



HEPATITIS B VACCINATION STATUS AND KNOWLEDGE OF HEPATITIS B VIRUS INFECTION AMONG STUDENTS OF A TERTIARY INSTITUTION IN NIGERIA

Otaigbe II^{1,2*}, Oluwole TO^{1,2}, Shonekan O¹, Okangba C¹, Nwadike VU¹, Tayo B¹, Omeonu AC¹, Akeredolu AA¹, Opabola TE¹, Anwojue AT¹, Ogungbo ZO¹, Uduma SO¹, Ketebu BW¹, Ucheobi IP¹, Olisa E¹, Elikwu CJ^{1,2}

¹ Department of Medical Microbiology and Parasitology, Benjamin (S) Carson (Snr) College of Health and Medical Sciences, Babcock University, Ilishan-remo Ogun State, Nigeria

² Department of Medical Microbiology and Parasitology, Babcock University Teaching Hospital, Ilishan-remo, Ogun State, Nigeria

***Corresponding author:** Idemudia Imonikhe Otaigbe, **Email:** otaigbei@babcock.edu.ng

Abstract

Introduction: Hepatitis B virus (HBV) infection is a global health concern, which accounts for about 2 billion infections worldwide, including 360 million chronic infections. It is, however, vaccine preventable. Sadly, in many low- and middle-income countries, vaccine uptake is low, particularly among health workers, who are at a potential risk of occupational exposure to infection. The aim of this study, therefore, was to determine the HBV vaccination status and knowledge of HBV infection among medical students in Babcock University.

Methods: This was a descriptive, cross-sectional study among medical students, in a private university, in Nigeria. Structured-questionnaires were administered to the participants, to obtain their bio-demographic characteristics, knowledge of HBV infection and HBV vaccine status.

Results: One hundred and twenty-six medical students were recruited into the study of which 29 (23.3%) were males and 97 (77.0%) were females. About 81 (64.3%) of the participants had been vaccinated against HBV infection. Also, 119 (94.4%) of the participants had a good knowledge of HBV and 123 (97.6%) of the participants knew of the modes of transmission of HBV.

Conclusion: The study shows a low HBV vaccination status and a high level of knowledge of HBV infection among the students. There is a need to continuously educate medical students and healthcare workers about HBV and the importance of being vaccinated.

Keywords: Hepatitis B virus, Vaccination, Students

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INTRODUCTION

The Hepatitis B Virus (HBV) is a DNA virus which consists of a viral core plus an outer surface coat.¹ Within the core is circular double-stranded DNA and DNA polymerase. HBV replicates within the nuclei of infected hepatocytes.¹ Infection with Hepatitis B may be acute or chronic.¹ Acute infections may resolve or progress to chronicity.¹ The major complications of chronic HBV infections are liver cirrhosis and hepatocellular carcinoma.² About 2 billion people are infected globally of which 360 million people are chronically infected.³ However the highest burdens of infection are found in the WHO Western Pacific Region and the WHO African Region, where 116 million and 81 million individuals, respectively, are chronically infected.²

The virus is transmitted by percutaneous and per mucosal exposure to infected body fluids such as blood, semen and vaginal fluids.⁴ It is also transmitted from mother to child at birth.⁴ Hepatitis B virus infection is however a vaccine preventable disease and concerted efforts must be made by governments to ensure coverage and uptake of the vaccine.⁴ Sadly the uptake of the HBV vaccine is low particularly in parts of the world (e.g., Africa) with high burdens of infection.^{5,6} Health workers have also been found to have low HBV vaccine uptake and this feature is also prevalent in trainee health workers such as medical students.⁶⁻⁸ Healthcare workers, including medical students are at significant risk of acquiring HBV infection due to occupational exposure and HBV vaccination is therefore necessary to prevent HBV infection.⁶⁻⁸ The aim of this study, therefore, was to determine the Hepatitis B vaccination status and knowledge of HBV infection among medical students in Babcock University.

