



Knowledge, Attitude and Practice (KAP) Towards Hepatitis B Vaccination Among HIV Patients at Nigeria Institute of Medical Research (NIMR), Yaba – Lagos: A Cross-Sectional Study

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ABSTRACT

The rate of Hepatitis B Virus (HBV) infection among HIV patients is higher than that of the general population. In spite of this challenge, there has been a low vaccination record among HIV patients. The objective of this study is to assess the knowledge, attitude and practice of HIV patients towards Hepatitis B. An institutional-based cross-sectional study design was conducted among 309 HIV patients from September to November 2024. A pretested self-administered questionnaire was used to collect data regarding knowledge, attitude and practice towards hepatitis B vaccination. Non-probability convenience sampling was also used. Descriptive statistics were done by calculating frequencies and percentages of categorical independent variables and categorical dependent variables, using SPSS version 20. Among 309 HIV patients, 59.3% of them had good knowledge about the Hepatitis B virus and vaccination, with an average mean score of 4.21, and 51.6% had a good attitude, with an average mean score of 4.31. The practice was low, with only 37.4% receiving the complete dose of HB vaccine, with an average mean score of 31. There were a significant association of socio-demographic variables with knowledge, attitude and practice towards Hepatitis B vaccination. Although, the knowledge and attitude towards Hepatitis B vaccination are high, the practice levels are very low. This indicates the need for immunising HIV positive patients against Hepatitis B and focusing more on preventive practices against HBV.

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INTRODUCTION

Hepatitis B (HBV) infection remains a significant public health challenge, particularly in sub-Saharan Africa, where the burden of HBV and HIV co-infection is high. Vaccination against HBV is a critical preventive measure, especially for HIV – positive individuals, who are at increased risk of HBV-related complications. Hepatitis B Virus (HBV) infection poses a significant health burden globally, particularly among individuals living with Human Immunodeficiency Virus (HIV). Co-infection with HIV and HBV not only accelerates disease progression but also complicates treatment outcomes. Underscoring the importance of vaccination against Hepatitis B in this vulnerable population. This study focuses on assessing the knowledge, attitudes and practices regarding Hepatitis B vaccination among HIV – positive patients, with a specific case study conducted at the Nigerian Institute of Medical Research (NIMR) in Yaba, Lagos, Nigeria. NIMR, situated in the bustling city of Lagos, serves as a pivotal centre for medical research and healthcare delivery, catering to a diverse patient population. Understanding the perspectives and behaviours of HIV – positive individuals towards Hepatitis B vaccination at this institution is crucial for enhancing vaccination coverage, preventing co-infections, and improving overall health outcomes in this high-risk group.

The co-occurrence of HIV and HBV infections presents unique challenges related to disease management and treatment, making vaccination a critical preventive measure. Knowledge gaps, misconceptions, and barriers to vaccination uptake among HIV-positive individuals can impede public health efforts to control Hepatitis B transmission and reduce

associated morbidity and mortality rates. Through this study, we aim to explore the levels of knowledge about Hepatitis B vaccination, attitudes towards vaccination, and vaccination practices among HIV – positive patients at NIMR. By assessing these factors, we seek to identify area for targeted interventions, education programs, and policy initiatives that can enhance Hepatitis B vaccination rates and promote better health outcomes for individuals living with HIV.

The Nigerian context, with its unique healthcare challenges and population characteristics, provides a rich setting for examining the intersection of HIV, Hepatitis B, and vaccination practices. By focusing on NIMR as a case study site, we aim to generate insights that are not only relevant to this specific institution but also offer broader implications for healthcare providers, policymakers, and public health practitioners working towards improving vaccination strategies and disease prevention efforts in similar settings across Nigeria and beyond.

Assessing knowledge, attitudes, and practices regarding Hepatitis B vaccination among HIV positive individuals reveals significant gaps and opportunities for improvement. Research indicates that widespread awareness of the importance of vaccination exists, actual vaccination rates and practices are often suboptimal. This literature review explores misconceptions about HBV vaccination, barriers to vaccination, the effectiveness of educational interventions, and socio-demographic factors influencing vaccination rates among HIV positive patients in Nigeria.

Oni et al (2022) revealed that the health workers had a good knowledge of hepatitis infection, but not the vaccination, which affected vaccine uptake as a significant relationship

exists between the two. Also, their findings showed that the greatest hindrance to the uptake of the vaccine is the cost of the vaccine. They suggested that HBV vaccination should be made compulsory as part of occupational protection measures for all health workers.

