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[Research Article]

Assessment of General Knowledge and Perceived risk of contracting Hepatitis B Among Health Care workers in Ahmadu Bello University Medical Center, Samarun Zaria, Nigeria.

Ado Shehu[1*], Yunusa A[2], Benjamin Gambo[2], Sagir Magaji[2] , Usman Sanusi Usman[3], Yusuf Abdu Misau[3], Attahir Sa'ad Ayuba[4], Ummukulsum Mustapha[5], Aliyu Muhammad Maigoro[6], [1]Fatima Zubairu Yakubu, Jama D Medan[7], Adamu Alhaji[8], Khadija Abdullahi Kobi[8]

[1]Department of Nursing Sciences, Faculty of Allied Health Sciences Abubakar Tafawa Balewa University Bauchi State, Nigeria [2]Department of Nursing Science, Faculty of Allied Health Ahmadu Bello University Zaria, Kaduna State, [3]Faculty of Allied Health Sciences, College of Medical Sciences, Abubakar Tafawa Balewa University Bauchi State, Nigeria [4]Department of Pharmaceutical Sciences, Sardar Patel University, India, [5]Department of Nursing Sciences, Faculty of Basic Medical Sciences Khadija University Majia, [6]Department of Community Medicine, Federal University Dutse, Jigawa State, Nigeria, [7]Maitama Hospital Abuja. Department of Nursing, Federal University of Health Sciences Azare.

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Abstract:

Hepatitis B virus (HBV) vaccination is proven to offer 90%–100% protection in individuals who generate adequate antibody responses. In light of this, the World Health Organization (WHO) has recommended routine HBV vaccination, particularly for high-risk populations such as healthcare workers (HCWs), to mitigate the risk of infection. Nigeria has developed national guidelines for the prevention, care, and treatment of HBV and hepatitis C virus (HCV), incorporating HCW vaccination as a key preventive strategy within healthcare environments. Despite being a readily identifiable group for targeted vaccination efforts, HCWs often exhibit suboptimal compliance with vaccination protocols due to various influencing factors. This study aimed to assess the general knowledge, perceived risk of HBV infection, vaccination status, and overall risk perception among HCWs at Ahmadu Bello University Medical Center, Samaru, Zaria. A non-experimental, descriptive research design was employed, utilizing self-developed questionnaires administered face-to-face to 80 purposively selected participants. Data obtained were analyzed using IBM SPSS version 24 and results were presented in tabular format.

The results reveal that all respondents had prior knowledge of Hepatitis B, understood it was caused by a virus, and recognized vaccination as a key preventive measure. A majority also identified modes of transmission such as needle pricks, contaminated instruments, unscreened blood transfusion, body fluid contact, and unprotected intercourse. About 95% of participants knew the infection could be treated. The perceived risk of contracting Hepatitis B among HCWs was high, with an aggregate mean score of 3.525, indicating strong awareness of occupational vulnerability. Therefore, the government and non-governmental organizations should organize workshops and seminars to deepen HCWs' understanding and promote complete vaccination.

Keywords: Hepatitis B Virus (HBV), Healthcare Workers, Knowledge Assessment, Risk Perception, Vaccination Uptake, Infection Prevention.

* Corresponding Author: Ado Shehu
Email: sado@atbu.edu.ng

Introduction:

Hepatitis B virus (HBV) infection remains a significant public health concern, particularly among healthcare workers (HCWs) who are frequently exposed to blood and body fluids. Despite the availability of an effective vaccine, coverage and compliance with HBV vaccination protocols among HCWs in sub-Saharan Africa remain inconsistent. The World Health Organization emphasizes the importance of vaccinating high-risk occupational groups, yet several local and regional studies suggest knowledge gaps and poor adherence to vaccination schedules among HCWs.

In Nigeria, multiple studies have investigated HBV vaccine awareness, knowledge, and uptake among health personnel. Shehu (2025) examined determinants of vaccine uptake among HCWs in Ahmadu Bello University Medical Center, Zaria, and found that while awareness was relatively high, various factors including risk perception and accessibility impacted actual vaccination rates [Shehu, A. (2025).

Similar findings were reported in a cross-sectional study conducted at a tertiary health facility in Enugu, South-East Nigeria, where 82.3% of respondents demonstrated good knowledge of HBV, yet vaccination uptake lagged due to perceived low personal risk and logistical barriers (Omotowo et al., 2018). Another study in Lagos State found that although 56.7% of doctors and nurses had good knowledge of HBV, only a fraction had completed the full three-dose vaccination regimen (Akinyemi et al., 2020).

Moreover, knowledge gaps extend beyond Nigeria. In a study conducted at a military hospital in Sierra Leone, Qin et al. (2017) reported that fewer than 40% of HCWs had adequate knowledge of HBV transmission and prevention, highlighting the need for continuous education in clinical settings across West Africa.

