AJEMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.14 (2), January-April, 2025 https://ajemates.org

KNOWLEDGE OF HEPATITIS B VIRUS INFECTION AMONG UNIVERSITY STUDENTS IN NORTH-CENTRAL NIGERIA

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ABSTRACT

This study assesses the knowledge of Hepatitis B virus (HBV) infection among university students in North-Central Nigeria, focusing on sources of information, awareness of causative agents, modes of transmission, symptoms, risk factors, preventive measures, and treatment options. A cross-sectional survey was conducted among 511 university students, utilizing structured questionnaires to collect data on their knowledge and awareness regarding HBV infection. The results indicate that television (34.7%) and the internet (31.2%) are the primary sources of information about HBV. Alarmingly, 73.7% of respondents did not recognize HBV as a virus, with 53.2% indicating they did not know its causative agent. Awareness of transmission modes varied, with 62.5% recognizing infected blood as a risk factor, while only 18.0% knew that HBV can survive outside the human body for at least one month. Furthermore, just 54.0% of participants were aware of the HBV vaccine as a preventive measure. Statistical analysis revealed significant associations between knowledge levels and academic year, with 75.0% of final-year students demonstrating good knowledge compared to only 28.1% of first-year students. The findings highlight critical gaps in knowledge about HBV among university students, emphasizing the need for targeted educational interventions. Enhancing health education through formal settings, such as lectures and seminars, could improve awareness and understanding of HBV infection. This study contributes to the understanding of HBV knowledge gaps among university students in Nigeria, providing evidence for the development of effective health education strategies tailored to this demographic.

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African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.14 (2), January-April, 2025 https://ajemates.org

Keywords: Hepatitis B Virus, Knowledge Assessment, University Students, Public Health, Nigeria, Transmission, Prevention, Socio-demographic Factors.

Introduction

Viral hepatitis refers to inflammation of the liver parenchyma caused by viral infections that affect hominoidea, including humans. The common viruses include hepatitis A, B, C, D, and E. On one hand hepatitis A and E infections are self-limiting, however resulting in fulminant hepatitis and death in only a small proportion of patients, on the other hand, hepatitis B and C are mostly fulminant and usually occur in chronic state after exposure to infected blood and body fluids (Musa, 2010). Hepatitis B virus (HBV) infection is a major global public health concern, with an estimated 257 million people living with chronic HBV worldwide (Alaridah et al., 2023).

The World Health Organization (WHO) considers HBV infection a severe health threat due to its potential to cause chronic liver disease, cirrhosis, and hepatocellular carcinoma. In regions with high prevalence, such as sub-Saharan Africa, understanding the dynamics of HBV infection is crucial for effective disease management and prevention strategies (Davlidova et al., 2021). Historically, the earliest record of epidemic caused by hepatitis B virus was made by Lurman in 1885 after the outbreak of smallpox in 1883. Hepatitis B surface antigen (HBsAg) was formerly called Australia antigen because it was first described in the serum of an Australian aborigine in 1963 (Mohamud et al., 2024). HBV can cause acute and chronic hepatitis with a tendency to progress to liver cirrhosis and hepatocellular carcinoma (HCC). Killing over 1 million people annually (WHO, 2006), thus making HBV a growing public health challenge particularly among the young adults (Colin t al, 2006; Pennap, 2011).

The most serious consequences of HBV infection are primarily the result of chronic HBV infection. This occurs in 6%-10% of infected adults, approximately 25% of infected children aged 1-5 years, and 70%-90% of infected infants (Williams, 2006); (Tesfa et al., 2021). In 1968 Okochi and Murakami discovered that the Australian antigen was related to type B hepatitis, while Dane found virus-like particles in the serum of patients suffering from type B hepatitis in 1973 (Okochi & Murakami, 1968; Jonas, 2003). These particles were designated as the hepatitis B virus (HBV). Despite the availability of an effective vaccine and antiviral treatments, knowledge about HBV's transmission, symptoms, risk factors, and preventive measures remains inconsistent across different populations (Mohamud et al., 2024).

