

## Knowledge and vaccination status for hepatitis B infection among health workers in Ibadan, Nigeria

SE Ibitoye and AJ Ajuwon

Department of Health Promotion and Education,  
College of Medicine, University of Ibadan, Ibadan, Nigeria



### Abstract

**Background:** Health workers are at increased risk for Hepatitis B virus (HBV). Although vaccination provides protection against this virus, there is inadequate information on health workers' knowledge, and status of vaccination.

**Objective:** To investigate knowledge and utilization of Hepatitis B vaccination among health workers in Ibadan, Nigeria.

**Methodology:** A total of 384 health care workers in secondary health facilities in Ibadan North and South West Local Government Areas of Oyo State Nigeria were surveyed. Data were collected using a 46-item validated self-administered, semi-structured questionnaire that assessed knowledge, practice and uptake of HBV vaccination. A 12 point scale was developed to assess knowledge; 0-4= poor knowledge, 5-8 =fair knowledge, 9-12= good knowledge. An 11- point practice scale was used; 0-5 as unhealthy practice and 6-11 as healthy vaccination practice.

**Results:** The majority (76.3%) of the respondents had a good knowledge on Hepatitis B mode of transmission. Also, 71.4% of the health workers had unhealthy practices with risk of HB viral infection. There was a low uptake of HBV vaccine as only 119 (33%) health workers have been completely vaccinated. A significant difference exists between cadre of health worker and HB vaccine use from regression analysis  $p=0.03$

**Conclusion:** The finding of this study highlights the importance of Hepatitis B vaccination of HCWs in Ibadan, Nigeria where high exposure rates are combined with low levels of vaccine coverage and uptake. There is a need for reorientation of health workers coupled with subsidized Hepatitis B vaccination to HCW who are at high risk to address this gap.

**Key words:** *Hepatitis B virus, vaccination and health care workers.*

### Résumé

**Contexte :** Les agents de santé sont à un risque accru de contracter le virus de l'hépatite B (VHB). Bien que la vaccination assure une protection contre ce virus, les informations sur les connaissances des agents de santé et leur état de vaccination sont insuffisantes.

**Objectif:** Pour étudier la connaissance et l'utilisation de la vaccination contre l'hépatite B chez les agents de santé à Ibadan, Nigéria.

**Méthodologie :** Un total de 384 agents de santé dans les établissements de santé secondaires dans les communes d'Ibadan Nord et d'Ibadan Sud-Ouest, de l'État d'Oyo, Nigéria, ont été enquêtés. Les données ont été recueillies à l'aide d'un questionnaire semi-structuré, auto-administré à 46-items validé, qui évaluait la connaissance, la pratique et la participation à la vaccination contre le VHB. Une échelle de 12 points a été développée pour évaluer la connaissance; 0-4 = mauvaise connaissance, 5-8 = connaissance passable, 9-12 = bonne connaissance. Une échelle de pratique de 11 points a été utilisée; 0-5 comme pratique malsaine et 6-11 comme pratique de vaccination saine.

**Résultats:** La majorité (76,3%) des répondants avaient une bonne connaissance du mode de transmission de l'hépatite B. En outre, 71,4% des agents de santé avaient des pratiques malsaines présentant un risque d'infection du virus HB. Il y avait une utilisation modique du vaccin contre le VHB car seulement 119 (33%) agents de santé ont été complètement vaccinés. Une différence significative existe dans l'analyse de régression entre le cadre des agents de santé et l'utilisation du vaccin contre le VHB  $p = 0,03$ .

**Conclusion:** Les résultats de cette étude soulignent l'importance de la vaccination des agents de santé contre l'hépatite B à Ibadan, Nigéria, où des taux d'exposition élevés sont associés à de bas niveaux de couverture et de participation au vaccin. Il y a un besoin pour la réorientation des agents de santé couplé à une vaccination subventionnée contre l'hépatite B des agents de santé qui sont au risque élevé pour remédier cette lacune.