These findings underscore the critical need for structured interventions to improve knowledge, address misperceptions, and enhance vaccine coverage among HCWs. The current study aims to assess the knowledge, vaccination status, and perceived risk of HBV infection among healthcare workers at Ahmadu Bello University Medical Center, Zaria.

Perceived Risk of Contracting Hepatitis B:

Healthcare workers (HCWs) are considered a high-risk group for hepatitis B virus (HBV) infection due to their occupational exposure to blood and bodily fluids. Despite this risk, several studies indicate a considerable gap in risk perception among HCWs across various regions.

In a study conducted in Jos, Nigeria, only 12.9% of primary healthcare workers believed their job placed them at a high risk of HBV infection, while nearly 30% were unsure or believed they were not at risk at all (Daboer, Chingle, & Banwat, 2010). Similarly, Siraj, Fareed, and Mahajan (2016), in their study among HCWs in a tertiary care hospital in Srinagar, India, found that only 27% of participants acknowledged a high risk of contracting HBV.

Contrastingly, findings from East Africa highlight higher awareness. At the University of Gondar Hospital in Ethiopia, 91.3% of healthcare professionals recognized their occupational risk for HBV, suggesting regional differences in HBV-related awareness and training (Ayalew, 2016). Another study by Joshi et al. (2014) in India found a moderate perceived risk (39.9%) among HCWs.

More recently, Shehu (2025) assessed healthcare workers at Ahmadu Bello University Medical Center, Zaria, Nigeria, and identified that risk perception remained a significant determinant of vaccine uptake, with several participants underestimating their vulnerability despite high awareness levels.

Vaccination Status of Healthcare Workers

Vaccination remains the most effective preventive measure against HBV. The World Health Organization (WHO, 2024) recommends that all healthcare personnel be fully vaccinated with a three-dose regimen. However, implementation and adherence vary widely across countries and institutions.

In China, a nationwide study involving 3,104 healthcare workers found that 86% had received at least one dose of the vaccine, while 60% had completed the full vaccination series (Yuan, 2019). In contrast, a study at a tertiary hospital in Tanzania showed that only 33.6% of HCWs were fully vaccinated, and many had missed follow-up doses (Aaron, 2017).

In Nigeria, Shehu (2025) reported that vaccine uptake at Ahmadu Bello University Medical Center was influenced by knowledge and accessibility, though full coverage remained suboptimal. Earlier, Daboer et al. (2010) noted that only 19.8% of healthcare workers in Jos had received at least one dose. Similarly, Abiola (2018) highlighted extremely poor vaccination practices in a Lagos facility, with a mean vaccination practice score of just 29.44%, and only 29% undergoing post-vaccination antibody testing.

Siraj et al. (2016) found low full vaccination rates 42.02% among medical staff and 29.6% among paramedics reflecting missed opportunities for immunization even within structured hospital systems.

Global and Regional Burden of HBV

According to WHO (2024), hepatitis B affects over 296 million people worldwide, with the African and Western Pacific regions bearing the heaviest burden. In Africa alone, 60 million individuals are chronically infected. Mortality from hepatitis B continues to rise, surpassing deaths from tuberculosis and rivaling those from HIV (WHO, 2017).

A comprehensive meta-analysis by Olakunde et al. (2021) estimated the national prevalence of hepatitis B virus (HBV) among pregnant women in Nigeria to range between 6.1% and 19.6%**,** depending on region and population group, confirming the country's status as a high-endemic area for HBV infection. Joel (2017) reported that over 70% of Nigerians show markers of past HBV infection, with approximately 13.7% showing current infection. This translates to an estimated 23 million individuals living with HBV in Nigeria—three times the prevalence of HIV/AIDS.

Methods:

A descriptive cross-sectional survey design was employed for this study. This approach was deemed appropriate as it allows for the collection of data without altering the respondents' experiences. It is particularly effective in exploring individuals' perceptions, knowledge, and experiences regarding specific phenomena.

Study Setting

The study was conducted at the Ahmadu Bello University Medical Center (ABUMC)**,** located in Samaru, a town in the Sabon Gari Local Government Area of Kaduna State, Nigeria. Established in 1962 as a sickbay, ABUMC now serves as the University Health Services (UHS) and is situated within the main university campus near the Student Union Building. Samaru is a prominent town in Zaria, known for its diverse ethnic composition and peaceful coexistence. Geographically, it lies at latitude 11°25'N and longitude 4°26'E, experiencing two primary seasons dry and rainy.

Study Population and Sampling

The target population comprised healthcare professionals at ABUMC, including nurses/midwives, doctors, and laboratory scientists working in the Accident & Emergency (A&E) unit, the theatre, and laboratory departments. According to records from the University Medical Center Main Campus (2024), the total number of eligible personnel was 100**. A** purposive sampling technique was used to select participants. This non-probability method

enabled the researcher to intentionally recruit individuals who are particularly knowledgeable and involved in the topic under investigation, ensuring rich and relevant data.

