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(RESEARCH ARTICLE)

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Awareness and accessibility of Hepatitis B vaccination among undergraduate clinical students of a tertiary institution in South Eastern Nigeria

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Abstract

Hepatitis B virus Infection is a chronic Infection with increasing incidence and worldwide prevalence. It is a leading cause of liver failure and hepatocellular carcinoma. Healthcare personal, chronic blood transfusion, unprotected sex, etc are some major risk factor of contracting the disease. It can be prevented by vaccination. This study was carried out among undergraduate Clinical students of college of Health Science, Nnamdi Azikiwe University (CHS-NAU), Nnewi it was a cross-sectional descriptive study using the convenience sampling method. Pretested self-administered questionnaires were distributed and the data analyzed using the statistical package for social science (SPSS) Version 20.0. A total of 178 questionnaires were distributed with a response rate of 100% (178). The study showed a high level of knowledge of HBV vaccination and consider attitude towards the need for vaccination but poor compliance to update due to busy schedule, cost, and level of study. HBV vaccination is low among the students of a CHS-NAU as in other parts of Nigeria and Africa with similar reasons. Good Policy enactment and implementation can help bridge the gap between the awareness, attitude and accessibility of vaccine.

Keywords: Hepatitis; Lamuvudine; vaccination; virus

1. Introduction

Hepatitis B Virus infection, is a major global problem affecting large number of people every year. Hepatitis B Virus primarily targets the liver and can cause both acute & chronic liver diseases. HBV infection is asymptomatic in majority of the people and the chronic infection may lead to serious complications such as cirrhosis of the liver, & hepatocellular carcinoma. As per the Latest World Health Organization (WHO) report dated July 18, 2018; globally by the end of 2015, an estimated 257 million people were living with HBV and approximately 887,000 deaths have occurred mainly because of chronic complications of HBV infection.

HBV infection is an occupational hazard, and the risk of health care workers and clinical medical students getting infected is 2-10times higher than in other general population, medical students must have proper knowledge about HBV infection, modes of transmission, clinical features, complication & preventive measures. The proper knowledge helps them take necessary precautions measures to prevent getting infected and also to create awareness about HBV infection, among the public and other health care workers [1].

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Vaccination and use of personal protective equipment's are the two major weapons for the prevention of hepatitis B infection. Recombinant HB vaccine which is licensed for use is advised for all health care workers and clinical medical students [3].

More than 1 billion doses of hepatitis B vaccines have been given worldwide and it is considered one of the safest & most effective vaccines ever made. Though common side effects may include; soreness, swelling and redness at injection site. The vaccine may not be recommended for those with documented history of adverse reaction to the vaccine [4].

HBV is hyper endemic in Nigeria and arguably the highest in Sub-Saharan Africa. This is coupled with the fact that it is highly transmittable at the initial stage of the infection even without clinical symptoms and signs [5].Amongst Clinical Medical Students /health care workers, zero prevalence is two or four times higher than that of the general population. They remain at high risk of acquiring HBV infection mainly through percutaneous or mucosal exposure to infected blood or body fluids [6].

As a result of 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 medical student. The widespread diffusion of HBV with its accompanying cost implication in prevention, management and treatment in a low – income country like Nigeria poses a heavy burden for government and health – care providers [5].

In a study in Pakistan in 2011, it was reported that the vaccination coverage of HBV among medical students was low in spite of the availability and accessibility of a cost-effective vaccine [7]. Another study showed that there are significant immunity gaps against all vaccine preventable diseases among healthcare students in Athens, Greece [8]. In 2015, a study by Okwesili *et al*revealed a high prevalence of HBV infection among Biomedical Students in Sokoto, Nigeria [8].Hepatitis B, being an object of public health concern ought to be adequately known and properly handled by students training to be health personnel in various capacities first to preserve their own health and prevent undue medical expenses and also to curtail cross-transmission to one another or to patients in their care together with its legal implications.

The objective of the study was to determine the level awareness, accessibility and barriers to uptake of hepatitis B vaccine among under graduate clinical medical students in a tertiary institution in south east Nigeria.

2. Material and methods

2.1. Study area

The study area was Nnamdi Azikiwe University Teaching Hospital. It is a Federal hospital that trains medical students, paramedical Students, Nurses and Resident doctors. The hospital is located at Nnewichi Nnewi and the college of Health Sciences, Nnamdi Azikiwe the college and has somepre-clinical students (200-300level), who stay at Okofia and the clinical student (400 – 600L) who stay within the hospital premises. The study population is the clinical medical students.

2.2. Study design

This study is a cross – sectional and descriptive study.