Seremba et al (2021) stated that HIV vaccination was effective in eliciting a protective humoral response, particularly among those with higher CD4 counts. Half of the screened patients did not have immunity to HBV infection, suggesting a larger at-risk population for HBV infection among HIV - positive adults in Uganda. Their findings support including HBV vaccination as part of routine care among HIV - positive adults.

Nakabuye et al (2025) revealed low coverage of hepatitis B vaccination among PLWH attending Gulu Regional Referral Hospital. They suggested that hepatitis B vaccination program should target PLWH living in rural areas, with a low level of education and with no family history of hepatitis B to educate them about HBV vaccine to increase coverage.

Elizabeth and Darcy (2021) highlighted significant variability in clinicians' practices regarding HBV vaccination in HIV patients, particularly for those with isolated hepatitis B core antibody and non-zero conversion after vaccination, indicating a need for standardised guidelines and improved clinician education.

Manjri et al (2023) reported that better knowledge and attitude led to more adoption of preventive practices. But still, there is a gap in the KAP towards hepatitis B preventive practices, and knowledge is not getting transformed into practices. They recommended that all HCWs should be questioned about their vaccination status. Vaccination coverage, various preventive campaigns, and the hospital infection control committee need to be strengthened.

Ul Haq et al (2013) indicated that Hepatitis B patients lack a basic understanding of infection control and management. They said this can result in the future spread of Hepatitis B infection. Their recommendation was that extensive health education campaigns should be provided to the patients in the hospital as well as in community settings for rational control and management of the disease.

Elhadi et al (2021) assessed the level of awareness about Hepatitis B infection, and the HBV testing and vaccination history among students of Medical Laboratory Sciences (MLS) at Sudan International University. Their findings reveal that awareness was significantly predicted by the study level among students.

Vasantha Mallika et al (2020) indicated that among 205 MBBS students, correct responses towards knowledge, attitudes and practices were given by 77.07%, 77.58% and 76.59%, respectively. 79.5% of the students were fully vaccinated, 20.5% were partially vaccinated against the Hepatitis B virus infection.

Gideon et al (2026) conducted an analysis to determine the seroprevalence and risk factors associated with HBV infection among patients attending SUMAS Medical Center, Igbo-Eno, Enugu State, Nigeria. Their findings revealed an intermediate seroprevalence of HBV infection, and highlighted variables such as sharing of sharps, being sexually active and living with a family member that has HBV infection as risk factors significantly associated with high HBV infection.

Garcia et al (2023) conducted an analysis at three HIV centres in Texas to determine the proportion of PLWH who received the recommended 3 doses of hepatitis B vaccination within 1 year. Their findings revealed low rates of hepatitis B vaccination. Among eligible PLWH, ONLY 9% completed the 3-dose hepatitis B vaccine series in 1 year. They suggested

an urgent need to improve HBV vaccination to reach the 2030 target for hepatitis B elimination.

In another related studies, higher seroconversion rates were observed in PLWH with high CD4⁺ T- cell levels, indicating that individuals infected with HIV should receive the HBV vaccine as soon as possible after diagnosis (Tian et al. 2021). Winnock et al (2006) focused on hepatitis B vaccination practices and attitudes among HIV infected patients and their physicians. Based on their study results, they concluded that targeted information and awareness campaigns are necessary for both HIV- infected patients and their physicians regarding HBV vaccination.

Sirohi et al (2024) reported that healthcare workers still lack complete knowledge regarding hepatitis B infections, its modes of transmission, preventive measures, and screening methods.

Almalki et al (2025) stated that there is a high level of awareness and positive behaviours towards hepatitis B and its vaccination among the healthy population in Makkah, especially among those with higher education, they also highlighted the ongoing need to address persistent misconceptions and stigma, particularly in specific demographic segments, to further refine preventive strategies. Yerima et al. (2025) also reported that lack of personal health information is a significant barrier to early detection and management.

Kadeh, et al. (2014) revealed that dentists generally demonstrated good knowledge regarding the transmission of HIV, hepatitis B, and hepatitis C, infections and high compliance with basic personal protective equipment, a significant majority still harbored fears leading to a reluctance to treat infected patients.

The aim of our study is to evaluate the knowledge, attitude, and vaccination practices of HIV-positive patients regarding Hepatitis B.