Data Collection Instrument and Procedure

Data were collected using a self-developed, structured questionnaire, which was reviewed for content validity by an expert from the relevant department. The expert assessed the instrument for clarity, relevance, and logical consistency. Following the review, the questionnaire was revised accordingly and finalized for data collection.

Prior to administration, an introductory letter was submitted to the office of the Director of the University Health Services. Ethical clearance was obtained and subsequently presented to the heads of departments in the A&E, laboratory, labour, and theatre units. These heads facilitated introductions to the potential respondents. Informed consent was obtained from all participants before the questionnaire was administered.

The questionnaires were distributed face-to-face in a language simple enough to ensure participant comprehension. To ensure high response rates and data integrity, the completed questionnaires were collected immediately after completion.

Data Analysis

The data collected were analyzed using the Statistical Package for Social Sciences (SPSS) version 24**.** Descriptive statistics, including frequencies and percentages, were utilized to summarize the responses. Results were presented in tabular format, including frequency distributions and data interpreted through Likert scale measures where applicable.

Result

The demographic characteristics of respondents and responses to the research questions were analyzed using descriptive statistics, specifically frequencies and percentages. Where applicable, responses were further interpreted using a Likert scale to capture the range of perceptions and attitudes.

A total of 80 questionnaires were administered and all were successfully retrieved, resulting in a 100% response rate, which enhanced the validity of the findings. The results of the analysis were systematically presented in tables, using both numerical and percentage distributions. The findings were discussed in alignment with each of the research questions to provide a structured and meaningful interpretation of the data.

Table 1: Demographic Information of the Respondents (N =80)

Variable	Frequency	Percentage (%)
Age:		
a) 20-24	12	15
b) 25-29	20	25
c) 30-34	21	26.25
d) 35 and above	27	33.75
Gender:		
a) Male	27	33.75
b) Female	53	66.25
Religion:		
a) Islam	55	68.75

c) Christianity	25	31.25
b) Others	0	0
Years in Service		
a) 0-10	51	63.75
b) 11-20	10	12.5
c) 21-30	19	23.75
d) 31-40	10	12.5
Profession:		
a) Doctor	10	12.5
b) Nurse	46	57.5
c) Midwife	17	21.25
d) Lab Scientist/Technician	7	8

Table 1: Describes the demographic characteristics of the respondents; 80 respondents participated in this study, out of which the majority 27 (33.75%) were between the ages of 35 years and above, while 12 (15%) were between the ages of 20-24 years. 27 (33.75%) were male while 53 (66.25%) were female. 55 (68.75%) were Muslims and 25 (31.25%) were Christians. 51 (63.75%) were in service for 1-10 years and 10 (12.5%) for 31-40 years. 46 (57.5%) were nurses, 7 (8.75%) were Lab Scientists.

Table 2: Respondent's general knowledge on Hepatitis B N=80

Variable	Frequency	Percentage (%)
Have you ever heard of Hep B?	80	100
a) Yes	0	0
b) No		
Hep B is caused by;	0	0
a) Bacteria	80	100
b) Virus	0	0
b) Fungi	0	0
c) I don't know		
Hep B can be transmitted through;	80	100
a) Needle Pricks	70	87.5
b) Contaminated Instruments	75	93.75
c) Unscreened blood transfusion	0	0
d) Mosquito bites	80	100
e) Contract with with body fluid	80	100

f) Unprotected Intercourse		
Can Hep B be treated?	76	95
a) Yes	4	5
b) No		
Some of the preventive measures include;		
a) Vaccination	80	100
b) Isolation	7	8.75
c) Use of PPEs	70	87.5
d) Screening of blood before transfusion	70	87.5
e) Condom	75	93.75

Table 2: Describes the respondent's general knowledge on hep B; 80 (100%) of the respondents have heard of hep B before. 79 (98.75%) know it is caused by virus. 80 (100%) know that hep B is caused through needle pricks. 70 (87.5%) believe it contracted through contaminated instruments. While 75 (93.75%) believe it is gotten through unscreened blood transfusion. Also, 80 (100%) understand it can be transmitted through contact with body fluid. And 80 (100%) know it is transmitted through unprotected Intercourse. 76 (95%) know that hep B can be treated, while 4 (5%) think it cannot. 80 (100%) believe hep B can be prevented by vaccination and 7 (8.75%) identified Isolation as a preventive measure.