**Mots-clés:** *virus de l'hépatite B, vaccination et agents de santé.*

### Introduction

A third of the world population (two billion people) has been documented to have Hepatitis B exposure

and an estimated 400 million are actively infected [1]. Hepatitis B virus (HBV) is the major cause of acute and chronic liver disease, cirrhosis and hepatocellular carcinoma worldwide [2]. It is also an occupational hazard among non-immunized health care workers (HCW) with a risk of work place infection [3]. National and regional prevalence rates of HBV infection vary widely between 8-10% in Sub-Saharan Africa and South East Asia, 2-7% in Eastern and Southern Europe, and 0.5-2% in the United States and Northern Europe [4]. HBV is also reported to be almost 100 times more infectious than HIV [5]. Since the professional duties of doctors, nurses, dental and other health workers involve the use of small, sharp instruments contaminated with blood or other fluids, there is ample opportunity for inadvertent skin wounds to the health care service provider and staff. Such accidents include the possibility of transmission of Hepatitis B, Hepatitis C and human immunodeficiency virus (HIV) [6].

HBV infection is endemic in Nigeria; results from previous studies among health workers show the prevalence of HBV to range from 15 to 39% [7], compared to a prevalence of 10-15% in the average risk Nigerian population [8], and consequently, the risk of occupational exposure to HBV among HCWs in Nigeria remains high. By contrast, studies conducted on selected HCWs in Nigeria indicate low rates of HBV vaccination coverage of 20%–50% [9]. In Ibadan, Oyo state, the prevalence of Hepatitis B vaccination is at 20- 50% among health care workers [10]. Hence, timely vaccination will prevent infection (acute disease and chronic carriage) as well as cross contamination of HBV from health workers to patients.

The Hepatitis B vaccine has been available globally since 1982 and in Nigeria since 1995, the World Health Organization (WHO) has recommended it since 1990 for all health workers whose activities frequently expose them to blood [8, 11,12]. Hepatitis B vaccine usually creates a long-term immunity, help in eliminating the risk of HBV infection and also decreases the risk of chronic liver disease, cirrhosis of the liver and liver cancer [13]. Despite these potential benefits, Hepatitis B vaccine remains under-utilized by health workers. Hepatitis B vaccination is yet to be offered en masse to health care workers in Nigeria who are more occupationally at risk of the infection despite risk of infection in this population [14].

There are different reasons for non-utilization of HBV vaccine among health care workers including lack of awareness of where to obtain vaccine (57.1%), lack of money to pay for the vaccine (23.1%) non recommendation of the vaccine (17.1%)

and concerns about side effects from HBV vaccine uptake (14.3%) [15]. Health workers have a role to play not only for protecting themselves against HBV but can also be a major source of HBV infection. Appropriate health care program targeting vaccination against HBV infection among healthcare workers are not available even in secondary health care institutions in Nigeria, where such HBV vaccine is available the adherence to recommendations remain low a situation further complicated by absence of HBV vaccination program in the country [16-18]. Hence this study aims to find out the reason for the differential vaccination status among the different cadre of health workers. The findings from this study could help in designing necessary intervention to promote the uptake of vaccine among health workers in Nigeria.

## Methods

The research was a descriptive cross-sectional survey conducted between September and October 2015 among health care workers in two urban Local Government Areas (LGA) situated in Ibadan metropolis, South West Nigeria. The protocol for the study was approved by the Oyo State Ministry of Health Ethics Review Committee with reference number: AD 13/479/949.

### Study sites

The population of Ibadan North and South West LGAs are 306,795 and 320,536 respectively. At 2015 when the survey was conducted, Ibadan North has six secondary health care facilities controlled by the state government with a total of six hundred and eighty three staff (683). Ibadan South West LGAs has eight secondary health care facilities controlled by the state government with a total of four hundred and thirty two health workers (432).

### Study population

The population for this study were all consenting health workers which consist of doctors, nurses, dental technicians, community health officers, physiotherapist, ward attendants laboratory scientists, laboratory technologists and laboratory attendants who work in selected state secondary healthcare facilities.