A comprehensive understanding of HBV is essential for mitigating its impact, yet many individuals lack critical information

necessary to protect themselves and their communities. The effectiveness of public health campaigns aimed at increasing awareness is often hampered by misinformation and cultural beliefs. In a study conducted among university students in Nigeria, it was found that some of the students indulge in behaviours that have been reported as possible risk factors in HBV transmission. For example, those with multiple sexual partners had the highest rate of infection(33%) while it was least among those that consume alcohol) (Hutin et al, 1999). Other study conducted among university students revealed prevalence as high as 9.4% and 8% (Emechebe, 2012).

Statement of the problem

Hepatitis B virus (HBV) infection remains a significant public health concern in Nigeria, with a high prevalence rate that adversely affects individuals and communities. Despite the availability of effective vaccines and treatments, knowledge about HBV transmission, prevention, and treatment among university students is often inadequate. This demographic is crucial as they represent future health advocates and decision-makers within society. Current literature indicates that misconceptions about the virus's nature, modes of transmission, and preventive measures are prevalent, potentially leading to increased vulnerability and risk of infection. Furthermore, the lack of comprehensive health education in formal academic settings exacerbates this issue. Understanding the knowledge levels of university students regarding HBV is essential for developing effective educational programs aimed at improving awareness and promoting preventive health behaviors. This study seeks to address these gaps by assessing the current understanding of HBV infection among university students in North-Central Nigeria, thereby informing strategies for better health education and interventions.

Objective

The general objective of this study is to assessment of the knowledge of hepatitis B virus infection among university students in north-central Nigeria. The research questions for the study are:

1. What are the main sources of information regarding Hepatitis B virus (HBV) infection among university students in North-Central Nigeria?
2. What is the level of knowledge among university students about the causative agent of HBV infection?
3. How knowledgeable are university students about the modes of transmission of HBV infection?
4. What is the knowledge level of university students regarding the symptoms and consequences of HBV infection?

5. What are the recognized risk factors for HBV infection among university students?
6. What is the level of knowledge regarding preventive measures against HBV infection among university students?
7. What is the knowledge of university students regarding the treatment of HBV infection?
8. What demographic factors predict the knowledge of HBV infection among university students?
9. How does the academic level of study affect knowledge about HBV prevention and treatment?

Methods

A semi-structured self-administered questionnaire was used to obtain quantitative information about the knowledge and risk factors while FGD was used to collect the qualitative data. Screening of blood samples (511 selected students) was used to determine the prevalence of HBV infection among the University students. The services of resident doctors and laboratory scientist from university of Ilorin teaching hospital were engaged to surport the reseacher in the collection and testing of the samples. However the testing and interpretation of the HBsAg screening was done by the researcher and assisted by a consultant Hematologist. As a quality assurance mechanism, ten randomly selected samples were tested for HBsAg by the researcher and the assistants independently and the results compared to ensure reliability. The cost of the screening was borne by the researcher.

Data were collected using a structured questionnaire, which was designed to capture various dimensions of knowledge regarding HBV infection. The questionnaire comprised sections on awareness of HBV, sources of information, knowledge of its causative agents, modes of transmission, symptoms, risk factors, preventive measures, and treatment options. To ensure the reliability and validity of the instrument, the questionnaire was pre-tested on a small sample before full deployment. Statistical analysis was conducted using descriptive statistics to summarize demographic data and knowledge levels. Inferential statistics, including multivariate logistic regression, were utilized to identify predictors of knowledge regarding HBV infection, with the significance level set at $p < 0.05$. Ethical approval for the study was obtained from the relevant institutional review board, and informed consent was secured from all participants prior to data collection, ensuring adherence to ethical research standards.

