Perception of Hepatitis B Infection: A National Survey on Knowledge, Practice, and Beliefs (KPB) of HBV in Nigeria

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ABSTRACT

Hepatitis B continues to be a significant public health issue, contributing to substantial global morbidity and mortality. This study employed an electronic-based cross-sectional survey to assess the knowledge, practices, and beliefs regarding hepatitis B among a sample of 3,589 participants from Nigeria. Data were collected between June and September 2023 using Google Forms, with participants recruited via social media. The questionnaire, designed based on similar studies and validated by experts, consisted of six sections addressing sociodemographic characteristics, knowledge of hepatitis B, related practices, and beliefs about the infection and those infected. The study population consisted of 2,945 males (67.0%) and 1,184 females (33.0%), with most participants (83.5%) aged between 21 and 30 years. A majority held bachelor's degrees (70.1%), and 46.4% were pursuing health-related educational majors. The geographical distribution included participants from 12 Nigerian states and the Federal Capital Territory, with Benue State having the highest representation (58.8%). The survey showed a moderately high awareness of hepatitis B (93.8% had heard of it), but only 66.0% knew it was caused by a virus, and 28.9% were aware that hepatitis B is curable. A considerable gap in vaccination coverage was identified, with 51.5% reporting being vaccinated and 48.5% unaware of the correct dosage for full vaccination. Participants displayed moderate knowledge of transmission routes, with 70.1% recognizing blood and blood products as a transmission medium, but only 44.4% aware that contaminated blades or needles also posed risks. Point-biserial correlation analysis revealed that factors such as travel history, educational background, smoking status, and alcohol consumption were significantly associated with higher knowledge scores ($p < 0.05$). Practices regarding hepatitis B screening and vaccination were varied, with 63.9% of participants having been screened for the infection, and 96.9% willing to seek treatment if diagnosed. However, 17.5% did not know where to get screened, and 21.7% reported not knowing where to get vaccinated. The survey also highlighted misconceptions about hepatitis B, with 17.5% of participants believing in spiritual protection against the virus. This study emphasizes the need for targeted public health interventions in Nigeria to improve hepatitis B awareness, screening, and vaccination, particularly among populations with lower educational attainment and rural settlements. Efforts should focus on dispelling myths, increasing access to vaccines, and promoting screening to meet the World Health Organization's hepatitis elimination goals.

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INTRODUCTION

Hepatitis is placed as the seventh leading cause of death globally and accounts for approximately 1.1 million deaths, majorly from cirrhosis and primary liver cancer (hepatocellular carcinoma) (WHO, 2022). Viral Hepatitis is an infectious disease of the liver caused by the hepatitis A, B, C, D, and E virus (WHO, 2018). Viral Hepatitis especially Hepatitis B and C is responsible for a large proportion of hepatitis mortality and morbidity, with about 90% of infected persons unaware of their condition, and thus they don't seek treatment (Spearman et al., 2017). Hepatitis B infection is a disease of the liver caused by the hepatitis B virus (HBV), which has a partially double-stranded circular DNA and belongs to the family Hepadnaviridae (Carman & Thomas, 1992; Gitlin, 1997).

The global prevalence is estimated at 254 million people living with chronic hepatitis B (Africa CDC, 2023; WHO, 2024). In Africa, more than 82 million people live with chronic Hepatitis B infection, accounting for about 7.5% of the global prevalence, Africans also account for two of every three children infected with the virus globally, either at birth or early childhood (Africa CDC, 2023), according to the W.H.O scorecard of viral hepatitis 2021, in 19 countries about 8% or more of the population is infected with Hepatitis B, and also accounting for about 78% of HBV-associated deaths (Africa CDC, 2023; WHO, 2021). The ineffectiveness or nonexistence of hepatitis management programs in the sub-Saharan region has added to the rising numbers of hepatitis burden in the region, the high mortality and morbidity that results is partly because a person can live asymptomatically with the virus for up to 30 years; and mostly, testing is conducted when the disease becomes chronic and liver cirrhosis is already severe.

