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Perception of Medical Students towards Hepatitis B Virus Infection and Hepatitis B Vaccination in a Private Tertiary Hospital in Jos North Local Government, Plateau State, Nigeria

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Abstract

Background: Prevention is one of the safe schemes against the high prevalence of viral Hepatitis. Negative perceptions or perceptions about the risks of hepatitis B among medical students and health care workers may influence the behavioral pattern and adoption of preventive measures against the virus and can affect the uptake of the Hepatitis B vaccine. This study assesses the perception of medical students towards Hepatitis B virus infection and Hepatitis B Vaccination in a Private Tertiary Hospital in Jos North Local Government, Plateau State, Nigeria. **Methods:** This was a descriptive cross-sectional study done in August 2021 among 236 clinical medical students using a multistage sampling technique. Data was collected using an interviewer-administered structured questionnaire and analysed using the IBM SPSS 28 (Statistical Package for the Social Sciences). Ethical approval was granted by Bingham University Teaching Hospital, Ethics Committee, Jos, Plateau State. **Results:** Two-thirds of respondents were of the opinion that they are at risk of contracting HBV. Half were of the opinion that the risk is very much while a third believed the risk is moderate. Among those who think they are not at risk of contracting HBV, the majority felt so because they are vaccinated while 10.3% believe that they are safe. 43.2% of respondents think that HBV Vaccine is very effective in preventing HBV infection while 39.8% think it is slightly effective, and 7.6% think it is not effective. Almost all respondents, 99.2% are of the opinion that HBV Vaccination is important for students while 0.8% think it is not important. The majority of the respondents at 95.8% were willing to be screened for HBV. The majority (85.6%) of respondents are willing to pay for HBV Vaccine as against 14.4% of respondents who are not

willing to pay. **Conclusion:** Summarily, 21 (8.9%) of the students had a negative perception of Hepatitis B Vaccination, and 215 (91.1%) had a positive perception of Hepatitis B Vaccination. Perception-sustaining events like seminars, workshops, road shows, and campaigns should be organized among students and health workers.

Keywords

Perception, Hepatitis B Virus Infection, Hepatitis B Vaccination, Medical Students

1. Introduction

Hepatitis B viral disease is a preventable disease, with worldwide public health significance [1] [2]. The disease mainly affects the liver and typically presents as jaundice, fatigue, loss of appetite, nausea and/or abdominal pain [3]. An infection with the virus often leads to acute to chronic infections [1] [2]. Hepatitis B virus is commonly transmitted from mother to child around the perinatal period, it is also transmitted through unprotected sex, infected unscreened blood products, unsafe use of needles, and injection drug use [4]. Hepatitis B virus infection takes a toll on individuals, communities and health systems [5]. Vaccination is the mainstay of prevention against Hepatitis B infection with 90% - 100% protection given following complete vaccination [2] [6]. World Health Organization (WHO) recommends that students and health workers should be given special consideration regarding screening and vaccination for Hepatitis B virus infection because they directly come in contact with patient's body fluid and blood and also deal with blood transfusion and surgical instruments during procedures [2] [6].

Hepatitis B virus vaccination is a key strategy in the prevention of HBV infection and this infection remains an occupational hazard to health care workers and students, so their belief, particularly regarding the safety and efficacy of the vaccine will influence their decision to accept or reject the vaccination [7]. Most public health actions among people are dependent on their attitudes and perception, thus it's important to understand and assess this belief in order to determine their willingness or not to accept the proposed intervention. There is also an assumption that high health literacy level is associated with better health behaviour, but health care professionals have not always shown a health behaviour that is aligned with their health literacy level [8].

Prevention is one of the safe schemes against the high prevalence of viral Hepatitis. Negative attitudes or perceptions about the risks of hepatitis B among medical students and health care workers may influence the behavioral pattern and adoption of preventive measures against the virus and can affect the uptake of the Hepatitis B vaccine [9].

