

ORIGINAL PAPER

## Knowledge and Utilization of Hepatitis B Infection Preventive Measures and Influencing Factors among Health Care Workers in Ibadan, Nigeria

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### Abstract

**Aim:** This study was carried out to determine the knowledge and utilization of hepatitis B infection preventive measures and influencing factors among primary health care workers in Ibadan.

**Background:** Exposure of healthcare workers to sharps, blood and body fluids makes them vulnerable to blood borne infections like human immunodeficiency virus (HIV), hepatitis C and hepatitis B to mention a few. There has been an increase in the prevalence of hepatitis in the under developed countries including Nigeria while Hepatitis B preventive measures are not practiced by some health workers.

**Methods:** This descriptive survey utilized a quantitative approach. Two hundred and ten workers were selected from primary health care centers within four local governments of Oyo state using multi stage sampling technique. Data were collected, coded and analyzed using Statistical Package of Social Sciences (SPSS) version 15.

**Results:** Majority of the health care workers had heard of hepatitis B transmission before while many (68.1%) had experienced needle stick injury. Many (65.2%) had good knowledge of preventive measures of hepatitis B while only 37.6% put the measures into practice.

**Conclusion:** Although they claimed high practice of preventive measures, the findings were to the contrary. Hypotheses tested showed that knowledge did not significantly influence practice of preventive measures of hepatitis B. It is recommended that primary health care workers should attend sponsored seminars /conferences targeted at improving practices of preventive measures of hepatitis B. Necessary resources for prevention of blood borne infections should be made available to the health care workers.

**Key words:** Knowledge, practice, preventive measures, primary health care workers.

### Introduction

Worldwide, hepatitis B infection is one of the major public health problems and is the tenth leading cause of death (Bora and Singh, 2009). It has become one of the most important infectious diseases all over the world, especially in developing countries (Bello et al, 2010). Hepatitis B virus is estimated to have infected more than 2 billion people worldwide, of who 400 million are

chronically infected today and are at an increased risk of liver-related sequelae, including cirrhosis, fulminant liver failure, liver transplantation, hepatocellular carcinoma (HCC) and death (Gish and Gadana, 2007). Healthcare workers are exposed to Hepatitis B virus by the virtue of their job (Askarian et al, 2011). The risk of being infected with hepatitis B virus is higher among hospital personnel frequently exposed to blood and

its products as compared to the general population (Stroffolini et al, 2008).

Observations have shown an increase in the prevalence of hepatitis B, especially in the under developed countries including Nigeria (Ola, 2010). It has long been recognized as an important occupational hazard among health care workers. Report has shown the prevalence among health workers. Among physicians in Iowa, 10-30% had serologic evidence of hepatitis B virus infection (Diekema, Ferguson and Doebelling, 2007); Nigerian dentists, 45% had detectable HBsAg (Sofola et al 2000) indicating active infection and for nurses in Pakistan, 30% had HBV, to mention a few (Sarwar, Gul, Idris et al, 2008). In Osun state, the prevalence of antibodies to HBsAg was 9.5% (Mabayoje et al, 2010).

Nigeria is among the group of countries endemic for HBV infection. About 18 million Nigerians are infected (Mbaawuaga et al, 2010). Generally, hepatitis B surface antigen (HBsAg) prevalence in healthy Nigerians is the same in any part of the country though higher among patients having AIDS in the northern states, especially the North eastern states where the prevalence is up to 70% (Uneke et al, 2005). The HBsAg prevalence among patients in different hospitals in Nigeria is high and in endemic proportion at Benin (41%), Maiduguri (49%), Lagos (52%) Ile-Ife (62%), Kano (70.3%) and Ibadan (84%) which is the highest (Ola, 2010). Since the patients and the healthy populace report in these different health care facilities for medical investigation and care, the HCWs 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. Although, the pattern of prevalence of the infection follow the risk grade of the HCWs, for nurses 55.7%; the infection is worse among the medical record officers (70%), clerical officers (75%), pharmacists (76.5%), dentists (80%), and worst among the obstetricians and gynaecologists (93%) in ascending order (Ola, 2010).

According to Gregory and Robert (2004), hepatitis B virus is 50-100 times more infectious than HIV.