### Measures

A 46-item validated self-administered semi-structured questionnaire was used for data collection. The questionnaire consisted of socio-demographic parameters such as year(s) of practice, professional designation, age, sex, highest level of education and marital status.

knowledge of Hepatitis B virus and safety practices of Hepatitis B vaccination status. The questions were derived from relevant literature guided by the research objectives and pretested on field among health care workers to refine ambiguous questions and confirm its validity. The study included all consenting health worker who had practices for more than six month while those who did not fulfil this criteria were excluded from the study.

#### Sample size and sampling procedure

The sample size for the study was a total of 384 health workers which was determined by using Leslie Kish Formula for descriptive cross sectional studies [19]. The prevalence of HBV vaccination coverage among health workers was given as 50% [10]. A Multi-stage sampling technique was used in selecting the respondents and the selection was based on the proportion of workers in each professional group from the selected public secondary health facilities in the study sites. A total of 384 questionnaires were distributed and all were retrieved from the health workers; this number was allocated based on the number of staffs in each health facility. Six (6) trained research assistants distributed and collated the questionnaires in all the identified hospitals with 100% response rate.

#### Data management and analysis

The data were analysed using SPSS package version 20 and the results presented in tables. Analysis was done using descriptive statistics, percentages and proportion, while inferential statistics was done using Chi-square test, Anova and Binary logistic regression to analyse categorical variables. A 12 point scale was developed to analyse knowledge, using 0-4= poor knowledge, 5-8 fair knowledge, 9-12 good knowledge on Hepatitis B mode of transmission and a mean knowledge score of  $9.56 \pm 1.5$ . The practice scale was assessed using an 18 point practice scale, using the range 09 as low risk-healthy practice, and 10-18 as a high risk-unhealthy practice on Hepatitis B virus prevention. The interpretation of these scores is that, the higher the score, the higher the risk of the disease, the lower the score the lower the risk of contracting Hepatitis B virus.

#### Results

Of the 384 respondents, (79.4%) were females and (20.6%) were males. The mean age of respondents was  $35.4 \pm 10.6$  years with the minimum age of 18

and maximum of 59 years. A large majority (70.1%) had university degree. The year of practice was  $9.9 \pm 9.3$  years, a median of 6.0 years with those who had practised for <10 years forming 40.8% (Table 1).

**Table 1:** Table the socio-demographic characteristics of the respondents

Demographic characteristics	No	%
<i>Sex</i>		
Male	79	20.6
Female	305	79.4
<i>Actual age in years</i>		
<i>(Age in groups)* (N=368)</i>		
<30	150	39.1
31-40	104	27.1
41-50	77	20.1
51-60	37	9.6
Non Response		
<i>Ethnicity</i>	16	4.17
Yoruba	352	91.7
Igbo	26	6.8
Others**	6	1.6
<i>Highest Level Education (N=384)</i>		
Primary school	2	0.5
Secondary school	12	3.1
NCE and OND	42	10.9
Higher National Diploma	31	8.1
University	269	70.1
Post Graduate and Above	28	7.3
<i>Religion (N=381)</i>		
Christianity	294	77.2
Islam	84	22
Traditional	3	0.8
<i>Marital Status (N=384)</i>		
Married	233	60.7
Single	151	39.3

\*Mean=35.4, Median=34.5, Range=41 \*\*Edo 3(0.8)  
Urobho 2(0.5) Igalala(0.3)

#### Knowledge of hepatitis B infection

The percentage of respondents with correct knowledge of the 12 statements is shown in Table 2. Virtually all (99%) of the respondents knew that HBV was caused by a virus and 62% believed it could be transmitted by drinking polluted water or contaminated food. There was no significant difference between the level of education and knowledge scores of the respondents using ANOVA test statistics ( $F=0.722$ ,  $df=2$ ,  $p\text{-value}=0.46$  with level of significance set at 0.05). (Table 3).

Majority (76.3%) of the health workers had a good knowledge on Hepatitis B mode of transmission (As seen in Table 4).