It is important to know the perception of the risk of contracting Hepatitis B

virus and the consequent disease and complications among health care workers and medical students who are in training. For those who do not perceive any risk of getting infected with the virus, there is a need to identify reasons for this feeling and review what preventive measures are in place to substantiate this perception. This study also elucidates the perception of students on the effectiveness and importance of the hepatitis vaccine. Generally, only a positive belief in the efficacy and effectiveness of a vaccine will propel a user to take the hepatitis B vaccine. Similarly, the next step is to determine if the user is willing to pay for the vaccine and then the cost of getting the vaccine. These important variables are essential to vaccine uptake and access. The right perception towards embracing the preventive strategies against hepatitis is to be willing to go for a Hepatitis screening in any health care centre offering the services.

This set of actions starting from a positive attitude and perception is essential in reducing the prevalence of Hepatitis B infection globally and in our communities.

The prevalence of Hepatitis B virus infection varies, depending on a number of factors that include the geographical region, host factors as well as other environmental/behavioural factors. A great percentage of areas of North America have a low prevalence (<2%). The low occurrence could be ascribed to the high standard of living in these areas with a high proportion of Asian immigrants and Alaskan and Canadian native populations. Rates as high as 5% - 15% of chronic Hepatitis B virus or prevalence of Hepatitis B surface Antigen (HBsAg) positivity are found [10]. The average prevalence rate of Hepatitis B infection in Nigeria ranges between 11% and 13.7% [11]. Approximately, 19 million Nigerians are chronically infected, there is no male or female predilection with both sexes almost equally affected, but young adults have been found to have a higher prevalence of infection [11].

The approximated population prevalence of chronic Hepatitis B virus in Nigeria is high and adds to the importance of protecting health care workers who provide clinical care [12]. A study reported that 8.7% of the source of occupational exposure to body fluids was positive for Hepatitis B surface Antigen (HBsAg) at a tertiary referral centre in Nigeria [13].

This study looks at the perception of medical students towards Hepatitis B virus infection and Hepatitis B Vaccination in a Private Tertiary Hospital in Jos North Local Government, Plateau State, Nigeria.

2. Materials and Methods

The study was carried out in Jos North Local Government Area which has a number of Health Facilities which include primary, secondary and tertiary facilities (this includes Jos University Teaching Hospital (owned by the Federal Government of Nigeria), Plateau State Specialist Hospital (owned by the Plateau State Government) and Bingham University Teaching Hospital (a faith-based one owned by Evangelical Church Winning All—ECWA) [14] [15] [16]. Jos North

Local Government Area is one of the seventeen local Government areas in Plateau state and it is mainly metropolitan [14]. It was created in 1987 and extends over an area of over 291 km/sq with a population of 429,300, projected from the 2006 national population and housing census [14]. Jos North Local Government areas share boundaries to the North with Toro LGA Bauchi State, to the East with Jos East LGA, to the West with Bassa LGA and to the South with Jos South LGA [14]. The LGA has 20 political wards and consists of diverse ethnic groups, which include Berom, Annaguta, Mwaghavul, Rukuba, Irigwe and Ngas as the major ethnic groups, while the others are Hausa, Fulani, Yoruba, Igbo and other minorities. Civil service, Farming, Small scale businesses are the predominant occupations. Christianity and Islam are the two most commonly practiced religions in the area [14] [15] [16].

The study was carried out in Bingham University Jos Campus, Plateau State, Nigeria. Bingham University is a private University owned by Evangelical Church Winning All (ECWA), established in 2005. The University has two Campuses; the main Campus located in New Karu, Nasarawa state and the Jos Campus, where the College of Medicine and Health Science is located.

The study was a descriptive cross sectional study done between March and August 2021 among undergraduate Medical Students in the clinical faculty of the College of Medicine and Health Science of Bingham University using a structured self-administered questionnaire. The study included clinical medical students from 400 - 600 level and excluded those clinical medical students who did not give consent. And those who were not present as at the time the study was done.

A sample size of 236 was calculated using the Cochrane equation [17]. $n = z^2pq/e^2$, n = minimum sample size; z = standard normal deviation at 95% Confidence interval = 1.96; p = proportion of the population having the characteristics of interest (obtained from reviewing of data from a similar study done) = 83.2% [8]; $q = 1 - p$; d = level of precision which is usually 0.05. The calculated minimum sample size was 215. A non-response rate of 10% was added, hence the final value is 236. Thus, 236 medical students were selected in this study.

