
Perception and Uptake of Hepatitis B Virus Vaccine Among Healthcare Trainees in A Nigerian University

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ABSTRACT:

Background: With a worldwide prevalence and high endemicity in Nigeria, the burden of HBV infection is of public health concern. Primary prevention through vaccination is the mainstay of control. Healthcare workers and trainees are posed with a risk of exposure. This study was conducted to determine the level of awareness and vaccine uptake among healthcare students in Nnewi, Nigeria.

Methodology: A cross-sectional study by convenience sampling method between February-March 2018. The data was obtained using self-administered questionnaires with 261 respondents. Analysis was done using SPSS version 20. χ^2 test of independence was determined with p-value set at 5%.

Result: 92.7% of respondents were aware of HBV, 47% knew it was common, and 80.8% believed it was vaccine-preventable. 23.4% had a prior vaccination and 4.6% had at least 3 doses. 34.4% of those unvaccinated did not know of vaccination, and 24.4% lacked interest, 20.6% was due to busy schedule, and 19.4% due to cost. Vaccine uptake was significantly associated with study year but not with the study department.

Conclusion: There was a good level of awareness of HBV vaccination but without a corresponding level of vaccine uptake due to hindrances such as schedule, cost, and disinterest. Vaccination prevention strategies for HBV should include healthcare trainees by policy to improve vaccination coverage and increase control of infection as they are at potential risk of exposure hazards in the course of their training and subsequent healthcare careers.

KEYWORDS: Hepatitis B, Healthcare trainees, Infectious disease, Vaccine uptake, Virus

1. INTRODUCTION

Hepatitis B Virus (HBV) is a blood-borne chronic infectious disease pathogen of public health concern with a worldwide distribution. There are over 200 million carriers worldwide with hyperendemicity in sub-Saharan Africa and Nigeria resulting in 1 million HBV-related liver disease and hepatocellular carcinoma annual deaths all over the world.[1-4]

Individuals at high risk of infection include parenteral drug abusers, healthcare personnel, multiple transfusion and haemodialysis patients and staff, highly promiscuous persons, and newborn infants born to mothers with HBV. The outcome after infection with HBV varies from complete recovery to chronic hepatitis and death may occur due to fulminant disease. Most infected adults recover completely from the infection, conversely, it commonly persists in infants and young children as chronic carriers. Fulminant HBV disease is associated with superinfection by the Hepatitis D virus.[5]

HBsAg is detectable in the serum 1-10 weeks after exposure and persists throughout chronic disease, else, it typically disappears by the 6th month due to resolution.[6] The course of the disease is generally subclinical until the late stages of chronic infection. Anti HBsAg is first detected at a variable period after the disappearance of HBsAg. It can be detected following vaccination as well without prior infection.[6] Recombinant interferon- α , Lamivudine, and Adefovir are some of the approved anti-HBV medications of proven benefit in the treatment of patients chronically infected with HBV, and the goal of therapy is to halt the progression of liver disease, liver failure, and hepatocellular carcinoma. However, there are cases of relapse after cessation of treatment as viral replication recommences as soon as therapy stops. Viral resistance is another challenge to this, and liver transplant fails due to reinfection in 80% of cases. As with treatment for many viral diseases, absolute viral eradication is not achieved.[7]

Prevention strategies will be of greater benefit in the control and HBV infection. Vaccination in addition to general health prevention methods has been shown to be of importance. HBV vaccine has been available since 1981. It is however recommended for all susceptible at-risk groups and for children as part of their regular immunization schedule.[1] Immunization entails receiving at least three doses of the vaccine at different scheduled points in time.

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Due to the fact that health workers and those under training run the risk of exposure to patients' body fluids during clinical activities, they are considered a high-risk group, and hepatitis B is regarded as a major infectious and occupational hazard for this group.[8] This is coupled with the fact that it is highly transmittable at the initial stage of the infection even without clinical symptoms and signs. As a result of the subclinical course the disease runs at the initial stage of infection most of the time, there is also the risk of transmitting infection to patients by the apparently healthy-looking health personnel. A study by Okwesili et al revealed a high prevalence of HBV infection among Biomedical Students in Sokoto, Nigeria.[9]

The widespread diffusion of HBV with its accompanying cost implications in prevention, management and treatment in low-income countries like Nigeria poses a heavy burden for stakeholders and health-care providers.[4] These necessitate the consideration of establishing good practices of prevention and control. Also, poor knowledge and practice of infection control measures among students is another consideration and there is the perceived risk of unsafe sexual practices among young adults category into which students of health professions fall.[10,11]

Unlike some countries in Europe where HBV vaccination is mandatory for healthcare trainees and recommended in some others,[12] there is a disproportionately lower uptake of vaccine among students in Nigeria[13-17] in spite of the high level of perception among these students. The situation is similar in other parts of Africa.[18-20] A significant difference in perception or vaccination uptake among different healthcare professional trainees was demonstrated by some studies.[15,18,19,21,22] It was also shown to be related to the student's level of study.[23] Major barriers experienced by students include busy schedules of academic work and the high cost of vaccination.[15,20,24]

This study is aimed at assessing the level of perception and uptake of the HBV vaccine among undergraduate students of the College of Health Sciences, Nnamdi Azikiwe University, Nnewi Campus, barriers, and contributing factors.