The main routes of being infected include child-to-child transmission, during delivery, unsafe injections and blood transfusions in health care facilities, unprotected sexual contact with a HBV infected person, shared personal items (toothbrushes, razors) with infected person, contact with blood in health care settings, tattooing / acupuncture with contaminated instruments. According to occupational safety and health administration (2011), concentration of hepatitis B virus in different body fluids is high in blood, serum, wound exudates; moderate in semen, vaginal fluid, saliva, and low/not detectable in urine, faeces, sweat, breast milk, tears.

Diagnosis of hepatitis B is made from complaints lodged by patients, physical examination findings, and biochemical assessment of liver function. The tests include prothrombin time, total protein, coagulation studies, full blood count, ultrasound scan of the abdomen, urinalysis, liver biopsy, computerized tomography scan (CTScan), liver function test (LFT) (Royle and Walsh, 2004).

However, the HCWs come in contact with these clients when they report in the hospital. During admission and hospitalization, there is a possibility of being infected by the clients through the secretions the HCWs come in contact with and also transmitting to other clients (Habiba et al, 2012). Thus they need to exercise great caution by taking precautionary measures so as not to come down with the infection (Schillie et al, 2013).

Preventive measures include standard precautions, management of sharps (including engineering control), post exposure management, appropriate waste management, good environment control (including other forms of workplace control), screening of blood and blood donors and vaccination. Also, the HCWs should report all percutaneous exposure to blood and other infectious body fluids following human bites /needle stick injuries in order to receive post exposure prophylaxis with HBV vaccination ± human immune globulin within 24 hours of exposure and be compliant with follow up management.

**Research Questions**

- What do the primary health care workers know about hepatitis B preventive measures?
- How do the health care workers prevent hepatitis B infection?
- What are the factors responsible for not practicing hepatitis B preventive measures?
- How many primary health care workers are vaccinated against hepatitis B virus?

**Research Hypotheses:**

- There is no significant association between the knowledge and practice of hepatitis B preventive measures among the primary health care workers
- There will be no significant relationship between profession and knowledge of hepatitis B preventive measures

**Method**

This study was a descriptive research that adopted a cross-sectional survey which utilized a self-administered questionnaire and an observational checklist adapted from peer reviewed literature to collect relevant data regarding the characteristics of respondents, their knowledge of preventive measures of hepatitis B, their practice of hepatitis B preventive measures and influencing factors. The study was carried out among primary health care workers in the four selected local governments' health centres in Ibadan, Oyo state, Nigeria. Ibadan is the capital of Oyo state, Nigeria. Ethical approval for the study was obtained from the Oyo State Research Ethical Review Committee and presented to the PHC coordinators in the local governments for institutional permission. Informed consent was sought and obtained from the participants. Voluntary participation was ensured without any risk attached while right not to participate was respected. A multi stage sampling technique was used to recruit HCWs in the selected local governments. A total of 240 representing the total number of 317 primary HCWs were selected from the health centres in the four local governments. A probability sampling distribution

proportional to the size was done. A self-administered questionnaire with 43 items was utilized to gather information from the respondents with the aid of one research assistant trained by the researcher. The questionnaire was sorted and the data from the properly filled ones were coded and analysed. Other method of data collection used was direct observation of their practice by the researcher. Data were analysed using Statistical Package for Social Sciences (SPSS) software version 15. The frequency percentage of the data was presented in tables and charts. Chi square was used to test association between two categorical variables at 0.05 level of significance.

**Results**

Data was collected from two hundred and forty health care workers but only 210 (87.5%) were found suitable for analysis. Study took place from May to June, 2011 (over a month period) from four randomly selected local governments using 26 health centres.

Table 1 shows that the ages of the HCWs ranged from 21 to 59 years with a mean age of 49 years, 172 (81.9%) were married, and 47 (70%) had post-secondary but not university education. Three (1.4%) were medical doctors, ten (4.8%) were laboratory scientists/ technicians, 27 (12.9%) were health attendants, 40 (19%) were nurses, 54 (25.7%) were community health officers while 76 (36.2%) were community health extension workers.

In table 2, almost all the health care workers (203) had heard about hepatitis B preventive measures at one time or the other. From the analysis, the most common source of health care workers' information on hepatitis B was seminar/ workshop (105, that is, 51.7%), 16.7% was school, 14.8% was literature and the least was internet (4, that is, 2%). Table 3 revealed that 65.2% of the HCWs had good knowledge of hepatitis B infection.