Multistage sampling technique was employed in the selection of study participants.

Stage 1—of the three Tertiary hospitals in Jos North, Bingham University was selected using simple random sampling. The list of Tertiary hospitals served as the sampling frame.

Stage 2—Selection from each class was done using Proportional allocation based on size of the class using the formula:

$$\text{Proportion}(p) = \frac{\text{number of students in each class}(n)}{\text{Total number of students in BHUTH}(t)} \times \text{sample size}$$

Every person from the class to be studied was assigned a number and using Simple Random Sampling (balloting).

Data was collected using a pretested structured questionnaires containing

question on respondents, perception of risk of contracting Hepatitis B virus, reasons for not perceiving any risk (risk was categorized as no risk, mild risk, moderate risk and severe risk), perception of students on the effectiveness and importance of the hepatitis vaccine. Data collected was analyzed using Statistical Package for Social Sciences (SPSS) version 20. After entry, data was analyzed and results were presented using frequency tables and charts.

Ethical approval was granted by the Bingham University Teaching Hospital health research and ethics committee. The management of the teaching hospital granted approval to conduct the research. Informed consent was obtained from each participant and each signed the consent form attached to the questionnaire. Participants were informed that they can opt out of the study at any time, no harm will result from their responses. And confidentiality was respected throughout data collection. Questions will be labeled with number and not names or contacts of respondents to ensure anonymity.

3. Results

A total of 236 medical students participated in this study.

Table 1 shows respondents perception of risks of contracting HBV. 66.9% of respondents are of the opinion that they are at risks of contracting HBV while 33.1% of respondents are of a contrary opinion.

Among the respondents that believe Hospital activities exposes them to the risks of contracting HBV, 50.0% are of the opinion that the risk is very much (severe risk) while 36.8% believe the risk is moderate and 10.8% think that their risk is mild. 1.2% feel they are not exposed while the remaining 1.2% do not know if they are at risk as shown in Table 1.

Table 1. Respondents perception of risk of contracting HBV.

Are at Risk of Contracting HBV?	Frequency	Percent (%)
Yes	158	66.9
No	78	33.1
Total	**236**	**100.0**
Risk of Contracting HBV from Your Hospital Activities	**Frequency**	**Percent (%)**
No Risk	2	1.2
Mild Risk	17	10.8
Moderately Risk	58	36.8
Severe Risk	79	50.0
I Don't Know	2	1.2
Total	**158**	**100.0**
Reason for Not Perceiving Risk of HBV Infection	**Frequency**	**Percent (%)**
Vaccinated	70	89.7
I am safe	8	10.3
Total	**78**	**100.0**

Among the respondents that think they are not at risk of contracting HBV, 89.7% believe it is because they are vaccinated while 10.3% believe that they are safe.

Table 2 shows 43.2% of respondents think that HBV Vaccine is very effective in preventing HBV infection while 39.8% think it is slightly effective and 9.3% do not know how effective the Vaccine is. However, 7.6% think it is not effective.

Among the respondents, 99.2% are of the opinion that HBV Vaccination is important for Medical students while 0.8% think it is not important. Majority of the respondents at 95.8% are willing to be screened for HBV, while 4.2% of the respondents are not willing to be screened for HBV. Table 2 illustrates that 85.6% of respondents are willing to pay for HBV Vaccine as against 14.4% of respondents who are not willing to pay.

Table 3 shows that 21 (8.9%) of the students had a negative perception towards

Table 2. Perceived effectiveness, importance of HBV Vaccine, willingness to screen for Hepatitis virus and willingness to pay for vaccination.

Perception on Effectiveness of HBV Vaccine	Frequency	Percent (%)
Not Effective	18	7.6
Slightly Effective	94	39.8
Very Effective	102	43.2
I Don't Know	22	9.3
Total	**236**	**100.0**
Perceived Importance of HBV Vaccine for Medical Students	**Frequency**	**Percent (%)**
Important	234	99.2
Not Important	2	0.8
Total	**236**	**100.0**
Willingness to go for HBV Screening	**Frequency**	**Percent (%)**
Willing	226	95.8
Not Willing	10	4.2
Total	**236**	**100.0**
Willingness to Pay for HBV Vaccination	**Frequency**	**Percent (%)**
Yes	202	85.6
No	34	14.4
Total	**236**	**100.0**

Table 3. Perception towards Hepatitis B Vaccination.

