Original Article

Knowledge and Associated Factors for the Uptake of Hepatitis B Vaccine among Nonmedical Undergraduate Students in a Private University in Ekiti State, Nigeria

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Abstract

Background: Hepatitis B is a life-threatening viral infection that causes acute and chronic diseases of the liver. Hepatitis B infection is endemic in Nigeria with a national pooled prevalence rate of 9.5%. However, a safe and effective vaccine that offers the protection against hepatitis B virus (HBV) is available. **Aim:** This study assessed the knowledge of hepatitis B vaccine and the associated factors for the uptake of the vaccine among non medical undergraduate in a Private University in Ekiti State. **Materials and Methods:** This survey is a cross-sectional study involving 420 nonmedical undergraduate students of a private university in Ekiti State, Nigeria, using a multistage sampling technique. Data were collected using a structured pretested self-administered questionnaire between March and May 2019. Analysis was done using SPSS version 23, and the level of significance was taken as $P < 0.05$. **Results:** The mean age of respondents was 20.3 ± 2.7 years. Almost half of the students (47.4%) were within the age range of 15–19 years. Females constitute 51.4% of the respondents and mostly practiced Christianity (77.4%). The majority of respondents had good knowledge of HBV vaccine (77.6%). Just a little over a quarter (26. 9%) of the respondents have taken one or more doses of hepatitis B vaccine. There was a statistically significant association between respondents' age ($P = 0.032$), the college of study ($P = 0.006$), and good knowledge of HBV vaccine ($P < 0.001$) and uptake of hepatitis B vaccine. The factors associated with uptake of hepatitis B vaccine include older age group (25–29 years), studentship in the college of science, and good knowledge of hepatitis B vaccine. **Conclusion:** The majority of respondents had good knowledge of hepatitis B vaccine. Associated factors identified for uptake of hepatitis B vaccine include age (25–29) years, studentship in faculty of science, and good knowledge of hepatitis B vaccine. It is recommended that health education about hepatitis B and its vaccine should be offered to undergraduates to increase the uptake of hepatitis B vaccine.

Keywords: Hepatitis B, tertiary institution, undergraduate students, uptake, vaccine

Background

Hepatitis B is a life-threatening viral infection that causes acute and chronic diseases of the liver.[1] The World Health Organization estimated that as at 2019, about 269 million people were living with chronic hepatitis B infection with about 1.5 million new infections yearly.[1] Out of these, the African and Pacific regions accounted for about 68% of those infected.[2] Hepatitis B infection is endemic in Nigeria with a national pooled prevalence rate of 9.5%.[3] Left untreated, one in four people living with the virus eventually develop liver problems.[4] Hepatitis B infection can spread from mother to child, through exposure to infected blood and body fluids, and needlestick injuries, including tattoos, piercing, and high-risk behaviours including multiple sexual exposures, drug use, and injections.[1,5] These high-risk behaviours are indulged by adolescents and young adults, including University students.[6] Moreover, about 5% of healthcare-related injections remain unsafe.[2] Hepatitis B virus (HBV) coinfection with human immunodeficiency virus has also been reported, as about 1% of people living with HBV are also infected with HIV.[4] Chronic hepatitis B infection can lead to liver cancer and it

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Table 1: Sociodemographic variables of the students

Variable	Frequency (n=420), n (%)
Age (years)	
15-19	199 (47.4)
20-24	186 (44.3)
25-29	35 (8.3)
Mean±SD	20.3±2.7
Range	15-29
Gender	
Male	204 (48.6)
Female	216 (51.4)
Religion	
Christianity	325 (77.4)
Islam	92 (21.9)
Others	3 (0.7)
Marital status	
Single	414 (98.6)
Married	6 (1.4)
Allowance/month (Naira)	
≤20,000	37 (8.8)
20,000-40,000	216 (51.4)
40,000-60,000	114 (27.1)
60,000-80,000	20 (4.8)
80,000-100,000	21 (5.0)
>100,000	12 (2.9)
Median (IQR)	40,000 (30,000-50,000)
College	
SMS	140 (33.3)
ENG	140 (33.3)
Sciences	140 (33.3)

IQR: Inter-quartile range, SD: Standard deviation

has been estimated that after tobacco, chronic HBV infections are the most important cause of cancer worldwide.[7] However, a safe and effective vaccine that offers 98%–100% protection against HBV is available[1] Vaccination with hepatitis B vaccine has been listed as a strategy to eliminating viral hepatitis by the year 2030.[8] Hepatitis B vaccines have been part of routine immunization for infants in Nigeria, also most of the awareness campaigns and uptake drives and researches have been among health-care workers and medical students, this research will, therefore, serve as a baseline for data and intervention among nonmedical undergraduate students. This study, however, aims to assess the knowledge of hepatitis B vaccine and associated factors for the uptake of hepatitis B vaccine among non medical undergraduates in a private University in Ekiti State, Nigeria.