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Results

Table 1: Distribution of Respondents by socio-demographic characteristics

Socio-demographic variables	Frequency (%)
Academic level	
100	135(26.4)
200	151(29.6)
300	91 (17.8)
400	130 (25.4)
500	4 (0.8)
Ethnicity	
Yoruba	342 (66.9)
Igbo	53 (10.4)
Hausa	41 (8.0)
Others	75 (14.7)
Religion	
Islam	208 (40.7)
Christianity	295 (57.7)
Traditional	8 (1.6)
Marital Status	
Single	495 (96.9)
Married	16 (3.1)
Residence	
Campus	271 (53.0)
Off Campus	240 (47.0)
Number living in a room	
1	130 (25.5)
2 – 3	178 (34.8)
≥ 4	203 (39.7)

Table 1 presents a significant portion of the respondents are in the 200 level (29.6%) and 100 level (26.4%), indicating a relatively even distribution among these first two academic years. Conversely, there is a notable decline in the number of respondents at the 300 level (17.8%) and an extremely low representation at the 500 level (0.8%), suggesting challenges in student progression or sampling biases in higher academic years. Regarding ethnicity, the sample is predominantly comprised of Yoruba respondents (66.9%), with much lower representation from the Igbo (10.4%) and Hausa (8.0%) ethnic groups. This skew toward the Yoruba population may reflect regional demographics and could influence the generalizability of the findings to broader ethnic contexts. In terms of religion, the majority of respondents identify as Christians (57.7%), followed by Muslims (40.7%), with traditional practitioners being a minimal presence (1.6%). This religious distribution suggests that the sample aligns with the predominant religious affiliations within the area. The marital status data

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indicates that an overwhelming majority of respondents are single (96.9%), a trend commonly observed in student populations, reflecting the typical age range of respondents, likely in their late teens or early twenties. When examining residence, the respondents are almost evenly split between those living on campus (53.0%) and those residing off campus (47.0%), highlighting a significant trend toward off-campus living, which may be influenced by factors such as cost, independence, or personal preferences. Lastly, the living arrangements reveal that a majority of respondents share their living space, with 39.7% living with four or more individuals and 34.8% living with 2-3 persons. Only 25.5% live alone, indicating a preference for shared accommodations, which is often typical in student life due to financial considerations and social factors.

Analysis of research questions

1. What are the main sources of information regarding Hepatitis B virus (HBV) infection among university students in North-Central Nigeria?

Table 2: Respondents' sources of information regarding HBV infection

Source of information	Frequency (%)
Television	160 (34.7)
Internet	144 (31.2))
Radio	47 (10.2)
Lectures	5 (1.1)
Seminar	101 (21.9)
Hospital	124 (26.9)
Friends	103 (22.3)

Multiple responses

Television emerged as the most common source of information (34.7%), followed by the internet (31.2%). This reliance on mass media for health information aligns with findings by (Alhowaish et al., 2017) suggesting that media plays a pivotal role in health education. However, the low percentage of respondents obtaining information from lectures (1.1%) indicates a potential gap in educational outreach in formal settings, which could be leveraged to enhance knowledge further.

2. What is the level of knowledge among university students about the causative agent of HBV infection?'

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Table 3: Respondents' knowledge of the causative agent of HBV infection

Causes	Frequency (%)
Virus	121 (26.3)
Bacteria	26 (6.1)
Fungal	16 (4.0)
Parasite	2 (0.4)
Helminthiasis	51 (10.0)
Don't know	245 (53.2)

A concerning finding is that 73.7% of respondents did not recognize HBV as a virus, with many attributing it to other causes such as bacteria or parasites. This lack of understanding can lead to misconceptions about transmission and prevention, highlighting the need for targeted educational interventions to clarify the nature of HBV (Abdela et al., 2016).