*Safety practices*

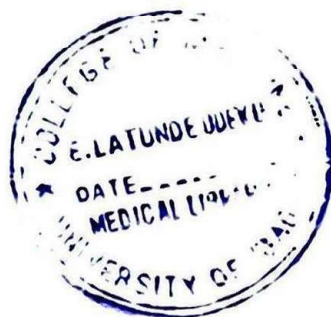
It was observed that majority, 71.4% of the respondents had an unhealthy practice with moderate risk of contracting Hepatitis B viral infection (Table 5).

*Practice that can increase the respondents' risk of contracting Hepatitis B virus*

The result of the study shows the mean practice score of the HCWs as 1.97±0.51. A total of 65.3% of the

**Table 2:** Representation of the knowledge of the respondents on Hepatitis B

Knowledge statements	Percent answering Correctly (%)
Hepatitis B is caused by a virus	99.0
Hepatitis B is a common disease in Nigeria	83.0
Hepatitis B can affect all age groups	97.0
Hepatitis B can be transmitted by used blades of barbers, pins, lancet, needles and other sharp objects	90.0
Hepatitis B cannot be transmitted by polluted water or food	62.0
HBV can be contracted through unprotected sexual relationships	81.0
Hepatitis B is a curable disease	68.0
Hepatitis B has vaccination	97.0
Needle stick injury has 10% risk of causing an infection.	80.0
Health worker to patient transmission of HBV is as common as the reverse situation	38.0
Hepatitis B infection indicates infection with a new subtype of Hepatitis B	57.0
HIV carries a greater risk to health workers than Hepatitis B	39.0
Hepatitis B core antigen carries no clinical importance	61.1



**Table 3:** Relationship between socio-demographic characteristics and knowledge scores of the respondents

Demographics	Total knowledge scores			$\bar{x}$	SD	F	Df	P value
	Poor	Fair	Good					
Year of practice	2	87	282	1.58	0.85	0.44	2	0.65
Marital Status	2	89	291	1.39	0.49	0.15	2	0.86
Ethnicity	2	89	291	1.1	0.52	0.14	2	0.87
Religion	2	89	290	1.75	7.0	0.29	2	0.75
Level of education	2	89	293	9.62	10.3	0.72	2	0.48

**Table 4:** Table showing the knowledge category of respondents

Knowledge score*	Frequency (No)	Percentage (%)
Poor Knowledge(0-4)	2	0.5
Fair Knowledge(>4-8)	89	23.2
Good Knowledge(>-8)	293	76.3
Total	384	100

respondents said that they recap needle from syringe after use. Majority of the respondents 79.4% said that they sometimes manipulate needles. Most of the respondents, 76.7% said they sometimes bent needles and 87.6% said that they sometimes broke needles with their hands (table 6).

**Table 5:** Total number of Health workers engaging in risky practices (N= 384)

Practice scale	Frequency	Percentage
Unhealthy practice	274	71.4
Healthy practice	110	28.6
Total	384	100.0

Majority of the respondents 35.2% said they never made use of water proof gowns and only 17.9% of the respondents made use of double visors to prevent HBV infection. About, 38.8% never made use of single surgical gloves during operations when attending to patients (table 8). Also, majority of the respondents reported not knowing their vaccination status. (table 9).

Respondents with >10 years practice had the highest frequency of HBV vaccine usage 71 (31.1%), followed by those with 11-20 years' experience (31.7%) see table 10. There was a significant relationship between the frequency of Hepatitis B vaccine usage and the respondents' age ( $X^2=13.14$ ,  $df=3$ ,  $p$ -value=0.04) as shown in table 11.