In Table 4, 143 (68.1%) of the primary health care workers had needle stick injury and 170 (81.0%) had injury from other sharps apart from needle stick injury at one time or the other. 24 (11.4%) had yellow and dark urine due to jaundice .

**Table 1: Demographic characteristics of respondents in Ibadan**

<b>Variable (n=210)</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age group (in years)</b>		
<30	15	7.1
30-39	66	31.4
40-49	90	42.9
50+	39	18.6
<b>Marital Status</b>		
Single	26	12.4
Married	172	81.9
Widowed	12	5.9
<b>Highest Educational Qualification</b>		
Primary	7	3.3
Completed secondary	24	11.4
Post secondary but not University	147	70.0
University	32	15.2
<b>Professional Qualification</b>		
Medical Doctor	3	1.4
Nurse	40	19.0
Laboratory Scientist/Technician	10	4.8
Community health officer	54	25.7
Community health extension worker	76	36.2
Health attendant	27	12.9
<b>Total</b>	<b>210</b>	<b>100.0</b>

**Table 2: Health care workers' source of information about hepatitis B preventive measures.**

Source of Information (n=203)	Frequency	Percentage
Seminar/Workshop	105	51.7
Literature	30	14.8
Internet	4	2.0
Media	16	7.9
School	34	16.7
Work experience	14	6.9
<b>Total</b>	<b>203</b>	<b>100.0</b>

**Table 3: Primary health care workers' knowledge of hepatitis B preventive measures**

Variable	Frequency	Percentage
Knowledge		
Good	137	65.2
Poor	73	34.8
<b>Total</b>	<b>210</b>	<b>100.0</b>

**Table 4: Frequency distribution of experience of risk factors**

Risk factors (n=210)	Frequency	Percentage
Needle stick injury	143	68.1
Other sharps apart from needle injury	170	81.0
Blood transfusion	62	29.5

**Table 5: Practice of hepatitis B preventive measures**

Variables (n=210)	Yes		No	
	Freq	%	Freq	%
Practice hand hygiene measures when rendering care to patients	201	95.7	9	4.3
Wear gloves during procedures	197	93.8	13	6.2
Wear mask when at direct contact with a patient	90	42.9	120	57.1
Recap needles after use	64	30.5	146	69.5
Place needles in sharp containers	115	54.7	95	45.3
Use syringes with retractable needle	52	24.8	158	75.2

In the above table, 201 (95.7% claimed they did educate patients on hepatitis B. 64 (30.5%) recapped needles after use. 115 (54.7%) placed needles in sharps container. Only 52 (24.8%) used syringes with retractable needles. Using the

observational checklist, assessment of practice of hepatitis B preventive measures like hand washing, use of gloves and proper disposal of sharps was also done at the health centre (Figure 2).

**Table 6: Reasons for not practicing hepatitis B preventive measures**

Variables	Yes		No	
	Freq	%	Freq	%
Vaccinated against hepatitis B	140	65.7	72	34.3
Screened for Hepatitis B virus	72	34.3	138	65.7
Have resources/facilities to practice standard precautions	86	41.0	124	59.1
Have policy regarding hepatitis B in your health care center	67	31.9	143	68.1
Availability of hepatitis B vaccine for worker/patients in your health care	158	75.2	52	24.8
Currently written policy to review HBsAg test result for all clients	36	17.1	174	82.9
Policy for administration of HBIG	65	31.0	145	69.0

**Table 7: Perceived Availability of resources in the health centre**

Variables	Yes		No	
	Freq	%	Freq	%
Gown	96	45.7	114	54.3
Gloves	204	97.1	6	2.9
Boots	51	24.3	159	75.7
Soap	206	97.1	6	2.9
Water	203	96.6	7	3.4
Wash hand basin	198	94.3	12	5.7
Screened blood and blood products	34	16.2	176	83.8
JIK	190	90.5	20	9.5

**Table 8: Assessment of availability of resources at the health centers**

Materials	Percentage of availability (n=26)		
	Always	Sometimes	Never
Soap	88.5	7.7	3.8
Running Water	30.8	15.4	53.8
Gloves	84.6	11.5	3.8
Face masks	3.8	7.7	88.5
Goggles	0.0	0.0	100.0
Gowns	0.0	0.0	100.0
Sodium hypochlorite	84.6	11.5	3.8
Chlorhexidine	11.5	11.5	76.9
Waterproof linen bag	3.8	0.0	96.2
Sharp box	84.6	0.0	15.4
Sterilizer	0.0	0.0	100.0
Suction machine	0.0	0.0	100.0