There is a general lack of awareness with studies showing average to poor knowledge of hepatitis B virus infection and hepatitis vaccine among persons residing in regions of high risk(Adekanle et al., 2015; Peteet et al., 2018). Hepatitis B vaccination has been recorded at 72% in the region below the WHO global target of 90% needed to ensure that the virus is no longer a public health menace (WHO, 2021). The Nigerian population has a prevalence rate of above 8.1% with 5.7% in the general public and about 3% in children under 5 (NAIIS, 2023; WHO, 2021, 2024), that is about 20 million persons living with hepatitis B infection, surprisingly, about 80% of Nigerian do not know their viral hepatitis status (NAIIS, 2023; WHO, 2024).

According to WHO, the major strategy for the elimination of HBV is via vaccination as new cases of HBV infection are still being reported to this day progressively (WHO, 2017). In Nigeria, Sudan, and Morocco, previous research demonstrated average knowledge of viral hepatitis among people to whom it's an occupational hazard but a lack of vaccine coverage (Eni et al., 2019; Kheir et al., 2022). Most research has been conducted within the context of healthcare workers, there is limited information on the knowledge level of the general population within Nigeria. This study is aimed at assessing the knowledge, practice, and beliefs of hepatitis B infection (perception of hepatitis B infection) among the general population in Nigeria to highlight areas of knowledge gaps and misconceptions that can help tailor public health sensitization campaigns in the future.

MATERIALS AND METHODS

Study design and settings

This study used an electronic-based cross-sectional survey to recruit eligible participants. Eligible participants were approached from all over Nigeria. The study questionnaire was designed using a Web-based survey software (Google Forms). From June 2023 to September 2023, social media was used to approach the participants and collect data for this study. All eligible participants were requested to provide consent before study participation. Participants who agreed to participate were requested to answer the questionnaire anonymously to ensure confidentiality This should be under research ethics.

Survey development

The questionnaire was adopted and modified based on similar studies and the general principles of good survey design (Adekanle et al., 2015; Othman et al., 2022). To ensure comprehension and clarity the questionnaire was validated by experienced colleagues (n = 3) Biomedical Scientist, Pharmacist, and Lawyer. The survey contained close-ended questions that could be completed within an average of 20 minutes.

The questionnaire consisted of 6 sections. The first section explained the aim of the study, the second section was consent to the study, and the third part was designed to collect participants' socio-demographic characteristics including gender, age, governorates, educational level, occupation, income, smoking, and marital status. The fourth section was designed to evaluate participants' knowledge of HBV infection including symptoms, transmission modes, and treatment, practice related to HBV infection and vaccination against it was evaluated in the fifth section while the sixth part was designed to assess participants' beliefs about HBV and people infected with the virus.

The questionnaire included closed-ended questions consisting of a Likert scale (Strongly agree, Agree, Undecided, Disagree, Strongly Disagree) and (Yes/No) assessments.

Study sample

A convenience survey was carried out, and 3,589 subjects participated in the study. Inclusion criteria included individuals aged 18 years and above, with no mental illnesses, who consented to take part in the study, and residents in Nigeria. Exclusion criteria included individuals who are not Nigerians, didn't give consent, or reside outside Nigeria, Patients with mental illnesses, and visitors from other countries.

Statistical analysis

Data were exported from Google Forms to Microsoft Excel and analyzed using the Statistical Package for the Social Sciences (SPSS), Version 25.0, IBM Chicago, US. The Shapiro-Wilk test was used to assess the normality. Descriptive statistical analysis was used to analyze the sociodemographic data: medians and interquartile ranges (IQR) for continuous variables. Categorical variables were demonstrated as frequencies and percentages. Cronbach's α was used to evaluate the reliability of the questionnaire, i.e., that the scales constructed are fit for their purpose, with values ≥ 0.7 indicating acceptable internal consistency. Knowledge score is a number that was given to each individual and it is calculated by giving a 1 for each correct answer and a 0 for each incorrect answer. The scale measured knowledge from a maximum of 23 to a minimum of Zero. Scores < 11 were considered poor, ≥ 11 as adequate knowledge of Hepatitis B (Othman et al., 2022; ul Haq et al., 2012). A point-biserial correlation was used to figure out whether there is an association between the Score of knowledge and the dichotomous variables presenting the Pearson correlation and P-values.