Table 4: Knowledge of respondents about causative agent of HBV infection

Knowledge of virus	Yes (%)	No (%)	Don't know (%)
Hepatitis B is common in Nigeria	228 (49.5)	110 (23.9)	123 (26.6)
It is less infectious than HIV	119 (25.9)	215 (46.6)	127 (27.5)
Chronic HBV means persistent for >6month	103 (22.3)	130 (28.2)	228 (49.5)
HBV can survive outside human body for at least month.	83 (18.0)	175 (38.0)	203 (44.0)

While nearly half (49.5%) of respondents acknowledged that HBV is common in Nigeria, misconceptions persisted regarding its infectiousness compared to HIV. Only 25.9% believed HBV is less infectious than HIV, which contradicts evidence by (Alhowaish et al., 2017) that HBV is indeed more infectious. Furthermore, only 18.0% knew that HBV can survive outside the human body for at least one month, which is critical information for understanding transmission risks.

3. How knowledgeable are university students about the modes of transmission of HBV infection?

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Table 5: Respondents' knowledge of modes of HBV transmission

Mode of transmission	Yes (%)	No (%)	Don't know (%)
Contaminated food prepared by an infected person	153 (33.2)	147 (31.9)	161 (34.9)
Infected blood or blood products	288 (62.5)	50 (10.8)	123 (26.7)
Unprotected sex	222 (48.2)	93 (20.2)	146 (31.6)
Sharing of sharp objects	240 (52.1)	62 (13.4)	159 (34.5)
Mother to child	203 (44.0)	82 (17.8)	176 (38.2)
Shaking of hands	184 (39.9)	155 (33.6)	122 (26.5)
Barber blades and nose piercing	178 (38.6)	136 (29.5)	147 (31.9)
Kissing	157 (34.1)	128 (27.8)	176 (38.1)
Breastfeeding	184 (39.9)	93 (20.2)	184 (39.9)
Health worker to patients	155 (33.6)	117 (25.4)	189 (41.0)
Open wound/ cut	203 (44.0)	243 (52.7)	15 (3.3)

Table 5 presents the highest level of awareness is regarding infected blood or blood products, with 62.5% of respondents indicating "Yes" to this transmission mode. This suggests a strong recognition of the risks associated with blood borne pathogens. In contrast, contaminated food prepared by an infected person shows a more divided opinion, with 33.2% affirming awareness, while a similar proportion (34.9%) remains uncertain, indicating a need for more education on this transmission route. Unprotected sex is recognized by 48.2% of respondents as a mode of transmission, highlighting a moderate level of awareness, but 31.6% are unsure, suggesting a gap in knowledge. Similarly, sharing of sharp objects is acknowledged by 52.1% of respondents, demonstrating a reasonable understanding of this risk, yet 34.5% still express uncertainty. The transmission from mother to child is acknowledged by 44.0% of respondents, with a significant 38.2% unsure, indicating a critical area for educational intervention.

Awareness of shaking hands as a mode of transmission is lower, with 39.9% saying "Yes," while a notable 26.5% don't know, raising questions about misconceptions regarding casual contact. Regarding barber blades and nose piercing, awareness stands at 38.6%, but similar uncertainty (31.9%) remains. The transmission via kissing is recognized by 34.1%, although 38.1% of respondents are unsure, indicating a lack of clarity about this mode. Breastfeeding is similarly acknowledged by 39.9%, with an equal percentage of respondents unsure, highlighting the need for clarity in public health messaging. Awareness of health worker to patients' transmission is lower at 33.6%, with a substantial 41.0% uncertain, suggesting an area that requires improvement in education. The transmission

through open wounds or cuts has 44.0% awareness, but a notable 52.7% of respondents answered "No," indicating misconceptions or lack of knowledge regarding this transmission route. Overall, the data reveals significant gaps in awareness about various modes of transmission, underscoring the necessity for targeted educational interventions to enhance understanding and promote preventive measures.