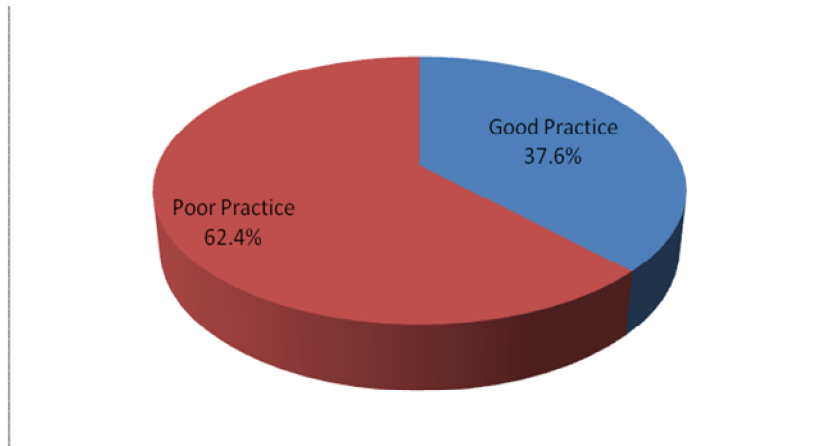
**Table 9: Association between knowledge and practice of Hepatitis B preventive measures among primary health care workers.**

Variable	Practice		Total	X <sup>2</sup>	P-value	Remark
	Good	Poor				
Good	50(36.5)	87(63.5)	137	0.212	0.645	Not Significant
Poor	29(39.7)	44(60.3)	73			
<b>Total</b>	79(37.6)	131(62.4)	210			

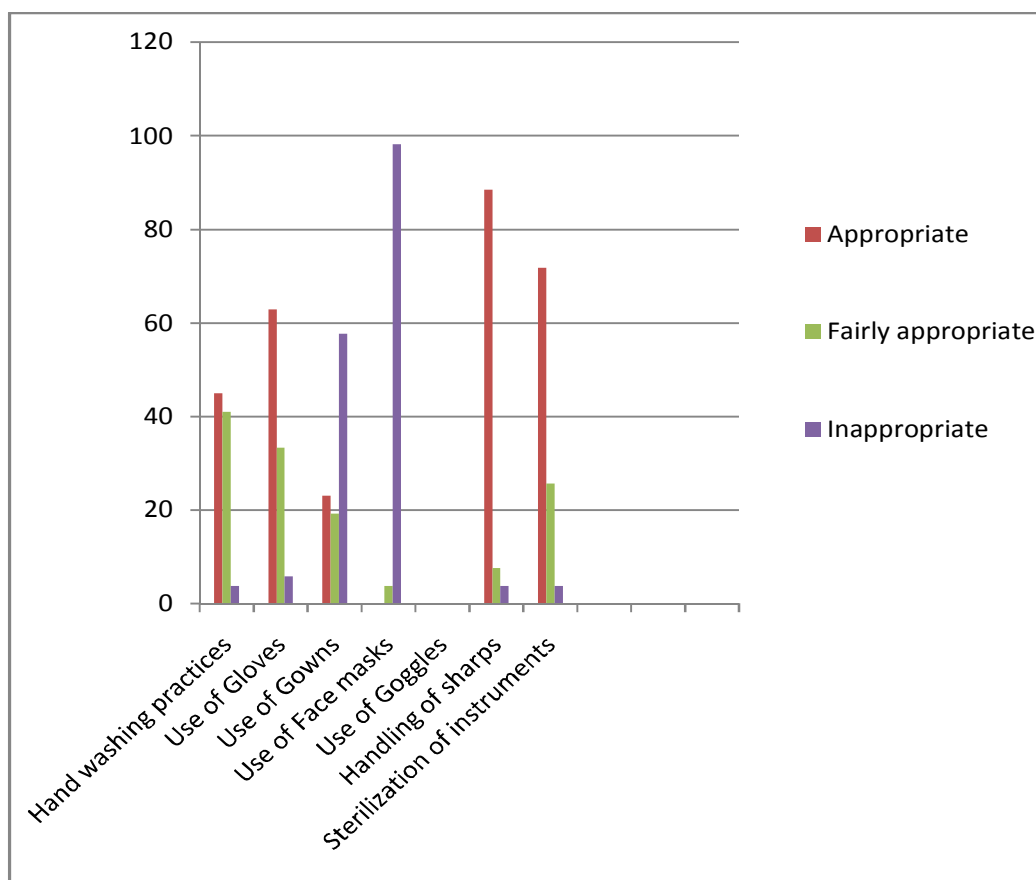
**Table 10. Association between professional qualification and knowledge of Hepatitis B preventive measures among primary health care workers.**