MATERIAL AND METHODS

This is a descriptive cross-sectional study to determine the HBV vaccine status and knowledge of HBV infection among medical students in Babcock University. Informed consent was obtained from study participants and subsequently interview-based questionnaires were used to obtain data from study participants. The study was conducted from October 2022 to February 2023 at the Benjamin S. Carson (Snr) College of Health & Medical Sciences in Babcock University, a Seventh-day Adventist tertiary institution located in Ilishan-Remo, Ogun State, Nigeria. The school has a total population of about 700 medical students. All medical students (from 100 level to 600 level) in Benjamin S. Carson (Snr) College of Health & Medical Sciences, Babcock University who consented to participate in the study were recruited.

A sample size of 126 participants was used in the study. The sample size was calculated using the following formula: $N = Z^2 \frac{pq}{d^2}$ [9]

Where N = Sample size

p = Prevalence of Hepatitis B virus infection in Nigeria: 8.1% [10]

Z = Critical value at 95% confidence level, set at 1.96

q = 1-p

d = Precision, usually 5%

$$N = \frac{1.96^2 \times 0.081 \times 0.919}{0.05^2} = 114.4$$

A minimum sample size of 120 was used in the study to account for loss to follow up.

A consecutive sampling method was used to recruit study participants who fulfilled the study's inclusion criteria until the sample size was attained. Informed consent was obtained from study participants and subsequently interview-based questionnaires were used to obtain data from study participants. Data obtained included socio-demographic data, HBV vaccination status and knowledge of HBV infection. Data analysis was done using IBM SPSS software version 20.0. Descriptive statistics were used to analyze results based on the vaccination status of the study participants. Data were summarized as frequencies and percentages in tables.

RESULTS

The study involved a total of 126 medical students from levels 100 to 600 in Benjamin S. Carson (Snr) College of Health & Medical Sciences, Babcock University. There were 29 (23.3%) males and 97 (77.0%) females in the study. The mean age was 20.98 ± 1.73 years. There was a female preponderance with a M:F ratio of 1:3.3 (Table I). All participants were single and 122 (96.8%) of them were Christians (Table I). About 81 (64.3%) of the study participants had received HBV vaccination (Table II). About 119 (94.4%) of the respondents had heard of HBV infection. About 123 (97.6%) of the participants knew the modes of transmission of the virus. (Table II). In addition, 98 (77.8%) of the respondents were confident of their knowledge regarding HBV infection and prevention and 106 (84%) of the respondents were aware that regular screening of HBV infection exists (Table II). Also, 74 (58.7%) of the participants were aware of the risk of exposure to HBV prior to starting medical school. About 69 (54.8%) of the study participants had been previously screened for Hepatitis B virus infection.

Table I: Socio-demographic characteristics of study participants

Characteristics			Frequency n=126 (%)
1. Age	15-20 years		68 (54.0)
	21-25 years		58 (46.0)
2. Sex	Male		29 (23.0)
	Female		97 (77.0)
3. Marital Status	Married		0 (0.0)
	Single		126 (100.0)
4. Religion	Christianity		122(96.8)
	Islam		4 (3.2)
	Other		0 (0.0)

TABLE II: knowledge of hepatitis B virus infection and hepatitis B vaccination status

Questions	Yes n=126 (%)	No n=126 (%)
Have you ever heard of Hepatitis B virus?	119 (94.4)	7 (5.6)
Do you know the mode of transmission of the virus?	123 (97.6)	3 (2.4)
Are you aware of mother to child transmission of the virus?	123 (97.6)	3 (2.4)
Are you aware of transmission via sexual contact?	123 (97.6)	3 (2.4)
Are you confident about your knowledge regarding HBV infection and prevention?	Very confident Not sure I don't know	98 (77.8) 9 (7.1) 19 (15.1)
Is there regular screening of HBV infection?	Yes No I don't know	106 (84.1) 9 (7.1) 11 (8.7)
Are preventive measures taken when an HBV positive individual is identified?	Yes No I don't know	120 (95.2) 0 (0.0) 6 (4.8)
Before entering medical school, were you aware of the risk of exposure to Hepatitis B virus?	74 (58.7)	52 (41.3)
Ever screened for Hepatitis B virus infection?	69 (54.8)	57 (45.2)
Ever vaccinated against hepatitis B virus?	81 (64.3)	45 (35.7)