Materials and Methods

This study was carried out in Afe Babalola University, Ado-Ekiti, a Federal Government-licensed, nonprofit private university in Ado-Ekiti, Ekiti State, South-west, Nigeria. It is located on latitude 7.670929°N and longitude 5.307051°E.[9] The university is bounded by Erinfun village to the South, Ijan and Ago Aduloju communities to the North, the Federal Polytechnic, Ado-Ekiti to the West, and Igbogun community to the East. The University is comprised five colleges: Law, Sciences, Medicine, and Health Sciences, Engineering, and Social and Management Sciences. There are currently 36 departments across the various colleges in the university with 10,684 undergraduate students.

The study was a descriptive, cross-sectional study carried out among 420 registered non medical students of the University to assess the knowledge and associated factors for the uptake of hepatitis B vaccine. Undergraduates who had not spend up to six months in the school and predegree students were excluded from the study. A structured pretested, self-administered questionnaire adopted from earlier published literature[10] was used to collect the data on sociodemographic characteristics, knowledge of hepatitis B vaccine, and uptake of hepatitis B vaccine. Data were collected between March and May 2019.

A multistage sampling technique was used to select the eligible students for the study. In the first stage, three colleges out of the four non medical colleges were selected by simple random sampling. College of Engineering, College of Sciences, and College of Social and Management Sciences were selected. In the second stage, four departments were selected by simple random sampling from the list of departments in each of the three colleges earlier selected in the first stage (12 departments were selected). In the third stage, simple random sampling through the balloting method was used to select one level of study in each of the departments that were selected in stage 2 above and questionnaires were then allocated equally (35 questionnaires allocated to each selected level in the selected departments) to each selected level. In the last stage, at each selected level of the study, the lists of students were collected to serve as the sample frame. The sample frame was then divided with the number of allocated questionnaires to get the sample interval. The first respondent within the sample interval was selected through simple random sampling by balloting while subsequent respondents were chosen by applying the sample interval.

The data collected were analyzed using the IBM SPSS (Statistical Package for the Social Sciences) software version 23. Independent variables were sociodemographic characteristics and knowledge of hepatitis B vaccine whereas the outcome variable was hepatitis B vaccine uptake. Data were represented in percentages and frequency tables. Knowledge of hepatitis B vaccine was assessed based on the frequency of right answers to the knowledge of HB vaccine-based questions vis a vis if they are aware, there is an effective vaccine to prevent hepatitis B infection, if hepatitis B vaccine can be given after exposure to the virus for prevention, if full immunization of adults consists of three doses of hepatitis B vaccine, if hepatitis B vaccine is effective for the treatment of acute hepatitis B infection and if hepatitis B vaccine is recommended for young people

Table 2: Knowledge of hepatitis B vaccine

Variable	Frequency, *n* (%)
There is effective vaccine to prevent HB infection	
Yes	311 (74.0)
No	109 (26.0)
HBV vaccine can be given after exposure to the virus for prevention	
Yes	143 (34.0)
No	277 (66.0)
Full immunization of adults consist of three doses of HB vaccine	
Yes	160 (38.1)
No	260 (61.9)
Full course of HB vaccination may confer lifelong immunity	
Yes	147 (35.0)
No	273 (65.0)
HB vaccine is effective for treatment of acute HB infection	
Yes	54 (12.9)
No	366 (87.1)
HB vaccine can cause problem if given to people already immune to HB infection	
Yes	43 (10.2)
No	377 (89.8)
HB vaccine is recommended for adults who indulged in risky health behaviors	
Yes	260 (61.9)
No	160 (38.1)
Individual vaccinated with HB vaccine may develop HB infection	
Yes	143 (34.0)
No	272 (66.0)
HB vaccine is recommended for all children <18 years	
Yes	273 (65.0)
No	147 (35.0)
HB vaccine is contraindicated in immune compromised people	
Yes	174 (41.4)
No	246 (58.6)