MATERIALS AND METHODS

Study Design

The study adopts a cross-sectional design to assess knowledge, attitudes, and practices regarding Hepatitis B vaccination targeted at HIV – positive patients at the Nigerian Institute of Medical Research (NIMR) in Yaba Local Government Area (LGA) of Lagos state, Nigeria.

Study Participants

Participants are recruited from the HIV clinic at NIMR using a purposive sampling technique. Informed consent was obtained from all participants prior to data collection. Health workers, administrative officers and all non-health workers of NIMR were excluded from the study.

Data Collection Tools

A structured questionnaire was used as the survey instrument to collect data on participants' demographic information, knowledge about Hepatitis B vaccination history and barriers to vaccination uptake.

Ethical Approval and Participants' Consent

Ethical approval was obtained from the research ethics committee of the Nigerian Institute of Medical Research (NIMR) [Approval Number: IRB/24/072]. Written informed consent was obtained from the study participants for the use of anonymous personal and clinical data in research. Confidentiality of the information was maintained thoroughly by de-identification.

Data Collection Process

A trained research assistant who had a week of training on the research tool administered the questionnaire to participants either through face-to-face interviews or self-administration, depending on participant preference and feasibility.

Data Analysis

Quantitative data collected from the questionnaire responses were analysed using the statistical Package for social sciences (SPSS) version 20.0. Descriptive Statistics were used to summarise demographic characteristics and key variables. Inferential statistics, such as chi-square tests, were employed to assess associations and predictors of Hepatitis B vaccination on knowledge, attitudes and practices.

Quality Control

To ensure data accuracy and reliability, quality control measures such as data validation checks, double data entry, and periodic data audits were implemented during the data collection process.

Confidentiality and Privacy

Participant confidentiality was maintained throughout the study by using anonymised data and secure data storage practices.

Interpretation of Results

The results of the study were interpreted in the context of existing literature and public health implications. Key findings related to knowledge gaps, attitudes towards

vaccination and vaccination practices among HIV – positive individuals were also discussed.

Limitations

Potential limitations of the study, such as sampling bias, self-reporting biases, and generalizability constraints, were acknowledged and discussed in the interpretation of the results.

Sample Size and Sampling

Purposive sampling technique was employed for collection of data. This involve selecting all conservative individuals who meet the inclusion criterial within the study period. Sample size was calculated using Taro Yamane method,

$$n = \frac{N}{1 + Ne^2}$$

Where, n = sample size

N = population size

e = degree of precision/ error margin

$$n = \frac{8000}{1 + 8000(0.05)^2} = 381$$

RESULTS AND DISCUSSION

Demographic Profile

A total of 309 respondents participated in the study. Most respondents were female, accounting for 60%, and the predominant age group was 49-58 years, representing 44.3% of the participants. 49.8% were self-employed, 39.8% had secondary education as their highest level of education, and 59.3% were aware of Hepatitis B vaccination.

Table 1: Sociodemographic Characteristics

Variables	N = 309 (%)
Age	
18-28	16 (5.2)
29-38	24 (7.8)
39-48	83 (26.9)
49-58	137 (44.3)
>59	49 (15.9)
GENDER	
Male	124 (40)
Female	185 (60)
Ethnicity	
Yoruba	90 (29.1)
Igbo	159 (51.5)
Hausa	16 (5.2)
Others	44 (14.2)
Religion	
Christianity	245 (79.3)
Islam	54 (17.5)
Traditional Worshipper	4 (1.3)
Others	6 (1.9)
Marital Status	
Couple living together	11(4.6)
Married	178 (57.6)
Divorced	28 (9.1)
Separated	35 (11.3)
Widowed	8 (2.6)
Level of Education	
No Education	35 (11.3)
Arabic/ Quaranic Education	8 (2.6)
Primary Education	73 (23.6)
Secondary Education	123 (39.8)
Tertiary Education	48 (15.5)
Postgraduate	22 (7.1)
Employment status	
Student	18 (5.8)

Variables	N = 309 (%)
Learning Trade/Work	28 (9.1)
Working employed full- time	56 (18.1)
Working-employed part-time	24 (7.8)
Unemployed	7 (2.3)
Working self-employed	154 (49.8)
Others	22 (7.1)
Ever heard of Hepatitis B Vaccination	
Yes	183 (59.3)
No	126 (40.8)

Table 2 shows that participants demonstrated knowledge about hepatitis B, with 41.2% agreeing could be acquired through a needle stick injury, and significant percentages strongly agreeing that hepatitis B could also be caused by a virus (46.2%), transmitted through contaminated blood and body fluids (47.7%), cause liver cancer (44.5%), require a post-vaccination test (42.9%), and that the complete vaccine

dose is 95% effective (40.7%), protects for at least 15 years (42.3%), and that a fully recovered patient cannot infect others (46.7%), and is 50-100 times more infectious than HIV (47.8%). The overall average mean scores of 4.21 suggest that participants possess good knowledge about the Hepatitis B virus and vaccination.