2.3. Study tool

Self-administered questionnaire was used.

2.4. Study population

This study was carried out among the clinical students of the Nnamdi Azikiwe University Teaching Hospital.

2.5. Inclusion criteria

All bona fide clinical students of the Faculty on Medicine, Nnamdi Azikiwe University was included.

2.6. Exclusion criteria

Post graduate, suspended or rusticated students of the faculty were excluded from the study.

2.7. Sample size determination

Minimum sample size was determined using

$$Nf = n/(1 + n/N)$$

$$n = \frac{Z^2PQ}{d^2}$$

Where:
Nf= sample size if population < 10,000
N = estimated population size = 240
n = minimum sample size
Z = standard normal deviation at 95% confidence level = 1.96
P = estimated prevalence based on previous studies = 36% = 0.36
Q = I – P = 0.64
d = precision or degree of accuracy = 0.05

$$n = \frac{(1.96)^2 X\ 0.36\ X\ 0.64}{0.05^2} = 354$$

Nf = 354/ (1+ [354/240] = 178.

2.8. Sampling method /technique

The sampling method used was convenient sampling technique. Self-administered questionnaire was taken to each student and shared randomly to members present in the location at the sampling time.

2.9. Data Collection/Tools

Data were collected within 2 weeks interval. The questionnaire had four sections; informed consent, participant's demographics, information on Awareness of hepatitis B vaccine and accessibility towards hepatitis B vaccination. The participants' demographics assessed include age, gender, state of residence and geographical zones, ethnicity, religion, marital status and level.

2.10. Statistical Analysis

Analysis was performed using the Statistical Software Package SPSS version 20.0.Descriptive statistics (including means and standard deviations) were calculated for the numerical variables.

2.11. Ethical consideration

The entirety of the study with focus on the objective and techniques involved were explained clearly to each participant and an informed consent was obtained. The participants were assured of the confidentiality and anonymity of all information that will be supplied in the study.

The participants were also given the freedom to withdraw from the study at any point with an assurance that their decision would not affect my decision to render medical services to them in the future.

3. Results

The mean age of the respondents isFifty nine point zero percent (105) are males while 41.0% (73) are females. The Igbo respondents accounted for ninety six point one percent (172) of the respondents, 0.6% (1) is Yoruba while others tribes accounted for three point four percent of the respondents. Ninety two point one percent (164) are married with all the respondents being Christians. Ninety eight point nine (176) percent are in medicine while 1.1% (2) is in nursing department. Forty-two-point one percent are in 600level, 40.4% (72) are in 400 level while seventeen-point four percent(75) are in 500 level.

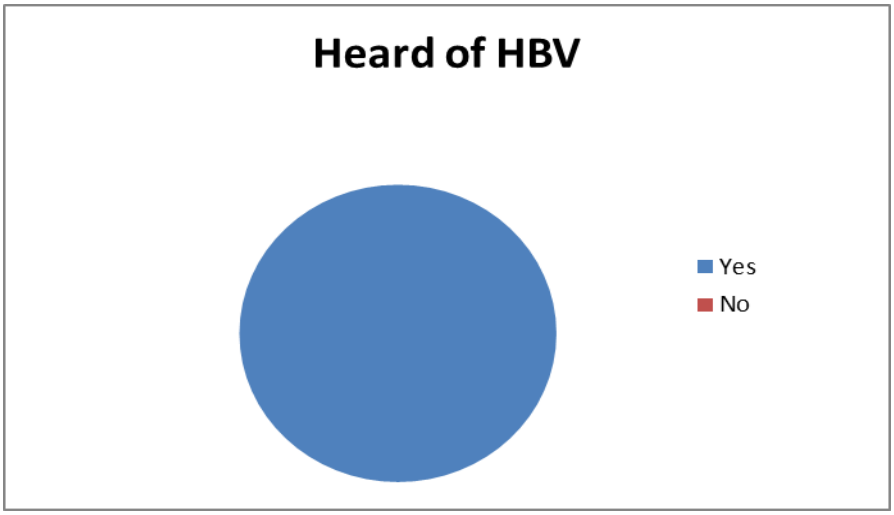

Figure 1 Awareness of Hepatitis B virus vaccine

Table 1 Socio-demographic characteristics

Socio-demographic characteristics	Frequency N=178	Percentage (%)
Age		
15-20	10	5.6
21-25	138	134.0
26-30	24	55.5
31-35	4	2.3
>35	2	1.2
Gender		
Female	105	59.0
Male	73	41.0
Ethnicity		
Yoruba	1	0.6
Igbo	172	96.1
Others	6	3.4
Marital Status		
Single	164	92.1
Married	14	7.9
Religion		
Christian	178	100
Department		
Nursing	2	1.1
Medicine	176	98.9
Level		
400	72	40.4
500	31	17.4
600	75	42.1