HB: Hepatitis B, HBV: HB virus

Table 3: Assessment of respondents' knowledge of hepatitis B virus vaccine

Variable Knowledge	Frequency (*n*=420), *n* (%)
Good (≥50%)	326 (77.6)
Poor (<50%)	94 (22.4)
Mean score±SD (%)	63.7±21.1

SD: Standard deviation

who indulge in risky behaviours, etc.[10] Ten (10) questions were asked in all and respondents who scored five (5) and above (score ≥50%) were graded as good knowledge while score <5(<50%) was graded as poor knowledge of hepatitis B vaccine. Bivariate analysis was done to assess the relationship between sociodemographic characteristics and knowledge score against the uptake of hepatitis B vaccination. Variables which showed a significant relationship at $P < 0.05$ were entered in the multivariate logistic regression model for analysis. *P* value was predetermined at <0.05 and 95% confidence interval (CI). Ethical clearance for this study was obtained from the Health Research and Ethical Committees of the Federal Teaching Hospital, Ido Ekiti, Ekiti State, Nigeria. Permission was also sought from the university authority to conduct the research among undergraduate students, and informed consent was obtained from the respondents. Confidentiality was ensured through anonymous distribution of the questionnaire.

Results

Sociodemographic characteristics

The mean age of respondents was 20.3 ± 2.7 years. Almost half of the students (47.4%) were within the age range of 15–19 years. Females constitute 51.4% of the respondents and most practiced Christianity as religion (77.4%). Monthly allowance for majority of the students was between 20,000 and 40,000 nairas [Table 1].

Knowledge on hepatitis B vaccine

The majority of respondents had good knowledge of HB vaccine (77.6%) [Table 2 and 3].

Self-reported uptake of Hepatitis B Vaccine

Only about a quarter of the respondents have taken one or more doses of hepatitis B vaccine. Among those who had received vaccination, about half (49.6%) had received three doses, 29.2% received two doses while the remaining 21.2% received only one dose [Table 4].

Factors associated with hepatitis B vaccine uptake

There was a statistically significant association between respondents' age ($P = 0.032$), the college of study ($P = 0.006$), and good knowledge of HBV vaccine ($P < 0.001$) and uptake of hepatitis B vaccine [Table 5].

Predictors of hepatitis B vaccine uptake

Binary logistic regression analysis showed that students in the age group of 25–29 years were about three times more likely to take hepatitis B vaccine than those in the age group of 15–19 years (adjusted odds ratio [AOR] 2.627 95% CI (1.180–5.851) ($P = 0.018$) students in the College of Sciences were twice more likely to take the vaccine than those in Engineering (AOR 2.054 95%CI (1.165–3.621) ($P = 0.013$) also students with good knowledge of HBV vaccine (*P* value 0.02, AOR 1.086, 95%CI (1.48–5.926) were about three times more likely to take the vaccine than those with poor knowledge of HBV vaccine [Table 6].

Discussion

The majority of respondents had good knowledge of HBV vaccine (77.6%). This result differs from that of study

Table 4: Self-reported hepatitis B vaccine uptake

Variable	Frequency, *n* (%)
Did you receive HBV vaccine? (*n*=420)	
Yes	113 (26.9)
No	307 (73.1)
Number of doses taken (*n*=113)	
1	24 (21.2)
2	33 (29.2)
3	56 (49.6)

HB: Hepatitis B, HBV: HB virus

Table 5: Association between demographic variables, knowledge of hepatitis B vaccine and uptake of hepatitis B virus vaccination