Table 2: Knowledge towards Hepatitis B Virus Infection and Vaccination (N = 309)

Items for knowledge on hepatitis B vaccination	SA n(%)	A n(%)	D n(%)	SDA n(%)	Mn	SD
Hepatitis B virus can be acquired through a needle stick injury	73 (40.1)	75 (41.2)	3 (1.6)	2 (1.1)	4.18	0.836
To what extent do you agree that hepatitis B is caused by a virus	84 (46.2)	62 (34.1)	3 (1.6)	1 (0.5)	4.24	0.817
How much do you agree that hepatitis B can be transmitted through contaminated blood and body fluids	86 (47.3)	65 (35.7)	1 (0.5)	1 (0.5)	4.29	0.791
To what extent do you agree that hepatitis B can cause liver cancer	84 (46.2)	62 (34.1)	3 (1.6)	1(0.5)	4.24	0.837
There is an effective vaccine for Hepatitis B	81 (44.5)	66 (36.3)	3 (1.6)	0 (0)	4.24	0.793
Post Hepatitis vaccination test is necessary	78 (42.9)	70 (38.5)	3 (1.6)	0 (0)	4.23	0.786
The complete dose of the Hepatitis B vaccine is 95% effective	74 (40.7)	69 (37.9)	9 (4.9)	0 (0)	4.15	0.866
Hepatitis B vaccine protects for at least 15 years	77 (42.3)	56 (30.8)	6 (3.3)	0 (0)	4.12	0.884
A patient who has fully recovered cannot infect others	85 (46.7)	56 (30.8)	4 (2.2)	0 (0)	4.21	0.845
Hepatitis B is 50 -100 times more infectious than HIV	87 (47.8)	56 (30.8)	12 (6.6)	0 (0.0)	4.21	0.923

SA = Strongly Agree, A=Agreed, N=Neutral, SDA=Strongly Disagree, MN=Mean, SD=Standard Deviation

Table 3: Attitude Regarding Hepatitis B Vaccination (N = 309)

Items on Attitude regarding Hepatitis B vaccination	SA n(%)	A n(%)	N (%)	D n(%)	SDA n(%)	Mn	SD
Hepatitis B vaccination should be made compulsory for all healthcare workers	94 (51.6)	62 (34.1)	23 (12.6)	3 (1.6)	0 (0.0)	4.46	0.76
Willing to recommend hepatitis B vaccination to friends	88 (48.4)	65 (35.7)	20 (11.0)	7 (3.8)	2 (1.1)	4.26	0.88
HIV patients are at risk of Hepatitis B vaccination infection	84 (46.2)	58 (31.9)	33 (18.1)	1 (0.5)	4 (2.2)	4.21	0.91
Willing to receive hepatitis B vaccination if unvaccinated	100(54.9)	52 (28.6)	20 (11.0)	4 (2.2)	6 (3.3)	4.31	0.95

SA=Strongly Agree, A=Agreed, N=Neutral, SDA=Strongly Disagree, MN=Mean, SD=Standard Deviation

Among the participants, 51.6% strongly agreed that Hepatitis B vaccination should be made compulsory for all health workers, 48.4% strongly agreed that they are willing to recommend hepatitis B vaccination to friends, and 46.2% strongly agreed that HIV patients are at risk of Hepatitis B vaccination infection, and 54.9% of the participant strongly

agreed that they are willing to receive hepatitis B vaccination if unvaccinated. The overall average mean scores of 4.31 suggest that participants have a strong positive attitude regarding Hepatitis B vaccination.