All the respondents haveheard of hepatitis B virus vaccine

Table 2 Awareness of HBV

	Frequency N=178	**Percentage (%)**
Source of knowledge of HBV		
Family members	51	28.7
Friends	81	45.5
Television	60	33.7
Book/Magazine	120	67.4
Internet	100	56.2
Health Staff	148	83.1
Is HBV common in our environment		
Yes	154	86.5
No	5	2.8
I don't know	19	10.7
Symptoms of HBV		
Pain	150	84.3
Vomiting	118	66.3
Jaundice	165	92.7
Live failure	146	82.0
Live cancer	142	79.8
Others	12	6.7
Risk group for contracting HBV		
Infants	63	35.4
Health Professionals	144	80.9
Individuals with multiple sexual partners	163	91.6
Intravenous drug users	158	88.8
Others	9	5.1

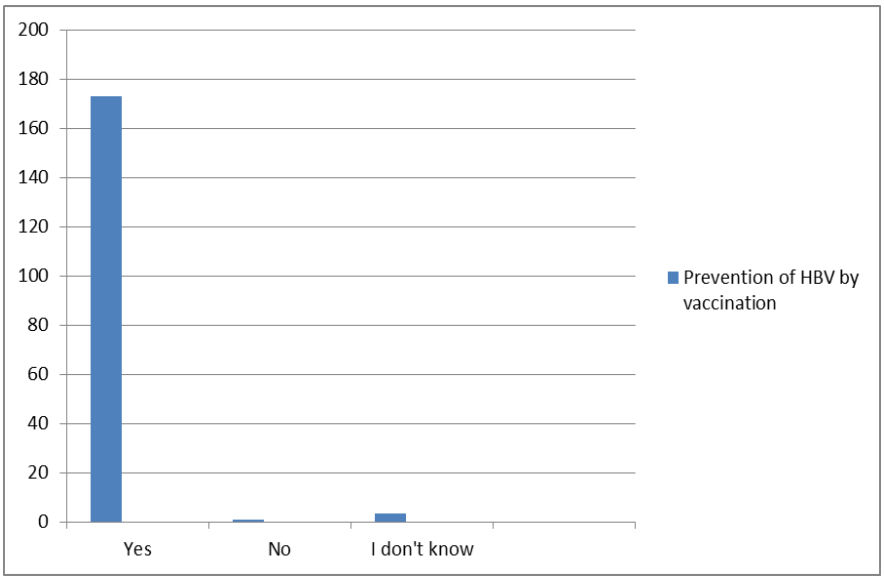

Figure 2 Prevention of HBV by vaccination

All the respondents are aware of hepatitis B virus vaccination with eighty three point one percent(148) having the source of their knowledge from a health staff, 67.4%(120) has book/magazine and newspaper as the source of their knowledge while fifty six point two percent(100) knew from the internet. Eighty six point five percent (154) said that HBV is common in our environment, 10.7% are not aware if it's common or not while two point eight percent (5) said that it is not common. The commonest known symptom of HPV according to the respondents was jaundice (92.7%). Abdominal pain accounted for 84.3%. Those who said it was liver failure accounted for eighty two percent (146) while 79.8% (142) chose liver cancer. Individuals with multiple sexual partners (91.6%) were the highest know risk group for contracting HBV. This is followed by intravenous drug usage which was eighty eight point eight while those said it was health professionals accounted for eighty point nine percent.

Ninety-seven-point two percent (173) agreed that HBV can be prevented by vaccination while 4% (2.2) are not sure if HBV vaccination can prevent it. Zero-point six percent (1) said that it cannot prevent it.

Table 3 Awareness of HBV vaccination

	Frequency N=178	**Percentage (%)**
Source of knowledge of vaccine prevention of HBV		
Family members	34	19.7
Friends	57	32.9
Television/radio	55	31.8
Book/Magazine/Newspaper	93	53.8
Internet	86	49.7
Health Staff	145	83.8
Church	15	8.7
Who to receive HBV vaccine		
Infants	91	51.1
Health professionals	155	87.1
Health students	150	84.3
Sexually active adults	152	84.9
Others	17	9.6
Knowledge of forms of vaccination		
Yes	127	71.3
No	51	28.7
Those involved in HBV vaccination		
Infants	42	33.1
Health Professionals	102	80.3
Students	81	63.8
Young adults	55	43.3
Others	4	2.2
Number of doses required for full vaccine		
1	8	4.5
2	7	3.9
3	112	62.9
4	11	6.2
I don't know	40	22.5