**Table 6:** Reported hepatitis B Virus related risky practices

Statement	Always (%)	Sometimes (%)	Never (%)	Total
Recap needle from syringe after use	131(34.4)	248( 65.3)	1(0.3)	380(100)
Bending of needle	87 (23.0)	291(76.7)	1(0.3)	379(100)
Do you break needles with your hand after use	46 (12.1)	331(87.6)	1(0.3)	378(100)

**Table 7 :** Accidental needle stick piercing and injuries among respondents

Statement	Yes (%)	No (%)	Total
Have you accidentally pierced yourself before	178(50)	178(50)	356

**Table 8:** Use of barrier methods by health care workers in wards

Barrier method used	Never (%)	Always (%)	Sometimes (%)	Total
Use of water proof gowns	133 (35.2)	117 (30.9)	128 (33.9)	378(100)
Use double gloving and visors	68 (17.9)	185 (48.7)	127(33.4)	380(100)
Use single surgical gloves during operations	148 (38.8)	177 (46.5)	56 (14.7)	381(100)
Use single surgical gloves when attending to patients.	75 (19.6)	214 (56.0)	93 (24.4)	382(100)

**Table 9:** Vaccination for HBV

Hepatitis B vaccination status of health workers in Ibadan	No.	(%)
Positive	125	32.6
Negative	244	63.5

About 18% of the respondents said that they recapped or detached needle from syringe or manipulate needles,(bending, breaking) used for Hepatitis B patients in the last three months (See table 6 for details). Half, 50% of the respondents had accidentally pierced themselves before (table 7).

In Table 12 below, Logistic regression analysis was used to determine the magnitude of relationship between respondents' demographic profile and HBV vaccine usage. Predictors of HB vaccine use were age, education and professional cadre using regression analysis. The model showed that health workers less than 30 years of age

(OR=1.056; CI= 0.498- 2.238,  $p<0.05$ ) were more likely to utilize Hepatitis B vaccine compared to health workers aged 31-40 years (OR=0.633; CI=0.288-1.393,  $p>0.05$ ).

However Health workers aged 41-50 years (OR=1.676; CI= 0.746-3.766,  $p>0.05$ ) were more likely to utilize Hepatitis B vaccine compared to health workers aged 51-60 years. Hepatitis B vaccine

**Table 10:** How often respondent use Hepatitis B vaccine and the Years of practice

Vaccine Use	Year of Practice in years				Total
	<10	11-20	21-30	31-40	
Yes	71(31.1%)	26(31.7%)	17(37.8%)	5(33.3%)	119
NO	157(68.9%)	56(68.3%)	28(62.2%)	10(66.7%)	239
Total	228(100%)	82(100%)	45(100%)	15(100%)	370

**Table 11** Ever tested for Hepatitis B virus

Demographics	Ever tested for Hepatitis B virus before			X <sup>2</sup>	Df	P value
	Yes (%)	No (%)	Total (%)			
<i>Sex</i>						
Male	28(36.4)	49(63.6)	77(100)	0.332	1	0.56
Female	99(32.9)	202 (67.1)	301(100)			
<i>Marital status</i>						
Married	69(30.0)	161(70.0)	230(100)	6.45	1	0.11
Single	58(39.2)	90(60.8)	148(100)			
<i>Age in groups</i>						
<30	59(39.9)	89(60.1)	148(100)	13.14	3	0.04
31-40	24 (23.3)	79(76.7)	103(100)			
41-50	24(31.6)	52 (68.4)	76(100)			
51-60	15(41.7)	21(58.3)	36(100)			
<i>Year of practice</i>						
10 Years	71(31.1)	157(68.9)	228(100)	0.77	3	0.85
11-20 Years	26(31.7)	56(68.3)	82(100)			
21-30 Years	17(37.8)	28(62.2)	45(100)			
31-40 Years	5(33.3)	10(66.7)	15(100)			

**Table 12:** Binary logistic regression of relationship between Hepatitis B vaccine use and covariates

	Covariates	Odds Ratio	95%CI	P-value	df
<i>Age</i>	<30	1.056	0.498- 2.238	0.024**	3
	31-40	0.633	0.288-1.393	0.256	
	41-50	1.676	0.746-3.766	0.211	
	51-60*				
<i>Highest level of education</i>	Secondary school	1.497	0.317-7.058	0.020**	3
	Degree	1.227	0.345-4.366	0.752	
	BSC	0.496	0.169-1.453	0.201	
	Post graduate diploma and above*				
<i>Professional Cadre</i>	Medical Doctor	0.278	0.121-0.640	0.003**	2
	Nurse	0.276	0.144-0.530	0.07	
	Other paramedical staffs *				
- 2 Log likelihood	477.113				
Cox & Snell R Square	0.060				
Nagelkerke R Square	0.081				