RESULTS

Socio-demographic characteristics of participants.

A total of 3,589 subjects were recorded in this study and the main parameters used for sampling are as shown in Table 1, 2945 (67.0%) males and females 1184 (33.0%), the religion recorded in this study was Christianity (3293, 91.8%), Islam (259, 7.2%) and traditionalist (37, 1.0%). The age distribution of the study was 148 (4.1%), 2997 (83.5%), and 444 (12.4%) for the ages of 18 – 20, 21 – 30, and 31 – 40 respectively with no participants above the age ranges. Amongst the 36 state and FCT Abuja only 12 states of the federation and the FCT were captured with Benue state having the highest number of participants (2109, 58.8%) and others distributed thus, Bauchi (148, 4.1%), Borno (37, 1.0%), Delta (111, 3.1%), Enugu (37, 1.0%), FCT (444, 12.4%), Gombe (148, 4.1%), Kano (37, 1.0%), Kogi (74, 2.1%), Lagos (185, 5.2%), Nassarawa (148, 4.1%), Ondo (37, 1.0% and Plateau (74, 2.1%). A greater number of the participants had a bachelor's degree (n = 2516, 70.1%), 3330 (92.8%) were non-smokers, with 2109 (58.8%) reporting as persons who don't drink alcohol and students (1369) accounting for 38.1% of the study participants.

Table 1: Sociodemographic characteristics of the participants (n = 3,589)

Variable		n (%)
Age (years)	18-20	148(4.1)
	21-30	2997(83.5)
	31-40	444(12.4)
Gender	Female	1184(33.0)
	Male	2945(67.0)
Religion	Christianity	3293(91. 8)
	Islam	259(7.2)
	Traditionalist	37(1.0)
State of Residence	Bauchi	148(4.1)
	Benue	2109(58.8)
	Borno	37(1.0)
	Delta	111(3.1)
	Enugu	37(1.0)
	FCT	444(12.4)
	Gombe	148(4.1)
	Kano	37(1.0)
	Kogi	74(2.1)
	Lagos	185(5.2)
	Nassarawa	148(4.1)
	Ondo	37(1.0)
	Plateau	74(2.1)
Settlement	Rural	259(7.2)
	Semi-rural	37(1.0)
	Semi-urban	962(26.8)
	Urban	2331(64.9)
Travel History	Asia	74(2.1)
	Europe	37(1.0)
	Not travelled out of Nigeria	2886(80.4)
	Other African countries	592(16.5)
Educational level	Bachelor's Degree	2516(70.1)

	Diploma (ND/HND)	296(8.2)
	Postgraduate	481(13.4)
	Secondary education	296(8.2)
Educational practice(major)	Health-related major	1665(46.4)
	Others	1924(53.6)
Occupation	Employed	629(17.5)
	Self-employed	999(27.8)
	Student	1369(38.1)
	Unemployed	592(16.5)
Marital status	Married	296(8.2)
	Single	3293(91.8)
Smoking status	Ex-smoker	111(3.1)
	Non- smoker	3330(92. 8)
	Smoker	148(4.1)
Alcoholic status	I don't drink	2109(58.8)
	I drink little	1369(38.1)
	I drink much	111(3.1)

As for subjects who reported information sources regarding hepatitis B, more than half 2220 (61.9%) reported school/university as the major source for hepatitis B, followed by a good percentage of 52.6%, and 50.5% by health workers and TV/internet/social media respectively for hepatitis B, as shown in figure 1.