2. METHODOLOGY

2.1 STUDY AREA

The study was carried out in the College of Health Sciences, Nnamdi Azikiwe University (CHS-NAU), Nnewi campus in Anambra state, South Eastern Nigeria.

The College of Health Sciences and the Nnamdi Azikiwe University Teaching Hospital, Nnewi house one of the campuses of Nnamdi Azikiwe University. The campus offers medical and paramedical training in their respective locations at Otolo and Uruagu, Nnewi, and have a combined population of approximately 1,500 students in the undergraduate degree program all in at least their 2nd year of study in seven different fields - Medicine & Surgery, Nursing, Radiography, Medical rehabilitation, Medical laboratory science, Anatomy, and Physiology.

2.2 STUDY DESIGN

It was a cross-sectional descriptive study carried out between February 1 to March 31, 2018.

2.3 STUDY POPULATION

This included all undergraduate students in the College.

2.3.1 INCLUSION CRITERIA

All undergraduate students were included in the study.

2.3.2 EXCLUSION CRITERIA

Diploma and Postgraduate students of the college were excluded from the study.

2.4 SAMPLING METHOD

Sampling was done by the convenience sampling technique. Self-administered paper questionnaires were taken to each department by assistants and distributed to students present at the location at the sampling time who consented to the study.

2.5 ANALYSIS

The collected data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 20. The test of association was employed using chi-square. The significance level was set at 5%.

3. RESULT

A total of 300 questionnaires were distributed out of which 261 were correctly filled and returned (response rate of 87%). The result is represented as follows

Table 3.1 shows the socio-demographic profile of respondents

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	Frequency	Percentage (%)
Age		
15-19 Years	36	13.8
20-24 Years	186	71.3
25-29 Years	32	12.3
30-34 Years	7	2.7
Total	261	100.0
Gender		
Male	133	51.0
Female	128	49.0
Total	261	100.0
Study Department		
Anatomy	46	17.7
Physiology	18	6.9
Nursing	14	5.4
Medicine	117	45.0
Radiography	26	10.0
Medical Rehabilitation	21	8.0
Medical Laboratory Science	18	6.9
Total	260	100.0
Study year		
2 nd	82	31.4
3 rd	41	15.7
4 th	76	29.1
5 th	28	10.7
6 th	34	13.0
Total	261	100.0
Marital Status		
Single	255	97.7
Married	6	2.3
Total	261	100.0

186(71.3%) of the respondents were between the ages of 20 to 24 years. There were 133(51%) males and 129(49.0%) females. 260 students identified their study departments and 261 identified their study year. 117(45%) were medical students, 82(31.4%) were in their 2nd year of study and 255(97.7%) were single.

Table 3.2 shows respondents' perception of HBV Vaccination

	Frequency	Percentage(%)
Ever learned of HBV		
Yes	242	92.7
No	19	7.3
Total	261	100.0
HBV is common		
Yes	123	47.1
No	51	19.5
Don't know	87	33.3
Total	261	100.0

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Groups at risk

Infants	70	26.8
Health professionals	120	46.0
individuals with multiple sex partners	158	60.5
iv drug users	114	43.7
Others	7	2.7

Prevention by vaccination

Yes	211	80.8
No	8	3.1
Don't know	42	16.1
Total	261	100.0

Priority vaccination groups

Infants	109	41.7
Health professionals	152	58.2
Health students	145	55.5
Sexually active adults	155	59.38
others	11	4.2

Compulsory Vaccine for Health Trainees

Yes	219	83.9
No	11	4.2
Don't know	31	11.9
Total	261	100.0

242(92.7%) had previously learned of HBV, 123(47.1%) agree that it is common, and 211(80.8%) think it can be prevented by vaccination. 219(83.9%) agree that it should be mandated for health trainees. 155(59.8%) included sexually active adults in their priority vaccination group and 152(58.2%) included health professionals in their priority vaccination group.

Table 3.3 shows respondents' uptake of HBV vaccine

	Frequency	Percentage(%)
Ever been vaccinated		
Yes	61	23.4
No	180	69.0
Don't know	20	7.7
Total	261	100.0
First vaccine dose		
Upon gaining admission	17	28.9
After sexual exposure	2	3.3
Clinical or laboratory exposure	17	28.9
Voluntarily	24	39
Others	1	0.2
Total	61	100.0
Doses received so far		
No answer	4	6.6
1	23	37.7
2	22	36
3 or more	12	19.7

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Total	61	100.0
Reason for incomplete vaccination		
Busy schedule	14	31.1
Cost	17	37.8
Lack of Interest	13	28.9
Unavailability	0	0
Others	1	2.2
Total	45	100.0
Why not vaccinated		
Did not know of it	62	34.4
Busy schedule	37	20.6
Not interested	44	24.4
High cost	35	19.4
Others	2	1.1
Total	180	100.0
Willingness to receive vaccine		
Yes	156	78
No	7	3.5
I don't know	37	18.5
Total	200	100.0

61(23.4%) of the respondents had been previously vaccinated against HBV while 180(69.0%) had not and 20(7.7%) others do not know if they had ever been vaccinated. 11(18%) of those previously vaccinated had received 3 doses of vaccination. 17(28.9%) of those vaccinated got their first vaccine upon admission into the University, 17(28.9%) during clinical or laboratory exposure, 24(39.0%) did so voluntarily, and 2(3.3%) after sexual exposure.