4. What is the knowledge level of university students regarding the symptoms and consequences of HBV infection?

Table 6: Respondents' knowledge of symptoms and consequences of HBV infection

Symptoms &consequences	Yes (%)	No (%)	Don't know (%)
Yellowness of the eye	181 (39.3)	29 (6.3)	251 (54.4)
Passage of dark urine	179 (38.8)	34 (7.4)	248 (53.8)
Nausea, vomiting and loss of appetite	157 (34.1)	73 (15.8)	231 (50.1)
HBV infected person without symptoms	150 (32.5)	148 (32.1)	163 (35.4)
Affect liver	253 (54.9)	40 (8.7)	169 (36.4)
Cause liver cancer	218 (47.3)	58 (12.6)	185 (40.1)

Only about one-third (32.5%) of respondents recognized that HBV can be asymptomatic, which is a crucial aspect of the disease's nature. The majority understood that HBV affects the liver (54.9%) and can lead to liver cancer (47.3%), indicating some awareness of the severe consequences of the infection (Nagpal & Hegde, 2016). However, the high percentage of respondents who did not know these facts underscores the need for improved educational efforts.

5. What are the recognized risk factors for HBV infection among university students?

Table 7: Knowledge of risk factors of HBV infection among respondents

Risk factors	Yes (%)	No (%)	Don't know (%)
Unprotected sexual intercourse	205 (44.5)	104 (22.5)	152 (33.0)
Intravenous drug use	177 (38.5)	84 (18.1)	200 (43.4)
Blood transfusion	240 (52.1)	74 (16.0)	147 (31.9)
Circumcision	162 (35.1)	90 (19.6)	209 (45.3)
Ear/Nose piercing	197 (42.7)	82 (17.8)	182 (39.5)
Multiple sexual partner	225 (48.8)	71 (15.4)	165 (35.8)
Scarification	114 (24.7)	225 (48.8)	122 (26.5)
History of liver diseases in the family	176 (38.2)	98 (21.2)	187 (40.6)
Sharing of sharp objects	216 (47.0)	71 (15.4)	174 (37.6)
Alcohol consumption	185 (40.1)	98 (21.3)	178 (38.6)
Close bodily contact	124 (26.9)	173 (37.5)	164 (35.6)
Overcrowding/Clustering	145 (31.4)	153 (33.2)	163 (35.4)

Table 7 summarizes the knowledge of risk factors associated with hepatitis B virus (HBV) infection a significant number of respondents recognize blood transfusion as a risk factor, with 52.1% answering "Yes," indicating a strong awareness of this transmission method. In contrast, unprotected sexual intercourse is acknowledged by 44.5% of respondents, revealing a moderate level of awareness, yet 33.0% remain uncertain, highlighting the need for further education in this area. Similarly, awareness of multiple sexual partners is also notable, with 48.8% indicating recognition of this risk, but a substantial number (35.8%) are unsure, suggesting gaps in understanding. Sharing of sharp objects is recognized by 47.0% of respondents, indicating a good level of awareness, while 37.6% are uncertain. Awareness of intravenous drug use as a risk factor is lower, with only 38.5% acknowledging it and 43.4% expressing uncertainty, suggesting a critical area where knowledge needs to be improved. Ear/nose piercing is identified as a risk factor by 42.7% of respondents, but a significant 39.5% are unsure, indicating a need for more information. Awareness regarding history of liver diseases in the family is moderate, with 38.2% recognizing it as a risk factor, whereas 40.6% do not know, indicating potential misconceptions about genetic risks. The recognition of circumcision as a risk factor is relatively low at 35.1%, with 45.3% of respondents unsure, suggesting a lack of clarity in public health messaging about this practice. The awareness of scarification is notably low, with only 24.7% acknowledging it as a risk factor; this is concerning given that 48.8% answered "No," potentially reflecting a significant gap in knowledge. When it comes to alcohol consumption, 40.1% of respondents recognize it as a risk factor, but 38.6% remain unsure, indicating mixed perceptions about its role in HBV infection. Finally, awareness of close bodily contact is low, with only 26.9% affirming it as a risk factor, while a significant portion (37.5%) answered "No," indicating a potential misunderstanding of transmission routes. Similarly, the recognition of overcrowding/clustering is moderate, with 31.4% acknowledging it as a risk factor, but uncertainty is still present among 35.4% of respondents.