Figure. 1: Reported information source for hepatitis B
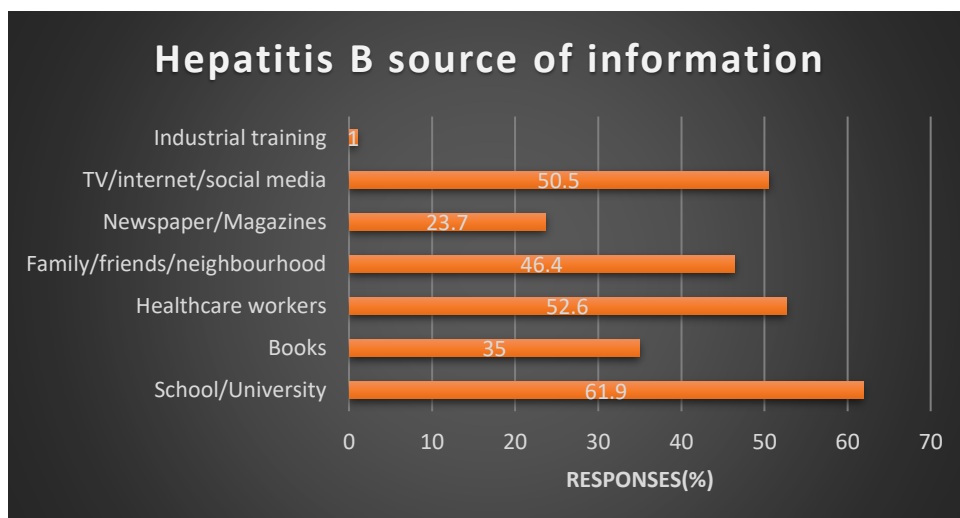
Evaluation of participants' knowledge about HBV infection

The participants' responses regarding Hepatitis B knowledge were evaluated using questions focusing on the aetiology, signs and symptoms, transmission, treatment, and management of HBV and HCV infection. Shown

in Tables 2a and b. The questionnaire was scaled from a maximum of 23 to a minimum of 0. A score level of <11 was considered poor while a score of ≥11 was considered adequate knowledge score regarding HBV. The mean (±SD) knowledge score of study participants was found 10.50 ± 4.15.

Table 2a: Participants knowledge on HBV

	Yes	No	I don't know
Have you heard of hepatitis B	3367 (93.8)	222(6.2)	
Do you know anyone with hepatitis B	1184(33.0)	2109(58.8)	296(8.2)

Table 2b: Participants' knowledge of HBV

Statement	Correct Answer	
	N	%
Hepatitis B is caused by?	2442	66.0
Does Hepatitis B affect the liver?	3071	85.6
Can hepatitis B affect any age group?	2886	80.4
Are all the following among the common symptoms of hepatitis B?		
• Cold and flu (fever, running nose, cough)	1443	40.2
• Jaundice (the skin, whites of the eyes and mucous membranes turn yellow)	2257	62.9
• Nausea, vomiting and loss of appetite	2072	57.7
Hepatitis B can be transmitted by		
• un-sterilized syringes, needles and surgical instruments	2257	62.9
• Contaminated blood and blood products	2516	70.1
• Contaminated blades of the barber/ear and nose piercing	1591	44.4
• Unsafe sexual intercourse	1925	53.6
• Transmitted from mother to foetus	1517	42.3
• Contaminated water/food prepared by a person suffering from these infections	2738	76.3
Is Hepatitis B curable?	1036	28.9
Can hepatitis B be self-cured by the body without medical treatment?	2405	67.0
Is there a specific diet required for the treatment of hepatitis B?	1813	50.5
People who are infected with hepatitis B are at risk of getting infected.	333	9.3
Does intake of alcohol increase the development of hepatitis B?	2035	56.7
Patients with Hepatitis B infection should be restrained from sexual contact	1036	28.9
Which of the following is considered a complication of hepatitis B?		