66(34.4%) of those unvaccinated did not know about HBV vaccination, 44(24.4%) were not interested, 37(20.6%) was due to busy schedule, and 35(19.4%) was due to the cost of vaccination. 17(34.8%) of those not fully vaccinated was due to cost, 14(31.1%) due to busy schedule, and 13(28.9%) due to lack of interest.

156(78%) of those unvaccinated will be willing to be vaccinated against HBV in the future, 7(3.5%) will not be willing and 37(18.5%) are unsure.

Table 3.4 shows test of independence between the year of study and vaccine uptake Ever had HBV vaccination

Study year	Yes	Total	Percentage (%)	p value
2 nd	17	82	20.7	0.0088
3 rd	5	41	12.2	
4 th	15	76	19.7	
5 th	13	28	46.4	
6 th	11	34	32.4	

The table shows that vaccine uptake was associated with the year of study ($p < 0.05$)

Table 3.5 shows the test of Independence between the department of study and vaccine uptake Ever had HBV vaccination

Department	Yes	Total	Percentage (%)	p value
Anatomy	9	46	19.6	0.50
Physiology	3	18	16.7	
Nursing	4	14	28.6	
Medicine	33	117	28.2	
Radiography	3	26	11.5	

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Medical Rehabilitation	6	21	28.6
Medical Laboratory Science	3	18	16.7

The table shows that vaccination was not associated with the student's study department ($p>0.05$)

4. DISCUSSION

Most of the students had heard of HBV infection, and about half agreed that it was endemic. The discovery of a high awareness and perception of HBV infection among students of the University of Jos, Nigeria[14] corroborates this finding. This could suggest that students in Nigerian Universities - especially healthcare trainees - have a reasonable level of awareness of HBV infection. However, less than half of the respondents in this study reported that healthcare professionals were at risk of contracting the infection although more than three-quarters would want it mandatory for healthcare trainees.

Vaccine uptake among the respondents was low with less than a quarter of the students having ever received a vaccination shot and less than a quarter of that number having been fully immunized. This is similar to other findings in Nigeria and other parts of Africa and in contrast to the outcomes seen among their European counterparts.[12-16] Half of the unvaccinated students were either uninterested or unaware of available vaccines, while the other half had challenges of cost or busy schedules as barriers. This finding was common among other studies.[15,24]

In contrast to the results obtained by Mesfin et al and Chudhurry et al, there was no significant association between vaccine uptake and the department of study of the students. This could be due to the wider range of courses captured in this study. It is also a plausible outcome given that the risk of exposure to HBV is arguably equal across most of the study student departments during the course of their study. On the other hand, vaccine uptake was significantly associated with the student's level of study with almost half of the participants in the most senior classes having been previously vaccinated. About a quarter of vaccinated participants received their first vaccination upon admission into the University and another quarter during exposure to clinical or laboratory experience. This pattern could be attributed to the higher perception of HBV observed among clinical students than in preclinical students.[23]

5. CONCLUSION AND RECOMMENDATIONS

There is a wide gap between the perception of HBV infection and vaccine uptake among Nigerian healthcare trainees. This outcome is in contrast to those seen in other parts of the world like Europe where vaccine uptake is largely guided by public policy. Adherence to vaccination is largely domiciled in the will of the individual as they gain more experience in the training. That has not been sufficient in driving the needed coverage as the cost of vaccination and academic schedule have been widely implicated as a major challenge in the uptake of the vaccine. Although the case fatality rate of HBV infection is low in adults, it should be regarded as a matter of public health concern, especially among healthcare practitioners and trainees who are directly responsible for a large number of sick and vulnerable individuals including children and the elderly. The potential occupational hazard of HBV infection can constitute a challenge for adequate clinical exposure, and a source of distress to healthcare trainees causing a further drawback to their training. It should be a matter of policy to vaccinate at least healthcare trainees on exposure to clinical or laboratory experience. A risk assessment of clinical occupation and HBV infection could help determine occupation-driven risks of infection which can further inform occupational hazard policies and health safety procedures.

STUDY LIMITATIONS

This study may be limited by selection bias owing to the convenience sampling method employed. The study was also prone to social desirability bias by respondents.

ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Nnamdi Azikiwe University Teaching Hospital Ethics Committee.

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CONFLICTING INTEREST

There was no conflicting interest all through the process of carrying out, computing or publishing this work.

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