Ninety seven point two percent (173) agreed that HBV can be prevented by vaccination with 83.8% (1450 having health workers as their source of information. Those who knew from books/magazine and newspaper accounted for fifty three

point eight percent (145) while 49.7% got their knowledge from the internet. Only eight point seven percent (15) got their knowledge from church. Health care professionals (87.1%) are the most eligible to receive HBV vaccination followed by health students and sexually active individuals accounting for 84.9% and 84.3% respectively. seventy one point three percent(127) are aware of the different forms of vaccination while 28.7% are not aware. Eighty point three percent(102) of the respondents chose health workers as those involved in HBV vaccination, Sixty three point eight percent(81) of those involved were students while the young adults accounted for 43.3% with majority(62.9%0 receiving three doses while twenty two point five percent(40) do not know the number of doses received.

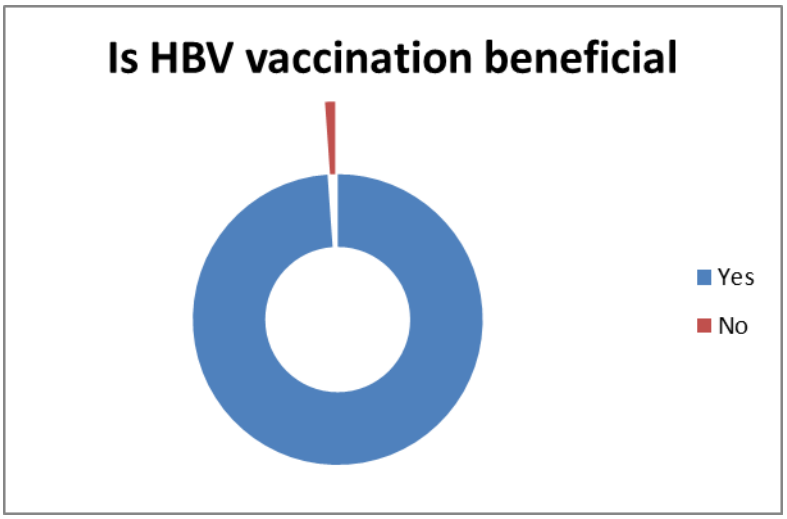

Figure 3 Assessment of HBV vaccination

Ninety-eight-point nine percent of the respondents (176) thinks that HPV vaccination is beneficial while 1.1% (2) feel it is not

Ninety six point six percent (172) said that HBV vaccination is beneficial for the prevention of HBV, fifteen point two percent t(27) said that it is recommended while 0.6%(10 do not know its benefit. Ninety seven point eight percent (174) will encourage others to get vaccinated with 96.6% (172) advocating for free HBV vaccine for all. Ninety three point three percent (166) said that HBV vaccine should be made compulsory for all health workers while 2.8% (5) said no. Thos who have had HBV vaccination accounted for 27.5% of the respondents. Sixty four point two percent of those have not received HBV vaccination was because of high cost(74), Thirty three point one percent(40) did not receive it due to busy schedule while 10.7% [13] lack awareness. Forty four point nine percent (22) respondents have received 3 doses, 28.6% (14) received one dose while twenty four point five percent (12) received two doses.Sixty-one-point two percent (30) had their first vaccination after sexual exposure, 20.4% (10) had theirs voluntarily while 12.2% (6) received their first dose immediately after admission. Forty three point eight percent (14) did not receive HBV vaccine due to busy schedule, forty point six percent [13] did not receive due to unavailability while 25%(8) did not receive due to cost. Seventy nine point three percent (96) are willing to receive HBV vaccine while 19.8%(24) are not sure.

Table 4 Awareness of HBV Vaccination

	Frequency N=178	**Percentage (%)**
Benefits of HBV vaccination		
Prevention of HBV	172	96.6
It is recommended	27	15.2
I don't know	1	0.6
Others	-	-
Encourage others to get vaccinated		
Yes	174	97.8
No	4	2.2