Variable	Knowledge		Total	X <sup>2</sup>	P-value
	Good	Poor			
<b>Professional Qualification</b>					
Nurse	35(87.5)	5(12.5)	40		
Laboratory scientist/technician	5(50.0)	5(50.0)	10	17.008	0.004
Community health officer	37(68.5)	17(31.5)	54		
Community health extension worker	40(52.6)	36(47.4)	76		
Health attendant	17(63.0)	10(37.0)	27		
<b>Total</b>	<b>137</b>	<b>73</b>	<b>210</b>		





**Figure 1: Overall Practice of Hepatitis B Preventive Measures**



**Figure 2. Bar chart showing observed hepatitis B preventive measures' practice**

In table 5, 201 (95.7% claimed they did educate patients on hepatitis B. 64 (30.5%) recapped needles after use. 115 (54.7%) placed needles in sharps container. Only 52 (24.8%) used syringes with retractable needles.

In table 6, only 72 (34.3%) were screened for hepatitis B and 86 (41%) had resources to practice standard precautions. 143 (68.1%) did not have policy regarding hepatitis B in their health care center but 158(52%) claimed they had hepatitis B vaccine. Just 36 (17.1%) affirmed that they had currently written policy to review HBsAg test result for all clients.

Table 7 revealed that 97.1% each of the respondents claimed availability of gloves and soap, 96.6% claimed they had running water, 90.5% claimed they had sodium hypochlorite (JIK), and 45.7% claimed they had gowns. On

assessment of availability of resources using the observational checklist, some differences were observed as noted in table 8: constant availability of soap was 88.5%; sharp box, gloves and sodium hypochlorite each was 84.6%, running water was 30.8%, chlorhexidine was 11.5% and face mask was 3.8%. No center had goggles/eye glasses, gown, water proof linen bag, steriliser or suction machine.

Self reported practice of Hepatitis B preventive measures was poor among the majority (62.4%) of the respondents as seen in figure 1. Figure 2 showed the observational checklist result gotten from assessment of practice of hepatitis B preventive measures viz: hand washing was 44.87 appropriate, use gloves was 62.83, gown was 23.1, handling of sharps was 88.47, and sterilization was 71.8. Use of goggles was not seen at all as goggles were not even available in all the health centers

visited. Use of mask was grossly inappropriate (98.1) as it was not even available in almost all the centers. Sterilization of instrument was 71.8 appropriate. This was due to the fact that though no functional sterilizer was found in the health centers, the HCWs improvised by using kerosene stoves.

**Hypotheses testing:** Chi square was used to test the hypotheses

Hypothesis 1: There is no significant association between knowledge and practice of hepatitis B preventive measures among primary health care workers.

Table 9 showed that P – value is 0.645. Therefore, since P value is greater than 0.05, this implies that there is no significant relationship between knowledge and practice of hepatitis B preventive measures among primary health care workers. This means that their knowledge did not have any effect on their practice of hepatitis B preventive measures. The knowledge they acquired during individual training in their various schools (being a structural variable in the conceptual framework) did not reflect in their practice at all. As such if care is not taken, the HCWs may be infected due to their poor practice and even become a reservoir of infection to their clients on the long run.

Hypothesis 2: There is no significant association between professional qualification and knowledge of hepatitis B preventive measures among primary health care workers.

From table 10, it can be seen that P – value is 0.004. Thus, since P value is less than 0.05, this makes it statistically significant so the null hypothesis is rejected. This implies that there is a significant relationship between professional qualification and knowledge of hepatitis B preventive measures among primary health care workers. This means that some of the HCWs (for example, doctors and nurses) had good knowledge as compared with laboratory scientist/ technician and CHEWs who had average knowledge.