Table 4: Practice Towards Hepatitis B Vaccination (N = 309)

Items on Practice Towards Hepatitis B Vaccination	SA n(%)	A n(%)	N (%)	D n(%)	SDA n(%)	Mn	SD
Received the hepatitis B vaccine	52 (28.6)	17 (9.3)	5 (2.7)	102 (56.0)	6(3.3)	3.04	1.39
Received the complete dose of HB vaccine	52 (28.6)	16 (8.8)	6 (3.3)	101 (55.5)	7(3.8)	3.03	1.40
Checked immune status after vaccination	55 (30.2)	16 (8.8)	5 (2.7)	102(56.0)	4(2.2)	3.09	1.40

SA=Strongly Agree, A=Agreed, N=Neutral, SDA=Strongly Disagree, MN=Mean, SD=Standard Deviation

Among the participants, 56.0% disagreed that they had received the hepatitis B vaccine, 55.5% disagreed that they had received the complete dose of HB vaccine, and 56.0% of the participants disagreed that they had checked their immune status after vaccination. The overall average mean scores of 3.053 suggest that participants agree that they have poor practice towards hepatitis B vaccination. Initially, parametric statistics seemed like the ideal approach for analysis. However, the data didn't follow a normal

distribution, violating the normality assumption, even after the data were transformed; normality assumptions also failed. We employed a chi-square analysis, a non-parametric test, to examine the association of social demographic variables with knowledge, attitude and practice towards Hepatitis B vaccination.

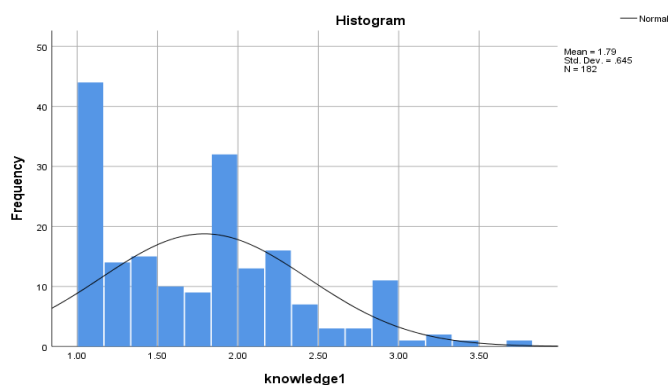


Figure 1: Histogram Showing Visual Representation

Table 5: Tests of Normality of Distribution of Knowledge

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Knowledge1	.110	182	.000	.926	182	.000

a. Lilliefors Significance Correction

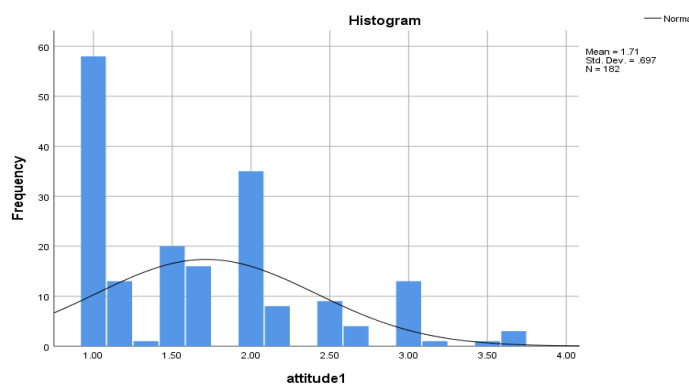


Figure 2: Histogram Showing Visual Representation of the Distribution of Attitude

Table 6: Tests of Normality of the Distribution of Attitude

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
Attitude1	.166	182	.000	.878	182	.000

a. Lilliefors Significance Correction

Table 7: Chi-Square (χ^2) Association of Knowledge of Hepatitis B Virus and Vaccination with Gender

Variable	Gender	Chi-Square (χ^2)	p-VALUE
Knowledge of hepatitis B virus infection and vaccination	Male	0.002	0.001
	Female		

Table 7 shows a strong link between gender and knowledge of hepatitis B vaccination, with men generally having more knowledge than women. This may be because, among the 182 participants who were familiar with hepatitis B vaccination, the majority were men. This finding suggests that targeted interventions may be necessary to enhance knowledge and

uptake among underrepresented groups, particularly women. Further research and public health initiatives could help bridge this knowledge gap and promote equitable access to Hepatitis B vaccination.