Do you advocate for free or affordable HBV vaccination for all		
Yes	172	96.6
No	6	3.4
Should HBV vaccine made compulsory for all health workers		
Yes	166	93.3
No	5	2.8
I don't know	7	3.9
Had HBV vaccination		
Yes	49	27.5
No	121	68.0
I don't know	8	4.5
First HBV vaccination		
Immediately after admission	6	12.2
After sexual exposure	30	61.2
During clinical/laboratory exposure	3	6.2
Voluntarily	10	20.4
Others	-	-
Reasons for not taking HBV vaccine		
Lack of awareness	13	10.7
Busy schedule	40	33.1
Not Interested	8	6.6
High cost	74	61.2
Religious faith	-	-
Others	7	3.9
Number of HBV doses received		
1	14	28.6
2	12	24.5
3	22	44.9
4	1	2.0
Reason for not receiving full vaccination		
Busy schedule	14	43.8
Cost	8	25.0
Unavailability	13	40.6
Lack of interest	1	3.1
Others	5	2.9
Willingness to receive vaccine against HBV		
Yes	96	79.3
No	1	0.8
I don't know	24	19.8

4. Discussion

From the results, knowledge of HBV as well as its symptoms and complication is high among undergraduate Clinical Students of college of health science Nnamdi Azikiwe University Nnewi Campus. This corresponds to study by Chingle MP *et al* in 2017, that awareness and perception of HBV infection are high among student of university of job, Nigeria [11].

There is high level of awareness of the prevalence of the infection and high level of knowledge of the individuals more at risk of contracting the infection with 86.5% (154) saying its common in our environment and 91.6% agreeing that individuals with multiple sexual pattern were the highest known risk group for contracting HBV About 148 (83.1%) learnt it from a health staff, 120 (67.4%) had books /magazine and newspaper as the source of their knowledge, while 100 (56.2%) knew from the internet.

There was high level of knowledge of the ability of prevention of HBV Infection byvaccination with 173 (97.2%) in agreement, while4% aren't sure and 0.6% said that it cannot be prevented. 83.8% had health worker as their source of information, 53% from books/magazines, 49.7% from the internet, only 8.7% from the church. The high level of knowledge of prevention by vaccination corresponds to the findings by Abdela A*. el al* in 2015 [10] and Okeke EN [9].There was also high level of knowledge of doses required for complete vaccination, 112 (62.9%) 172 (96.6%) said that HBC Vaccination is beneficial for the prevention of HBV, 27 (15.27%) said it was recommended.

However there is low coverage of HBV Vaccination among Clinical Students with only 27.5% of the respondents have been vaccination which correspond with some student in Europe and Saudi Arabia 74 (61.2%) of the respondents citedhigh cost of vaccination as their reason for not yet receiving the vaccine which corresponds to the findings by Noubiap JJ *et al* in 2013 in Cameroon [13], 40 (33.1%) cited busy schedule as their reason for not receiving vaccine familiar to the findings ofGhomraou FA *et al* [12] in 2016.

13 (10.7%) Sited lack of awareness as their reason for not getting vaccinated which correspond to the finding of Okeke E.N in 2008 [9] Forty four point two percent (22) respondent have received 3 doses, 28.6% (14) received one dose while twenty four point five percent (12) received two doses. Sixty one point two percent (30) had their first vaccination after sexual exposure, 20.4% (10) had theirs voluntarily while 12.2% (6) received their first dose immediately after admission. Forty three point eight percent (13) did not receive due to vaccine due to busy schedule; forty point six percent (13) did not receive due to unavailability while 25% (8) did not receive due to cost. Seventy nine point three percent (96) are willing to receive HBV Vaccine while 19.8% (24) are not sure.

5. Conclusion

There is a wide gap between the awareness of HBV Infection, importance of vaccination against it, the willingness to be vaccinated and the accessibility of the vaccine among clinical students of College of Health Science, Nnamdi Azikiwe University (CHS-NAU), Nnewi campus. This outcome however is different from the result obtained in other parts of world like Europe where there are good policies for childhood vaccination.

Limitation of study

- Unwillingness of participants to respond appropriately to the research or properly fill the questionnaires.
- High financial implication
- Non availability of a previous work on the same subject matter within the locality of my study area for comparative analysis.

Recommendations

- There should be increased awareness of HBV infection and importance of vaccination through the television, radio, and internet media which are among the easiest means of communication to the wider population.
- Policy for infant vaccination against HBV should be enacted and implemented.
- HBV Vaccination should be made mandatory for all health students upon admission or at least upon clinical or laboratory exposure.
- Vaccination should be scheduled for the students so as to prevent lack of vaccination due to a busy schedule.
- HBV vaccination should be made free or affordable and accessible for all.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

Authors declare that there is no competing interest.

Statement of informed consent

The guidelines on research involving the use of human subjects according to Helsinki declaration was adhered to. Online consent was obtained from participants. Participants were allowed to leave the survey at any time they desired. Confidentiality of information was assured, and the survey was anonymous.

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