• Affect liver function	2923	81.4
• Liver cancer	1480	41.2
• Liver cirrhosis	1813	50.5
• Death	1961	54.6
Does hepatitis B have a vaccine? (Is vaccination available against hepatitis B?)	2923	81.4
How many doses of the hepatitis B vaccine should be given?	1739	48.5
How long does the vaccine function effectively in human	444	12.4

The study recorded a total of 3,589 participants who responded to questions regarding HBV infection, out of the total participants, 3367 (93.8%), responded to having heard of hepatitis B, and only 2442 (66.0%) of the participants knew that hepatitis B is caused by a virus. From the response to the common symptoms and transmission, there was evidence of moderate knowledge of hepatitis B with jaundice and nausea/vomiting/loss of appetite getting a moderate response of 62.9% and 57.7% respectively. The knowledge of transmission was moderate for HBV with some modes above the half mark while most were below. Only 1036 (28.9%) knew that hepatitis B is curable, 2405 (67%), and 1813 (50.5%) knew that HBV is self-cured without medical treatment and there is no specific diet for HBV patients respectively. Furthermore, 2923 (81.4%) were aware of the availability of the hepatitis B vaccine and about 1739 (48.5%) had the knowledge of the dosage required with 444 (12.4%) knowing how long it stays effective in the human body. On the contrary, a good number of participants knew the complications associated with viral hepatitis, with the majority 2923 (81.4%) knowing it affects liver function.

Evaluation of practices regarding HBV infection

Table 3. shows the practice of participants towards hepatitis B infection, this was measured using 6 questions with 'yes', 'no', or 'I don't know' as the response options. A large number of the participants (1184, 33%) responded they had never been screened for HBV infection, 222(6.2%) had been infected with HBV, and most respondents 3478 (96.9) were willing to go for testing, further investigations, and treatment. The majority of responders 629 (17.5%) not know where to test was the reason for their not taking an HBV screening test.

A large number of participants 1850 (51.5%) reported being vaccinated, however, 1517 (42.3%) were not vaccinated with the remaining 222 (6.2%) not sure if they had been vaccinated or not. 777 (21.7%) said they weren't vaccinated because of not knowing where to get the vaccine while 703 (19.7%) had no sufficient knowledge about the vaccine.

Table 3: Participants' practice regarding hepatitis B (n=3589)

Question	Yes	No	I don't know
Have you ever been screened for hepatitis B?	2294(63.9)	1184(33.0)	111(3.1)
Have you ever been infected with hepatitis B?	222(6.2)	3219(89.7)	148(4.1)
If you were diagnosed with hepatitis B, would you go for further investigation and treatment?	3478(96.9)	111(3.1)	-
What are your reasons for not being tested?			
• I don't have enough money	222(6.2)		
• I don't know where to test	629(17.5)		
• I don't have time	481(13.4)		

• Fear of positive test result	37(1.0)		
• Other	0(0.0)		
Have you got a vaccine against hepatitis B?	1850(51.5)	1517(42.3)	222(6.2)
Reasons for not being vaccinated.			
• I don't have enough money	407(11.3)		
• I don't know where to be vaccinated.	777(21.7)		
• I don't have time.	333(9. 3)		
• I have spiritual cover against hepatitis B	37(1.0)		
• Fear of side effects	148(4.1)		
• I don't have sufficient information about the vaccine	703(19.7)		
• My religious beliefs do not allow vaccination	37(1.0)		
• There is no vaccine for HBV	111(3.1)		
• Others specify	0(0.0)		

Participant's beliefs regarding HBV infection and people infected with the virus

Figure 2 revealed that 1222 (34%) of the participants strongly agreed that the Hepatitis B vaccine is safe and effective, although a small proportion of 37 (1%) and 296 (8.2%) disagreed and strongly disagreed with the safety and effectiveness of the vaccine, in addition, only 2738 (76.3%) agreed to the statement that HBV vaccine should be compulsory for every individual. 1924 (53.6%), and 1628 (45.3) disagreed with avoiding and isolating those infected with the virus respectively, however, 1850 (51.6%) agreed that HBV patients should be hospitalized for the full duration of treatment, a good number of participants 185 (5.1%) and 629 (17.5) believed HBV is a spiritual attack and it can be cured using local medicine respectively.