Perception towards HBV Vaccination	Frequency	Percentage (%)
Negative Perception	21	8.9
Positive Perception	215	91.1
Total	**236**	**100.0**

Hepatitis B Vaccination, 215 (91.1%) had positive perception towards Hepatitis B Vaccination.

4. Discussion

The perception of medical students was assessed by evaluating the responses to the risk of contracting HBV, effectiveness of vaccine in preventing HBV infection, importance of HBV Vaccination for medical students, screening before vaccination and willingness to pay for HBV Vaccine. In this study, over a third (66.9%) of medical students felt they were at risk of contracting HBV infection and is in line with the finding that 91.1% of them had a positive perception of vaccination as a preventive strategy. This is a positive perception, because it keeps the student on guard about the infection and makes them take the necessary precautions. Majority of respondents had a good perception towards HBV Vaccination. Similarly, a study done in Thailand showed, the Thai students had good perceptions towards the Hepatitis vaccine [18]. The perception was also good at 81.7%, in Ethiopia [19]. This could be attributed to most medical students feeling they are at risk of contracting HBV infection from activities carried out in the hospital. Good perception is key towards adopting healthy behaviour and preventive strategies.

In this study, it was found that 43.2% of respondents believed that HBV Vaccine is very effective in preventing HBV infection. Another study done in Northern Nigeria showed that there was a positive perception of health care workers; 91.2% saw the need to be vaccinated, 82.8% considered it was necessary and safe, while 67.6% trusted its efficacy. About 84.8% deemed it necessary for all health care workers to be vaccinated and 89.2% felt that more health care workers would agree to be vaccinated if it were provided for free [20].

The risk perception of contracting HBV infection was evaluated; it was seen that 33.5% of respondents believe that activities in the hospital expose them to the risk of contracting HBV infection. The reason for not perceiving risk of contracting HBV in this study was seen to be that majority of the respondents had been immunized against HBV infection. A good number of respondents think that HBV Vaccine is very effective and important in preventing HBV infection while less than 10% think it is not effective. Similar finding was seen in a study conducted in Jos, Nigeria, where the respondents risk perception of HBV infection was slightly higher (40.7%) [21].

Willingness to screen is a critical attribute required for reducing the burden of hepatitis B in the community. This study shows that majority of the respondents were willing to be screened for HBV and a similar proportion were willing to pay for the vaccine if made available. Public health interventions can leverage on the willingness of this group of people to pay for the vaccine services to make sure we have a 100 percent coverage of all health workers and those who have contact with patients or work around the hospital space. Hepatitis B Vaccination can be made an occupational health benefit for health workers, interns and students. It

can be made mandatory to reduce the burden of the disease. This study was based on self-report and depended on the truthfulness of the respondents.

5. Conclusions

Two-thirds of respondents are of the opinion that they are at risk of contracting HBV. Half were of the opinion that the risk is very much while a third believed the risk is moderate. Among those who think they are not at risk of contracting HBV, the majority felt so because they are vaccinated while 10.3% believed that they are safe.

43.2% of respondents think that HBV Vaccine is very effective in preventing HBV infection. Almost all students were of the opinion that HBV Vaccination is important and effective. The majority were willing to be screened for HBV, and were willing to pay for HBV Vaccine. Generally, nine in ten had a positive perception towards Hepatitis B Vaccination.

6. Recommendations

To the Students

Perception-changing and sustaining events like seminars, workshops, road shows, and campaigns among students and health workers will be helpful in increasing the proportion of students with positive perceptions towards Hepatitis B Vaccination.

To the Government

The government should leverage on the willingness of students to pay for hepatitis vaccines and support the availability of these vaccines in the right formulations and dosage. Setting up testing and vaccination centres will be helpful in improving perceptions and attitudes. Routine availability and administration of Hepatitis vaccine to all those who work within the hospital space should be explored. This can be part of an occupational health intervention for health workers, interns and students and visitors.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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