6. What is the level of knowledge regarding preventive measures against HBV infection among university students?

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Table 8: Respondents' knowledge of preventive measures of HBV infection

Preventive measure	Yes (%)	No (%)	Don't know (%)
HBV vaccine	249 (54.0)	67 (14.5)	145 (31.5)
Regular exercise	140 (30.4)	137 (29.7)	184 (39.9)
Balanced diet	243 (52.7)	72 (15.6)	146 (31.7)
Good hand hygiene	243 (52.7)	82 (17.8)	136 (29.5)
Use of condoms	253 (54.9)	40 (8.7)	168 (36.4)
Post exposure vaccination	124 (26.9)	87 (18.9)	250 (54.2)
Boiling of surgical equipment b/4 use	216 (46.9)	75 (16.3)	170 (36.8)

More than half of the respondents (54.0%) were aware of the HBV vaccine as a preventive measure, which is encouraging. However, knowledge about other preventive measures, such as regular exercise and good hand hygiene, was less prevalent. This indicates a need for comprehensive education that encompasses all aspects of prevention, not just vaccination (Kareem et al., 2022).

7. What is the knowledge of university students regarding the treatment of HBV infection?

Table 9: Knowledge of respondents on treatment of HBV infection

Knowledge	Yes (%)	No (%)	Don't know (%)
HBV infection is curable	223 (48.4)	84 (18.2)	154 (33.4)
HBV infection is self-cure	107 (23.2)	187 (40.6)	167 (36.2)
Specific diet required for the treatment	243 (52.7)	72 (15.6)	146 (31.7)
Availability of treatment drug	87 (18.8)	169 (36.7)	205 (44.5)

The data shows that less than half (48.4%) of respondents knew that HBV infection is curable, and only 18.8% were aware of available treatment drugs. This lack of knowledge about treatment options can lead to fatalism and reduced motivation to seek medical help, emphasizing the importance of educating the public about the availability and effectiveness of treatments (Babudieri et al., 2005).

8. What demographic factors predict the knowledge of HBV infection among university students?

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Table 10: Predictors of knowledge of HBV infection among the respondents using multivariate logistic regression analysis

Characteristics	odd ratio (C.I)	p-value
Age group		
≤ 20	0.496 (0.068-3.602)	0.48
20-22	1.014 (0.563-1.827)	0.96
23-25	1.254 (0.312-4.424)	0.81
26 and above (RC)		
Residence		
Off-campus	3.384 (0.159-0.925)	0.04*
Campus (RC)		

CI= Confidence Interval; RC= Reference Category; *p<0.05

The analysis indicates that place of residence significantly predicts knowledge of HBV infection, with off-campus respondents showing better knowledge. This finding suggests that targeted educational interventions could be beneficial, particularly for those living in campus settings where access to information may be limited (Tesfa et al., 2021).

9. How does the academic level of study affect knowledge about HBV prevention and treatment?

Table 11: Association between knowledge on prevention and academic level of study

Knowledge	Year of Study (%)						
	100	200	300	400	500	X^2	P value n:461
HB Vaccine	76 (59.8)	58 (47.5)	47 (53.5)	67 (54.0)	1(33.3)	6.40	0.60
Regular exercise	51 (40.2)	28 (23.0)	21 (24.7)	39 (31.5)	1(33.3)	20.78	0.00*
Balanced diet	80 (63.0)	50 (51.0)	52 (61.2)	61 (49.2)	0 (0.0)	26.95	0.00*
Use of condom	45 (33.3)	47(31.1)	42 (46.2)	67 (51.5)	3 (75.0)	29.50	0.00*
Blood screening	62 (48.8)	58 (47.5)	39 (45.9)	67 (54.0)	1(33,3)	8.68	0.37
Post exposure vaccine	43 (33.9)	31(25,4)	22(25.9)	28 (22.6)	0 (0.0)	35.25	0.00*