**Discussion** The discussion of findings is based on the objectives of the study.

**Knowledge of hepatitis B preventive measures among primary health care workers in Ibadan.**

Research findings showed that 96.7% had heard about hepatitis B virus transmission before, 79.5% mentioned blood and blood products while 80.5% mentioned needles and sharps as route of transmission of hepatitis B. This is in consonance with the findings of a study among health care workers in Irrua, Edo state carried out by Samuel et al (2009) who found out that 81% had heard of hepatitis B infection prior to the study. Of those that were aware of hepatitis B infection, 92% mentioned blood and blood products as route of transmission of hepatitis B, 68.5% mentioned needles and sharps. Also, 68.1% had a history of needle stick injury and 81% had injuries from other sharps apart from needle. This finding is consistent with study of Alam (2002) in Saudi Arabia which found out that 74% of the respondents had a history of needle stick injury.

**The primary health care workers' practice of hepatitis B preventive measure.**

The research findings revealed that 93.8% gave a history of wearing gloves during procedures. This is in support of Naz et al (2002) who carried out a study among the health care workers in Pakistan and 53% gave a history of wearing gloves during procedures. Also, the research findings showed that 50.5% reported the injuries. On the contrary, Alam (2002) found out that only 7% reported the injuries. In addition, in all the health centers visited, only 3.8% attested to availability of face masks while none of them had goggles. This is in contrast to Al - Dwairi study (2007) in Jordan who found out that eyeglasses and protective face shields were regularly worn by 35 percent (70/200) and 40 percent (80/200) of technicians, respectively.

**Factors responsible for not practicing Hepatitis B preventive measures.**

From the research findings, it was discovered that only 41% said they always had resources/ facilities to practise standard precaution. 68.1% did not have policy regarding hepatitis B in their health care center, 82.9% did not have currently written policy to review HBsAg test result for all clients and only 31% affirmed that they had policy for administration of HB1g.

### **Primary health care workers vaccinated against Hepatitis B virus.**

The research findings showed that 65.7% were vaccinated against hepatitis B virus. This is in consonance with Yacoub et al (2008) who carried out a study in Syria and discovered that 56.1% were vaccinated, 20.6% had incomplete vaccination while 23.4% were never vaccinated.

On the whole, 65.2% had good knowledge while only 37.6% had positive practice of hepatitis B preventive measures.

### **Implication of the study to the nursing profession**

From the study findings, it is apparent that despite the knowledge of health care workers towards hepatitis B preventive measures, there are still gaps in their practice.

Considering the high percentage of needle stick injury, the health care workers need to allow their knowledge to positively influence their practice so that in years to come, the health care workers themselves will not become patients in place of the clients they are taking care of.

Also, the study showed that 1.9% had yellow and dark urine due to jaundice, 11% had swollen face including 68.1% with needle stick and 81% that had injury from other sharps apart from needle. This implies that these people may be incubating hepatitis B virus without knowing it since it is asymptomatic especially in the early stage. Therefore the health care workers may need to go for proper screening including HBsAg, HBeAg and HBcAg to know which stage they belong so as to manage them appropriately. Furthermore, only 24.8% had ever used syringes with retractable needle, thus putting the health care workers at a very high risk of contracting hepatitis B virus from using ordinary needles. This implies that the health care workers need to go for training and the retractable needle be pumped into circulation to reduce the incidence of needle stick injuries which may predispose the workers to hepatitis B infection.

Also, only 34% had been screened for hepatitis B virus while 65.7% had been vaccinated. This implies that some were not even screened before

vaccination and this may be dangerous since an infected health care worker may even be vaccinated ignorantly. Also, hepatitis B policy should be in place so that all the health care workers are fully immunized together with their family members so they will be fit to take care of their clients and they will not constitute a health hazard to their clients and vice versa.

**Limitation of the study:** The researcher faced some constraints in carrying out this research project. Time was not enough to carry out an in-depth study of this project.

Also, there was inadequate fund which did not permit a very extensive study. In addition, there was no enough literature regarding studies on practice of hepatitis B preventive measures in Oyo State.

### **Conclusion**

This study showed that despite the knowledge of hepatitis B preventive measures by the primary health care workers, the practice was low. Although the primary health care workers claimed knowledge of hepatitis infection, their practice of preventive measures was not commensurate with their knowledge. Therefore it is 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 primary health care workers.

### **Acknowledgement**

We would like to appreciate all the primary health care workers who participated in this study.

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