Table 8: Chi-Square (χ^2) Association of Attitude of the Respondents Toward Hepatitis B Vaccination with Gender

Variable	Gender	Chi-Square (χ^2)	p-VALUE
Attitude of the respondents toward hepatitis B vaccination	Male	0.012	0.007
	Female		

From Table 8, gender is significantly associated with attitude toward Hepatitis B vaccination. This finding underscores the need for tailored strategies to address potential gender-specific concerns and promote positive attitudes toward

vaccination, ultimately enhancing vaccine uptake and public health outcomes

Table 9: Chi-Square (χ^2) Association on the Practice of Hepatitis B Vaccination on Age

Variable	Age	Chi-Square (χ^2)	p-VALUE
Practice of hepatitis B vaccination	18-28	0.114	0.038
	29-38		
	39-48		
	49-58		
	>59		

As seen from Table 9, age is significantly associated with the practice of Hepatitis B vaccination. This finding suggests that age-specific interventions may be necessary to improve vaccination rates and promote healthy practices across

different age groups, ultimately reducing the burden of Hepatitis B infection.

Pie Chart Percent of WOULD YOU BEEN WILLING TO RECEIVE A HEPATITIS B VACCINATION IN THE FUTURE



Figure 3: Most Participants Expressed Willingness to Receive the Hepatitis B Vaccination in the Future

RESULTS AND DISCUSSION

Descriptive Statistics

The overall average mean score was 4.21, which suggests that participants possess good knowledge about Hepatitis B virus vaccination, with a low standard deviation of 0.8. On attitude, an average mean scores of 4.31 suggest that there was a strong positive attitude regarding Hepatitis B vaccination with a low standard deviation of 0.85. Practice towards hepatitis B vaccination, our findings reveal an average mean of 3.05 with a low standard deviation of 1.4, which implies poor practice.

Practice Frequency

Among 309 HIV patients, 59.3% had good knowledge of the Hepatitis B virus and vaccination, with an average mean score of 4.21. 51.6% had good attitude with an average mean score

of 4.31. The practice was low with only 37.4% received the complete dose of HB vaccine with an average mean score of 3.1. Over 85% of the respondent had primary education and above, while 11.3% had no formal education. This high level of education status among the respondents assisted in an easy understanding of the questions (Tables 1, 2, 3 and 4).

Discussion

Chi-Square Test

The chi-square test of independence was utilized to assess the association between knowledge, attitude, and practice regarding Hepatitis B vaccination and various demographic variables. Our results showed a strong link between gender and knowledge of hepatitis B vaccination, with men having more knowledge than women. Public health initiatives could

help bridge this gap and promote equitable access to the hepatitis B vaccine. It was also revealed that gender is significantly associated with attitude toward hepatitis B. This finding underscores the need for tailored strategies to address potential gender specific concerns. Our findings also indicated that age is significantly associated with the practice of Hepatitis B vaccination. This suggest that age-specific interventions may also be necessary to improve vaccination and promote healthy practices across different age groups. Our results agreed with that of Almalki (2025), Garcia (2023), as well as Ul Hag (2013).

CONCLUSION

This study aimed to assess knowledge, attitude, and practices regarding hepatitis B vaccination among 309 respondents. Our findings revealed some sort of satisfactory level of awareness about hepatitis B vaccination, with 59.3% of participants being aware of its existence. Participants demonstrated a good understanding of hepatitis B transmission, prevention and vaccination, with significant percentages strongly agreeing on various aspects, as seen from our analysis. However, the study also highlighted some gaps in knowledge and practices. For example, 55.49% of participants reported not receiving the complete dose of the hepatitis B vaccine, and 56.04% agreed not to have received the vaccine at all. Interestingly, the study found a significant association between gender and knowledge with men tending to have more knowledge than women of hepatitis B vaccination. The chi-square result revealed that a significant majority of the participant demonstrated good understanding of hepatitis B. Specifically, they were aware of its transmission through needle, stick injuries, contaminated blood, and body fluids, as well as its viral cause and potential to cause liver cancer. Additionally, respondents recognized the existence and effectiveness of hepatitis B vaccine, with many aware that the complete dose offers protection for at least fifteen years or more.

Sensitisation about Hepatitis B vaccination should be organised for HIV positive patients, and the vaccine should also be made available. Public health initiatives could help bridge the gap between genders. Age-specific interventions may also be necessary to improve vaccination across different age groups. Educational campaigns and policy changes aimed at improving hepatitis B vaccination among HIV positive patients would also be needed in this high-risk group. Generally, there is an urgent need to improve hepatitis B vaccination in order to eliminate the virus by the year 2030.

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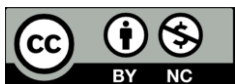
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