*statistically significant

More than half, (59.8%) of the respondents in 100 level knew that Hepatitis b vaccine can prevents HBV infection, closely followed by 300 and 400level constituting (53.5%) and (54.0%) respectively. Less than half, (33.3%) of the respondents in 100levels knew that condom use can prevent HBV infection compared with 51.5% of the 400 level student. Statistical significant association was found between the condom use and academic level of the respondents.

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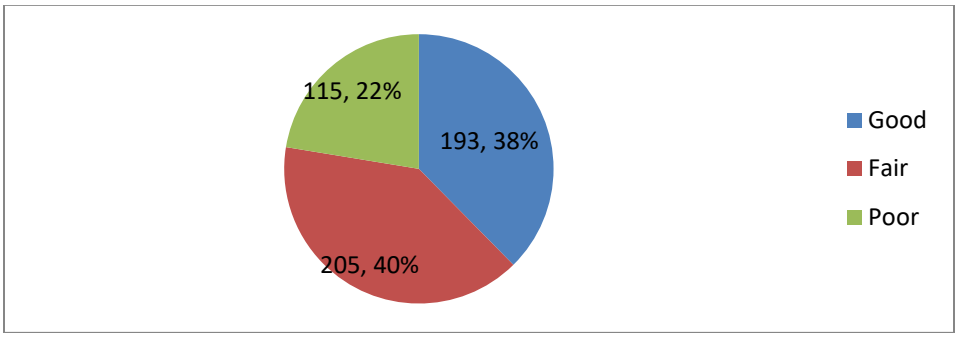


Figure 1: Respondents' knowledge on prevention of HBV infection

Majority, (40%) of respondents had fair Knowledge, followed by good knowledge score, (38%).

How does the academic level of study affect knowledge about HBV prevention and treatment?

Table 12: Relationship between Knowledge level on prevention and academic level of respondent

Level of study	Knowledge Score (%)				
		Good	Average	Poor	X^2p n;461
100	33 (28.1)	55 (42.3)	40 (29.6)		
200	70 (53.0)	54 (35.8)	14 (11.2)		
300	30 (36.4)	30 (34.0)	21 (29.6)		
400	25 (30.8)	55 (44.6)	30 (24.6)		
500	3 (75.0)	1 (25.0)	0 (0.0)	12.13	0.00*

*Statistically significant Yates's correction

Respondents in 500 level had highest proportion, (75.0%) with good Knowledge on prevention and the lowest, (28.1%) among 100 level. There was a statistically significant association between respondent's knowledge on prevention and the academic level of study.

Discussion of Findings

The findings from the study on respondents' knowledge and awareness of Hepatitis B virus (HBV) infection present a complex picture of public health education and its effectiveness. Overall, a significant majority (90.0%) of respondents were aware of HBV infection, suggesting that public health campaigns have successfully disseminated information. However, while awareness exists, the depth of understanding regarding modes of transmission, causative agents, and preventive measures is inconsistent. The socio-demographic profile of the respondents reveals a predominantly young population, with a majority being single and living either on or off campus. The academic distribution indicates a strong representation

among first-year (100 level) and second-year (200 level) students, while there is a noticeable drop in participation from higher levels. This pattern may suggest challenges in retention or sampling biases, as seen in similar studies (Davlidova et al., 2021). The data indicates that a concerning 73.7% of respondents did not recognize HBV as a virus, with many attributing it to other causes such as bacteria and parasites. This lack of understanding can lead to misconceptions about transmission and prevention strategies. Literature underscores the importance of accurately framing the nature of infectious diseases to prevent stigma and enhance public health responses (Ara et al., 2021); (Oladapo et al, 2021)

The awareness levels regarding modes of transmission varied significantly. While 62.5% of respondents recognized infected blood or blood products as a transmission route, awareness of other modes, such as unprotected sex (48.2%) and sharing sharp objects (52.1%), was moderate, with considerable uncertainty expressed. This aligns with findings by (Babudieri et al., 2005); (Opele, & Tomori, 2024) who noted that gaps in knowledge about transmission routes can hinder effective prevention strategies.