Figure 2: Participants belief about hepatitis B and people infected with the virus (n=3589)
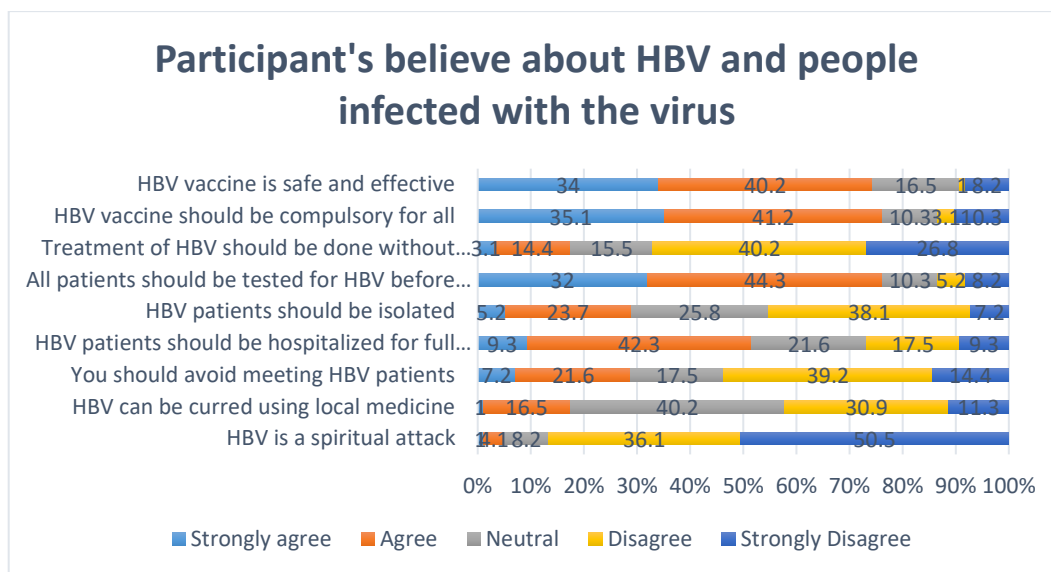
Point-biserial correlation between the dichotomous demographic variables and a score of knowledge about hepatitis B infection in Table 7 revealed that there was a significant correlation of knowledge score with travel experience, educational practice major, smoking status, and alcohol status, with other variables not statistically correlated to the level of knowledge.

Table 4: Point-biserial correlation between the Score of knowledge about hepatitis B and the dichotomous demographic variables.

Variables		
	Pearson correlation	P-value
Age: <21 vs>21	0.088	0.391
Gender: Female vs Male	0.187	0.067
Religion: Christianity vs None-Christians	0.091	0.375
Settlement: (urban vs rural)	-0.100	0.329
Travel History: travelled out of Nigeria vs not travelled out of Nigeria	**0.217***	**0.032**
Educational level: University degree vs Non-university degree	-0.021	0.840
Educational practice(major): Health-related major vs Other	**-0.489****	**0.000**
Occupation: Employed vs unemployed	0.006	0.952
Marital status: Single vs Married	-0.054	0.599
Smoking status: Ever smoked vs Never smoked	**-0.246***	**0.015**
Alcoholic status: No alcohol at all vs Alcohol intake even a small quantity	**0.204***	**0.045**

*Significance measure at P-value<0.05 is represented in bold using Point-biserial correlation