\*Reference category \*\*  $p<0.05$  (Binary logistic analysis was used)

usage was significantly associated with the cadre of health worker in the secondary health care facility. The Medical doctors (OR=0.278; CI=0.121-0.640,  $p < 0.05$ ) were more likely to use hepatitis B vaccine compare to nurses (OR=0.276; CI=0.144-0.530,  $p > 0.05$ ). Health workers who had secondary level education were more likely to utilize Hepatitis B vaccine (OR=1.497; CI= 0.317-7.058,  $p < 0.05$ ) compared with those who had degree education (OR=1.227; CI= 0.345-4.366,  $p > 0.05$ ). B.Sc holders were less likely (OR=0.496; CI= 0.169-1.453,  $p < 0.05$ ) to have utilized Hepatitis B vaccine compared to health workers with postgraduate diploma qualification and above.

Few, (2.2%) of the respondents with poor knowledge engaged in unhealthy practice which exposed them to the risk of contracting HBV. Less than one-third 23.0% of the respondents who had fair knowledge about HBV engaged in unhealthy practices while 76.3% with good knowledge also engaged in unhealthy practices. Therefore, there was no significant association between knowledge and the practice that influenced their risk of contracting Hepatitis B infection using Fishers exact test ( $*\chi^2=0.04$ ,  $df=2$ ,  $p\text{-value}=1.0$ ). (table 13).

Despite their relatively high level of education, and the advanced level of knowledge about the modes of transmission of the pathogens, there were great disparities among health practitioners knowledge and vaccination uptake as only 33.9% has been fully vaccinated [23].

Most of them had low vaccine coverage as Hepatitis B virus could be transmitted through many other routes, and inadequate knowledge of the essence of vaccination against Hepatitis B virus among health workers may reflect their behavioural pattern to vaccination and safety measures [25]. A study had found out that lack of knowledge and negative attitudes were the main reasons for refusal, in a vaccination programme against Hepatitis B virus [26]. These were found to improve significantly after the dissemination of information, with acceptance rates increasing from 56.9% to 77.7% [26].

It was observed that more than half of the respondents reported practices that increased their risk of contracting Hepatitis B viral infection through needle recap and manipulations. The risk of non-percutaneous exposure may account for a significant proportion of HBV transmission in the healthcare setting. Indeed, some healthcare workers infected

**Table 13** Relationship between knowledge and total practice (N=384)

*Total Knowledge Group Scales	Unhealthy practice (%)	Healthy practice(%)	Total	*X <sup>2</sup>	Df	P-value
Poor Knowledge (0-4)	1(0.5)	1(0.5)	2	0.04	2	1.00
Fair Knowledge (5-8)	44(23.0)	45(23.3)	89			
Good Knowledge (9-12)	146(76.4)	147(76.2)	293			
Total	191(100)	193(100)	384			

*\*Fishers Exact test was used*

**Discussion**

Majority of the respondents had good knowledge of Hepatitis B and this could be linked to the fact that they had residual knowledge about HBV from the medical training institutions. This study also found out that over a third 38.0% of the respondents were not aware of the routes of transmission of HBV which indicated a significant problem in the health sector as they stated that HBV can be transmitted by polluted water or food [22]. Most (61.1%) of the respondents said that Hepatitis B core antigen carried no clinical importance whereas, this is contrary to other studies [24] it is the core antigen that indicates the presence of a chronic or an acute HBV infection thus indicating the need for better reorientation of the health workers [20].

with HBV could not recall an overt needle stick injury, but could remember caring for a patient with Hepatitis B. New staff with less than ten years of practice may be at a higher risk of acquiring Hepatitis B infection in the hospitals as they are learning to do procedures and may be less cautious than other health workers [7]. They are also less likely to practice universal precautions and are more likely to sustain needle stick injuries due to inexperience [30]. Immunization with Hepatitis B vaccine is the most effective means of preventing Hepatitis B infection and its consequences [31]. The recommended strategy for preventing this infection is selective vaccination of persons with identifiable risk factors [27].