The high percentage of uncertainty regarding casual contact methods, such as shaking hands and kissing, further indicates a need for targeted educational initiatives to clarify these misconceptions. Although a majority of respondents understood that HBV affects the liver and can lead to liver cancer, only about one-third recognized that HBV can be asymptomatic. This is critical knowledge, as asymptomatic carriers can unknowingly transmit the virus, complicating control efforts (Alhowaish et al., 2017); (Lanre-Ogungbile et al., 2020). The high proportion of respondents unaware of key symptoms emphasizes the need for comprehensive educational campaigns that address both the medical and social implications of HBV. The knowledge of risk factors was similarly inconsistent. While blood transfusion (52.1%) and sharing sharp objects (47.0%) were recognized as risks, other factors, such as intravenous drug use (38.5%) and scarification (24.7%), had lower awareness levels. This suggests a critical gap in education about less commonly discussed risk factors, which can lead to increased vulnerability among certain populations (Ellis et al., 2019). More than half of the respondents recognized the HBV vaccine as a preventive measure (54.0%), which is encouraging. However, knowledge about other preventive strategies, such as good hand hygiene and regular exercise, was lacking.

The importance of a multifaceted approach to prevention is supported by (Aynalem et al., 2022), who argue that vaccination alone is not sufficient to control HBV transmission. Furthermore, the lack of awareness regarding the availability and efficacy of treatment options underscores the

need for public education to reduce fatalism and encourage individuals to seek medical help (Opele et al., 2022). The multivariate logistic regression analysis revealed that residence significantly predicted knowledge levels, with off-campus respondents demonstrating better awareness. This finding suggests that individuals living off-campus may have better access to health information, possibly due to greater engagement with community health resources (Nagpal & Hegde, 2016); (Awe, 2020). Conversely, those on campus may benefit from targeted educational interventions to improve their understanding of HBV. The analysis showed that knowledge of prevention strategies varied significantly by academic level. Notably, higher-level students (500 level) exhibited greater knowledge of preventive measures compared to their lower-level counterparts. This trend may reflect accumulated exposure to health education over time, emphasizing the importance of integrating health education into the academic curriculum for all levels (Strang et al., 2000)

Conclusion

The study highlights significant gaps in knowledge and understanding of HBV infection among respondents, despite high levels of awareness. While certain aspects of HBV transmission and prevention are recognized, misconceptions persist, particularly regarding the causative agent and modes of transmission. The findings underscore the urgent need for targeted educational initiatives that address these gaps, particularly among younger populations and those living on campus. By enhancing knowledge about HBV, including its transmission, symptoms, and preventive measures, public health campaigns can foster better health outcomes and reduce the burden of this preventable infection. Future research should focus on the effectiveness of these educational interventions in improving knowledge and changing health behaviors related to HBV.

Recommendations

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

1. The university management should develop educational initiatives tailored to specific demographic groups, particularly younger populations and students, to enhance their understanding of HBV transmission, prevention, and treatment.
2. There is a need to use diverse media platforms, including social media, television, and community outreach, to disseminate accurate information about HBV effectively.
3. The university management should provide comprehensive training for healthcare providers to improve their ability to communicate essential information about HBV and address common misconceptions.
4. The university management should implement ongoing awareness

campaigns focused on high-risk populations, incorporating interactive elements to engage the audience and promote preventive behaviours.

5. There is a need to encourage continuous research to monitor knowledge and awareness trends over time, allowing for the assessment and adjustment of educational strategies as needed.

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