DISCUSSION

The study revealed that 64.3% of the participants had been vaccinated. This is higher than a study done in the Democratic Republic of Congo where 6.7% of respondents had been vaccinated.¹¹ It is also higher than studies done in Ethiopia,¹² Cameroon,¹³ and Somalia⁸ where 5.8%, 26.5% and 2.8% of medical students respectively had been vaccinated. In addition, it is also higher than previous studies conducted in Nnewi,¹⁴ Lagos,¹⁵ and Jos¹⁶ where 35.6%, 2.6% and 60.2% of medical students had received at least one dose of the HBV vaccine. It is however lower than studies done in Kenya⁶ and Port Harcourt¹⁷ where 85.8% and 85.4% of medical students were vaccinated.

The low HBV vaccine status recorded in this study among the participants is a matter of concern as they are at a high risk of occupational exposure to HBV infection.¹⁸ Previous studies have identified several barriers to HBV vaccination among medical students. These barriers include unavailability of the HBV vaccine, high costs of the vaccine, distrust in the quality of the

vaccine, a fear of side effects following HBV vaccination and a lack of training regarding Infection Prevention and Control (IPC) Protocols.^{6, 8, 12, 18, 19} For example a study done in Kenya showed that the poor HBV vaccination rate among medical students was due to unavailability of the vaccine.⁶ Also in a study conducted among medical students in Port Harcourt, Nigeria 30.4% of the respondents stated lack of time as being responsible for not taking the vaccine while 21.8% and 17.4% were unprepared and afraid of side effects respectively.¹⁷

About 94.4% of study participants had heard of hepatitis B infection. This is higher than previous studies done in Oman, Enugu (Nigeria), Saudi Arabia, Syria and Nepal where 84.8%,²⁰ 68.2%,²¹ 62.0%,²² 92%,²³ and 87.3%²⁴ of respondents respectively had heard about the disease. It is also higher than studies done in Benin City²⁵ and Uturu,²⁶ both in Nigeria, where 65.7% and 75.7% respectively had heard about HBV infection.

In this regard it is strongly recommended that concerted efforts should be made to scale up hepatitis B virus vaccination among medical students.¹⁷ It is important to continuously provide health education to medical students regarding the need for vaccination against Hepatitis B virus infection.¹⁸ Examples of health education events include student weeks, grand rounds and student magazines to disseminate knowledge about the importance of HBV vaccination to students. In addition, students should be taught infection prevention and control protocols to prevent acquisition or transmission of the Hepatitis B virus and other pathogens.¹⁹ Other suggestions would be to curb barriers to HBV immunization such as financial and geographic barriers by ensuring that the HBV vaccine is always available, affordable or preferably free.^{6, 27-29}

Limitation

The limitation of this study is that barriers to vaccination were not identified. Future studies are therefore recommended to identify salient barriers to hepatitis B vaccine uptake among medical students. Such studies will provide useful evidence to guide policy and practice regarding scaling up hepatitis B vaccine uptake among medical students and health workers in general.

Conclusion

This study has shown a low HBV vaccination uptake among the study participants. In contrast the study participants had a high knowledge of HBV infection. There is a need to conduct further studies to identify barriers to hepatitis B vaccination among medical students as findings from such studies will guide the design of strategies to improve HBV vaccine uptake among the study participants and health workers.

Conflict of interests: None

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Ethical approval: Ethical approval for this study was obtained from Babcock University Health Research and Ethics Committee



(BUHREC). Informed consent was obtained from study participants and privacy and confidentiality of patients' data were protected in accordance with the Declaration of Helsinki.

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