The study identified the predictors of hepatitis B vaccine usage as a significant relationship was found

between professional cadre, level of education, age of the respondents and hepatitis B vaccine usage using logistic regression analysis. Health workers less than 30 years of age were 1.06 times more likely than health workers aged 31-40 years while the Medical doctors were 0.28 times more likely to use hepatitis B vaccine compare to nurses (Table 12).

It was observed that over two third of the respondents had a poor practice that may influence the risk of contracting Hepatitis B virus infection. Almost half (46.4%) of the respondents had been accidentally pierced before which was high compared to similar studies [28]. The study has shown that general hygienic measures as well as protective equipment use in hospitals in Nigeria to reduce the risk of HIV/ Hepatitis B infections among health workers are insufficient. A finding corroborated by earlier studies in similar settings [29].

Unhealthy practice in the use of barrier methods poses a risk to the health workers. The main reason for this may be attributed to poor practice of universal precautions owing to organizational problems and a lack of necessary materials such as non-availability/ use of gloves during emergency operations as reported by 38.8% of the respondents. Also, data on the frequency and circumstances of occupational exposures in developing countries are sparse especially in Nigeria, frequency of exposures and prevention criteria, circumstances of exposures, and post exposure practices are poorly managed and only few cases are documented in the hospitals which could be one of the risk factors for Hepatitis B virus spread among health workers. From the results of the study, one third 31.0% of the respondents with less than ten (10) years working experience are more likely to receive Hepatitis B vaccination than other respondents with more years of practice. The most likely reason for this high uptake level Hepatitis B vaccine maybe due to the fact that, the majority of the respondents were Nurses (53.9%) and doctors (14.8%) thus, more likely to be educated than the lower cadre of health care workers with more years of practice.

The result of the study also indicates that (31.1%) about one third of the respondents had taken at least one dose out of the recommended three doses of Hepatitis B vaccine before, while at least 33% of the respondents had taken more than one dosage of the vaccine, thus, factors such as availability of the vaccine in their respective health centres, low level of awareness on the availability of the vaccine to health workers at vaccination centres, the cost of vaccine which costs up to #1,200 (\$3.81) per vaccine and 3,600 (\$11.42) for a dose may be one of the

“factors responsible for the low uptake of the vaccine as stated by 18.9% of the respondents, a finding similar in a study” [23].

## Conclusion

This study indicates that there is a low vaccination uptake among the health care workers. They must be sufficiently well informed to be able to improve the knowledge, attitudes and behaviour of other HCWs and patients. It also seems evident that additional research on HBV is needed in this regard. Although they claimed high knowledge of preventive measures, the findings of standard prevention practices and HBV vaccine uptake were to the contrary and majority engaged in high risk practices which may predispose them to HBV infection. In conclusion, the Hepatitis B vaccination rate among health workers in Ibadan North and South west local government area is low. This study suggests that, the present system of vaccination, in which health workers have to take the initiative and sometimes pay is not very efficient, therefore national and institutional legislation for a compulsory vaccination against Hepatitis B needs to be promulgated especially for all health workers who are at higher risk. Thus, hospital workers from these institutions have moderate perceived risk of HBV infection and low vaccination coverage despite a high level of awareness of HBV vaccine.

## Recommendations

In light of the findings of this study which show a high exposure rate coupled with an abysmally low vaccine uptake, it is recommended that a capacity building of all health workers whose duties put them in direct contact with blood be compulsory with prompt vaccination at the start of their career. Vaccination should be provided free or at a subsidized rate local government administration (18.9%) in this study reported high cost of vaccine as a barrier, Vaccination program should be preceded by rigorous educational programmes targeting health workers on the importance of vaccination against HBV. Such programs must also remove barriers to vaccination such as concern for social consequences and personal financial burden of the HBV vaccine costs. The government should also provide resources that will enable all health workers practice universal precaution.

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