DISCUSSION

Hepatitis B remains a global public health problem with an estimate of over 1.5 million new cases, and hepatitis B virus-related deaths of over 1.1 million annually. There are well-documented efforts on the side of government and international organizations to combat the spread of this disease among the general population and immigrants with the introduction of the hepatitis B vaccine in the immunization schedule in Nigeria in 1995 and making the vaccine widely available in 2004 with its introduction in routine children immunization schedule. People must acquaint themselves with the required knowledge surrounding these viral infections, including transmission mode, signs and symptoms, treatment, and prevention. This study surveyed the Nigerian population's knowledge, practice, and beliefs toward hepatitis B infections. The overall knowledge of hepatitis B was poor, there was no statistical difference in the mean knowledge of respondents with varying ages, genders, religions, settlement, educational levels, employment, and marital status, however, there was a statistical difference in travel history, occupational sector, smoking and alcohol status of respondents. Previous studies found age as a predictor of knowledge of hepatitis B (Adekanle et al., 2015a; Gnanapandithan & Ghali, 2023; Hajarizadeh et al., 2015), however, age was not associated with the knowledge of these infections in this study, this can partly be attributed to the imbalance in our sampling as reported by (Eni et al., 2019) with this study's population ranging from ages 18 – 40, all who responded to this survey were within the cognitive ages and had at least secondary education, a large number had bachelors and pos-graduate degrees, there was also no statistical difference in educational levels and socio-economic status which disagrees with previous studies in Nigeria, Jordan, Malaysia, and Somaliland (Agbesanwa et al., 2023; Al-Mamari*, 2019; Othman et al., 2022; Rajamoorthy et al., 2019), all who reported knowledge of this infection to be associated with educational levels and socio-economic status.

This study recorded a self-reported prevalence of 6.2% for hepatitis B, this is in consonant with a seroprevalence report by (NAIIS, 2023; NASCP/FMoH, 2016; Odukoya et al., 2022; WHO, 2024), these documents reported the prevalence to range from 2 – 9%. Surprisingly, the (NAIIS, 2023; WHO, 2024) documents added that about 80% of Nigerians not to have been screened for viral hepatitis among an estimated

population of more than 20 million people living with either one or both HBV and HCV, our study findings of 33% respondents reporting to have never been screen for hepatitis B and an additional 3.1% who weren't sure of their screening status, when these figures are computed, it comes close to the statistics reported by NAIIS, (2023) and WHO, (2024) if we exclude HCV. We acknowledge that while the figures in our study are self-reported matric, they are still relevant. Although this study didn't evaluate personal risk factors for this infection, considering the age range of participants, we can say that the supposed risk factors would be multiple sexual partners, tattooing, and unprotected sex as reported by previous studies in Nigeria (Akpor et al., 2023; Ayamolowo et al., 2023; Lawal et al., 2020). As much as this study wasn't focused on the prevalence of these infections, the correlation between the self-reported prevalence in this research and the seroprevalence reported in previous studies is of much concern, more implementable policies should be put in place adding to the improvement strategies already undergoing implementation in Nigeria such as adequate screening of blood and its products, extended vaccination, and the National monovalent hepatitis B vaccine birth-dose (HepB-BD) and routine inclusion of children's vaccination program.

In this National survey, almost half of the participants (48.5%) reported a lack of previous preventive vaccination against Hepatitis B, these findings are somewhat alarming, considering that the African population is classified as a high-risk population. The World Health Organization recommended that individuals in endemic regions of the world be vaccinated against this infection, considering that the survey was carried out in Nigeria and the sample population were Nigerians living in Nigeria, a country classified to be hyperendemic with a prevalence rate greater than 8% (NAIIS, 2023; WHO, 2019, 2024; WHO African Region, 2022). Following WHO recommendation, the reported vaccination status in this survey by respondents is far below 90% coverage (WHO, 2022), thus comprehensive public health policies and efforts are needed to work at a steady and continuous rate to support sensitization, screening, and possibly vaccination at the ward levels in towns and local communities. These efforts should focus on making the vaccine available and accessible in Nigeria and other endemic countries and the promotion of the National monovalent hepatitis B vaccine birth-dose (HepB-BD).