Table 3: Respondents Perceived risk of contracting Hepatitis B N=80

Variable	SA	A	D	SD	Mean
1) My occupation is a risk for hep B transmission?	42	33	5	0	3.5
2) I am concerned about contracting hep B?	38	34	3	5	3.3
3) I feel my occupation poses a risk to transmission of hep B virus?	46	24	10	0	3.5
4) Hep B is a serious health problem?	61	19	0	0	3.8
Aggregate mean					3.525

SA=4

A=3

D=2

SD=1, mean=2.5

Table 3: This table describes the perception of the risk of contracting hep B by the health care workers. The aggregate mean is 3.525, which means that the workers perceive they are at high risk of contracting Hepatitis B.

Discussion:

The results of this study indicate a generally high level of knowledge regarding hepatitis B among high-risk healthcare workers (HCWs) at the Ahmadu Bello University Medical Center (ABUMC), Samaru, Kaduna State. Most respondents accurately identified the causative agent, understood the modes of transmission, and were familiar with preventive measures for HBV infection. This high level of awareness may be attributed to the substantial professional experience of many respondents—averaging 10 to 15 years—as well as their exposure to formal training sessions on hepatitis B. These findings are consistent with those of Omotowo et al. (2018), who reported that 82.3% of HCWs at a tertiary health facility in Enugu, South-East Nigeria demonstrated good knowledge of hepatitis B infection and prevention strategies.

In terms of perceived risk, a majority of the participants acknowledged that their occupational exposure places them at elevated risk of contracting HBV. This aligns with the findings of Ayalew (2016), who reported that 91.3% of healthcare professionals at the University of Gondar Hospital in Ethiopia believed their job placed them at risk for HBV infection. Such awareness is essential for promoting proactive preventive behaviors, including vaccination and safe clinical practices.

The study also found that a substantial proportion of respondents had undergone HBV testing, and many had received at least one dose of the hepatitis B vaccine. Among those vaccinated, the majority had completed the full three-dose series, while a smaller proportion had received only partial vaccination. Reported barriers to full vaccination included the cost of the vaccine, limited availability, and perceptions about the length of the vaccination schedule. These factors are similar to those documented by Aaron (2017), whose study at a national hospital in Tanzania revealed that 56.9% of HCWs had received at least one dose, and only 33.6% were fully vaccinated. Many HCWs missed follow-up doses due to scheduling issues, and a subset of the unvaccinated group were found to be positive for HBV markers.

Additional challenges affecting vaccine uptake identified in this study included personal beliefs, vaccine cost, time constraints, and insufficient information about where to access the vaccine. These findings are corroborated by Omotowo et al. (2018), who identified similar barriers such as high cost (reported by 10.8% of respondents), disbelief in personal risk of infection (6.6%), and scheduling/time constraints (35.1%).

Overall, the results of this study reinforce the importance of institutional support for continuous HBV education, accessible vaccination programs, and policy enforcement to improve vaccine uptake and compliance among HCWs in Nigeria.

Conclusion:

This study concluded that healthcare workers at Ahmadu Bello University Medical Center (ABUMC), Samaru, Kaduna State possess a good level of knowledge regarding hepatitis B infection, its transmission, and prevention. The majority of participants also demonstrated a high perception of occupational risk, and many had received at least one dose of the hepatitis B vaccine. However, full vaccination coverage remains suboptimal, primarily due to factors such as cost, availability, time constraints, and personal beliefs.

To enhance vaccine uptake, it is imperative to implement institutional and policy-level interventions, such as mandatory vaccination policies, provision of free or subsidized vaccines, and awareness campaigns within healthcare facilities. Ensuring vaccine accessibility within the workplace will improve compliance and protect frontline workers from preventable infection.

Recommendations:

Based on the findings of this study, the following recommendations are proposed:

7. Policy Implementation: Government health authorities and institutional administrators should adopt mandatory hepatitis B vaccination policies for all healthcare workers, particularly those at high risk of exposure.
8. Vaccine Accessibility: Hepatitis B vaccines should be made freely available at health institutions, especially within occupational health departments, to eliminate financial barriers.
9. Training and Sensitization: Government and non-governmental organizations (NGOs) should organize regular seminars and workshops to deepen healthcare workers' understanding of hepatitis B and to promote vaccine acceptance and completion.
10. Monitoring and Follow-up: Establish systems to track vaccination status of staff, ensuring that incomplete vaccinations are followed up and completed within the recommended schedule.

Ethical Consideration:

An introductory letter from the Head of Department, Nursing Sciences, Ahmadu Bello University, Zaria, along with a detailed study proposal, was submitted to the Ethical Review Committee, which approved the research protocol. Informed consent was obtained from all respondents, and participants were assured of anonymity and confidentiality. Their rights and autonomy were respected throughout the research process, including the right to withdraw from the study at any time without any negative consequences. Respondents were treated with dignity, respect, and their well-being was prioritized during data collection.7. Conflict of interest:

Conflict of interest:

The authors declare that there is no conflict of interest.

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