Variable	Uptake of HBV vaccine			χ^2	*P*
	Yes, *n* (%)	No, *n* (%)	Total		
Age (years)					
15-19	51 (25.6)	148 (74.4)	199	6.908	0.032*
20-24	46 (24.7)	140 (75.3)	186		
25-29	16 (45.7)	19 (54.3)	35		
Gender					
Male	47 (23.0)	157 (77.0)	204	3.014	0.083
Female	66 (30.6)	150 (69.4)	216		
Religion					
Christianity	89 (27.4)	236 (72.6)	325	1.112^{Y}	0.572
Islam	22 (23.9)	70 (76.1)	92		
Others	2 (66.7)	1 (33.3)	3		
Marital status					
Single	112 (27.1)	302 (72.9)	414	0.224^{Y}	0.636
Married	1 (16.7)	5 (83.3)			
Allowance					
≤20,000	15 (40.5)	22 (59.5)	37	4.005	0.549
20,000-40,000	54 (25.0)	162 (75.0)	216		
40,000-60,000	30 (26.3)	84 (73.7)	114		
60,000-80,000	5 (25.0)	15 (75.0)	20		
80,000-100,000	6 (28.6)	15 (71.4)	21		
>100,000	3 (25.0)	9 (75.0)	12		
College					
SMS	28 (20.0)	112 (80.0)	140	10.339	0.006*
ENG	34 (24.3)	106 (75.7)	140		
Sciences	51 (36.4)	89 (63.6)	140		
Knowledge of HB vaccine					
Good	102 (31.3)	224 (68.7)	326	14.232	<0.001*
Poor	11 (11.7)	83 (88.3)	94		

*P<0.05, ^{Y}Yates corrected Chi-square. χ^2: Chi square test, HB: Hepatitis B, HBV: HB virus

conducted among medical students in Abakaliki, Ebonyi State, Southeast Nigeria,[11] where a good knowledge of hepatitis B vaccine was 100%. This difference is likely due to the exposure of medical students to information HBV and its vaccine. This finding implies the need for regular health education sessions on HBV and its vaccine among university students.

This study showed that about a quarter of the respondents had taken one or more doses of hepatitis B vaccine. These results differ from studies conducted in Ghana,[12] Kampala, Uganda,[13] and Kenya[14] where higher uptake of hepatitis B vaccine was reported. Among those who had received vaccination in this study, about half (49.6%) had received three doses, 29.2% received two doses while the remaining 21.2% received only one dose. A previous study conducted among public health students in Ghana reported that 30.5% of respondents received three doses of vaccine, 13.7% received incomplete doses while 55.8% of respondents were unvaccinated.[15] The difference in results of these studies and our study could be explained with active hepatitis B vaccination programs in the Medical Schools where the studies were conducted.

This study also identified factors associated with uptake of hepatitis B vaccine to include undergraduate students within the age group of 25–29 years. This result was similar to that which was reported by a cross-sectional study conducted in Ghana[12] where ages 26 and above were identified as a factor for vaccination with hepatitis B vaccine. This might be due to the increased sense of responsibility that comes with increasing age. This result may also imply the need to consider age in interventional programs for hepatitis B vaccine among undergraduates. This study also identified studentship in the College of Science as a factor associated with uptake of hepatitis B vaccine. This might be because the students in the College of Science were likely more exposed to Biology and Virology courses[9] where they had more information about HBV and the vaccine. College of study was similarly reported in previous study conducted among university undergraduates in Uganda,[13] as a factor for hepatitis B vaccine uptake. Good knowledge of HBV vaccine was also identified as another factor associated with hepatitis B vaccine uptake in this study. This finding is supported by the report of another study conducted in Juba city, South Sudan,[16] where the knowledge of HBV prevention through vaccination was identified as a predictor of hepatitis B vaccine uptake. This result implies the need for increase knowledge of HBV vaccine through health education intervention as a strategy to increase the uptake of hepatitis B vaccine among undergraduates.

Conclusion

The majority of respondents had good knowledge of hepatitis B vaccine. Associated factors identified for uptake of hepatitis B vaccine include age (25–29) years, studentship in faculty of science, and good knowledge of hepatitis B vaccine. It is recommended that health education about HBV and its vaccine should be offered to undergraduates so as to increase uptake of hepatitis B vaccine.

Limitation

Uptake of hepatitis B vaccine was self-reported, therefore may be subjected to recall bias.

Table 6: Predictors of uptake of hepatitis B virus vaccination using binary logistic regression

Variable	*B*	*P*	AOR	95% CI	
				Lower	Upper
Age (years)					
15-19[REF]					
20-24	-0.102	0.686	0.903	0.550	1.481
25-29	0.966	0.018*	2.627	1.180	5.851
College					
SMS[REF]					
ENG	0.392	0.218	1.480	0.793	2.761
Sciences	0.720	0.013*	2.054	1.165	3.621
Knowledge					
Poor knowledge[REF]					
Good knowledge	1.086	0.002*	2.963	1.481	5.926

*$P<0.05$. *B*: Coefficient of regression, CI: Confidence interval, AOR: Adjusted odds ratio

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Conflicts of interest

There are no conflicts of interest.

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