepatitis B vaccination among health workers calls for concern among people seeing that the only way to prevent HBV infection among health workers is through effective vaccination program and adherence to universal precaution which often times cannot be guaranteed.

It is recommended that a deliberate programme of education/training and vaccine provision should be implemented for health care workers so as to protect them from HBV infection and to prevent them from transmitting it to their clients. Measures should be taken by health care managers as well as government by running awareness programs. Based on the study findings, it is recommended that responsible authorities in health care management should:

- Disseminate knowledge of the Hepatitis B virus vaccine, and post exposure prophylaxis
- Increase vaccination uptake of health care workers in particular nurses.
- look into ways of making anti-HBs testing available after vaccination of health care workers to increase adherence to anti-HBs testing
- Offer safer injection devices
- Maintain a steady supply of free Hepatitis B vaccine

## REFERENCES


1. Heymann DL. Control of communicable diseases manual. American Public Health Association, 2008; 19:284–93.

2. World Health Organisation. Hepatitis Department of Communicable Diseases Surveillance and Response. 2002 [Online]. Available from: http://www.who.int/csr/disease/hepatitis/HepatitisB_whocdscsrlyo2002_2.pdf
3. Centre for Disease Control and Prevention. 2007. Public Health Service Inter-Agency Guidelines for Screening Donors of Blood, Plasma, Organs, Tissues, and Semen for Evidence. MMWR, 2007; 40:1-17.
4. Ciorlia LAS, Zanetta DMT. Hepatitis B in healthcare workers: prevalence, vaccination and relation to occupational factors. Brazilian Journal of Infectious Diseases, 2005; 9: 384-389.
5. Kiire CF. 1996. The epidemiology and prophylaxis of hepatitis B in sub-Saharan Africa: a view from tropical and subtropical Africa. Gut. 38: 5-12.
6. Moghimi M, Marashi AS, Kabir A, Taghipour HR, Faghihi-Kashani AH, Ghoddoosi I, Alavian SM. Knowledge, Attitude, and Practice of Iranian Surgeons About Blood-Borne Diseases. Journal of Surgical Research, 2008; 151(1):80-84.
7. Ola SO, Odaibo GN. 2010. Alfa-feto protein, HCV and HBV infections in Nigerian patients with primary hepatocellular carcinoma. Niger Medical Practice, 2010; 51:33-5.
8. Hou J, Liu Z, Gu F. Epidermiology and prevention of Hepatitis B virus Infection. Journal of Medical Sciences, 2(1):50-57.
9. Carpenter CJ. 2010. A meta-analysis of the effectiveness of the health belief model varaibles in predicting behaviour. Health Communication, 25(8):661-669
10. Samuel SO, Aderibigbe SA, Salami TAT, Babatunde OA. 2009. Health worker's knowledge, attitudes and behaviour towards hepatitis B infection in Southern Nigeria. International Journal of Medical Sciences, 1(10):418-424
11. Naz S, Ahmad M, Agha H. 2002. Prevalence of hepatitis 'B' among hospital personnel in Combined Military Hospital (CMH) Muzaffarabad. International Journal Agriculture and Biology, 4:227-230
12. Alam M.2002. Knowledge, Attitude and Practices among healthcare workers on needle-stick injuries. Annals of Saudi Medicine, 2002; 22(5-6):396-399.
13. Makary MA, Al-Attar A, Holzmueller BA, Bryan Sexton J,Syin BS, Gilson MM et al. 2007. Needlestick injuries among Surgeons in training. New England Journal of Medicine, 355:2693-2699.

14. Yacoub R, Al Ali R, Moukeh G, Lahdo A, Mouhammad Y, Nasser M. 2010. Hepatitis B Vaccination Status and Needlestick Injuries Among Healthcare Workers in Syria. Journal of Global Infectious Diseases, 2(1): 28-34.

15. Gunson RN, Shouval D, Roggendorf M, Zaaijer H, Nicholas H, Holzmann H, de Schryver A et al. 2003. Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections in health care workers (HCWs): guidelines for prevention of transmission of HBV and HCV from HCW to patients. Journal of Clinical Virology. 27:213-230.

16. Saffar MJ, Jooyan AR, Mahdavi MR, Khalilian AR 2005. Hepatitis B vaccination status in health-care workers. Indian J Gastroenterology, 24: 82-83.