A good number of studies have reported a poor knowledge baseline of travel-related infections among travellers (Leggat et al., 2009; Streeton & Zwar, 2006; Zuckerman & Steffen, 2006), suggesting a possibility of ignorantly placing themselves at risk of hepatitis B, but when compared to non-travellers or the general population there's a significant statistical difference in both populations, with regular travellers having better knowledge scores (Heywood et al., 2017), our study is also in agreement with these findings with a significant statistical difference between Nigerians who have travelled out of the country and those who have never travelled outside of Nigeria. This can be attributed to the factors that seemingly disposed travellers to health-related pieces of information and vaccination programs which according to (Heywood et al., 2017), gives the travellers an odd nearly 2.5 times those of non-travellers on vaccination and access to information. In addition, a good number of those who travel outside of Nigeria are reported to be mostly from families that are either of the financial middle-class or the wealthy, having access to quality education and TV/internet/social media, it is therefore not surprising that the evaluation for the source of information for Hepatitis B infections had the highest source as School/University, followed by health-care workers and then TV/internet/social media. There are facts that, healthcare workers have adequate knowledge of these infections owing to the grounds that these infections are occupational hazards to health workers as reported by several studies (Abiodun et al., 2019; Akazong W et al., 2020; Kooffreh-Ada et al., 2021; Sok et al., 2024), our study also confirmed a significant difference in knowledge when healthcare workers were compared to none-healthcare workers.

Based on the responses from participants, there is a significant gap in knowledge of the infection, related to common symptoms, transmission routes, and self-limitation of the viruses, although a good number responded rightly to the site affected by the viruses, over or close to half of the respondents responded wrongly or weren't sure if these viruses were curable, self-limiting or curable through diet, furthermore, a large number of wrong responses to the common symptoms and ways of transmission and considered complications were observed, these have also been reported within previous studies or literature (Freeland et al., 2020; Kheir et al., 2022; Mohamed et al., 2012). These misconceptions make it important to reiterate that, the hepatitis B virus is self-limiting meaning the immune system can eliminate it before establishing an infection, common symptoms of both viruses can be jaundice, cold or flu, vomiting, nausea, and loss of appetite, in addition, the listed ways of transmission can be through all the ways mentioned in the questionnaire. It is also important for individuals to

know the most effective way of hepatitis B prevention, this is through the three-dose vaccination which will significantly reduce the rate of hepatitis B infection as reported by (Velati et al., 2019), additionally, the government should also increase effects in sensitization and improvement of knowledge about hepatitis B vaccination as reported by (Kheir et al., 2022), because from the study only 48.5% and 12.4% were aware that the vaccine is taken in three doses for full protection and duration of effective vaccine function respectively. On the flip side, there was a significant statistical difference between smokers and non-smokers, alcohol intake and non-alcohol takers for hepatitis B which opposes the report by (Kheir et al., 2022), and there was no explainable reason for the statistical difference among these two categories of participants.

The participants reported good practice and belief towards these infections. A good number of Nigerians have a perception that the hepatitis B vaccine is safe and effective for human usage, with only 4.1% who were not vaccinated for fear of side effects which is directly the opposite of the numbers reported by (Kheir et al., 2022).

Overall, there is poor knowledge of hepatitis B among Nigerians and thus, the Nigerian Government and international organizations should work in synergy to help bridge the knowledge gap by hosting seminars, school outreaches, and TV/internet/social media adverts and jingles and reach the WHO 2030 vaccination target of 90%, this should be done alongside hepatitis B screening and treatment, especially in the most affected areas

Limitations

There are some limitations identified in this study, First, the study is an online survey which is subject to security breaches, as an online survey it needed a certain level of literacy and internet availability to be able to respond to it thus almost automatically excluding the illiterates and those living in areas with no internet connectivity, furthermore, the sample size was too small due to time constraints, this small sample size could not affect the total representation of the Nigerian general population, in addition, bias could arise as a result of the snowball collection technique with no random selection warranted. Unmatched variables and direct or indirect responses to variables related to stroke could have given rise to residual bias.

CONCLUSION

This study presents results and data that can be a valuable contribution to the already existing piece of literature on the perception of hepatitis B virus concerning the Knowledge, Practice, and belief reporting a knowledge gap in the participants' knowledge of hepatitis B with a statistically positive correlation of knowledge among healthcare workers and none-healthcare workers. This study raises concerns that should be addressed by the authorities and Nigerians in the quest for knowledge and sensitization not just in the urban settlements or among health workers but also in the rural, and uneducated persons.

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