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PREVALENCE OF HEPATITIS B VIRUS INFECTION AMONG HEALTHCARE WORKERS IN KARU PRIMARY HEALTHCARE, FEDERAL CAPITAL TERRITORY ABUJA.

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ABSTRACT

Hepatitis B Virus (HBV) infection affects the liver and can lead to potentially life-threatening acute or chronic disease. The population with high HBV infection prevalence of ≥ 8%, such as Nigeria, presents the highest risk of HBV transmission among health-workers. There is a need to disseminate knowledge of HBV infection and the risk of transmission to health-workers. This study was carried out to determine the prevalence of hepatitis b virus infection among health care workers in Karu Primary Health Care, FCT, Abuja. A cross-sectional descriptive research that studied 70 randomly selected health-workers was conducted between June and October 2025. Collected data with a pre-tested structured questionnaire, and analyzed it with SPSS version 21.0. The study recorded a prevalence of 7.1% among studied respondents. Hepatitis B prevalence was more prevalent in males (12.9%), those who were below 29 years (10.5%), those who were still single (9.5%), and those with 1 - 5 years experience (8.3%) following distribution based on gender, age group, educational

qualification, marital status, and years of work experience respectively, although the difference was not statistically significant (P > 0.05). There was no association between the risk factors assessed and HBV infection.

KEYWORDS: Prevalence, Hepatitis B Virus Infection, Healthcare workers, Primary Healthcare Center.

INTRODUCTION

Hepatitis B infection is a systemic viral infection caused by the hepatitis B virus (HBV), which infects the liver, resulting in hepatocellular necrosis as well as liver cell inflammation (Orji, 2023). HBV is a double-stranded DNA virus from the hepadnaviridae family. The hepatitis B virus (HBV) replicates in liver cells (hepatocytes), causing damage and potentially leading to death. HBV infection was previously ranked as the tenth leading cause of death worldwide, but currently, liver cirrhosis and liver cancer are the 11th and 24th leading causes, respectively (Angbalaga *et al*., 2025).

The transmission of HBV is mainly through percutaneous or mucosal exposure to infected blood and other body fluids. These are menstrual, vaginal, saliva, and seminal fluids. However, in the areas of high endemicity, vertical transmission from a mother to child in utero/at birth and horizontal transmission via exposure to infected blood during the first five years of life from an infected child to an uninfected child becomes a very vital source of infection (WHO, 2019). Sexual transmission of hepatitis B is also an important route of infection, predominantly in non-vaccinated men who have sex with men and heterosexual persons with multiple sexual partners or those patronizing commercial sex workers, in addition to those with a history of other sexually transmitted diseases (STDs). Transmission of HBV may also occur through recycled needles and syringes either in healthcare settings or intravenous injection drug users. Besides, the infection can occur during dental, medical, and surgical procedures due to lapses in infection prevention & control measures through tattooing or using razors and similar objects contaminated with infected blood (Orji *et al*., 2023).

Occupations at risk of infection include health workers (especially surgeons and dental practitioners) who have the highest risk, commercial sex workers and long-distance drivers are also at a significant risk of infection. Risk factors like local circumcision, female genital mutilation, scarification and tribal marks, body piercings and poorly screened blood transfusions are important and highly specific to Nigeria (Muhlemann *et al*., 2018).

Not all people newly infected with HBV have symptoms, but for those that do, symptoms can include fatigue, poor appetite, stomach pain, nausea, and jaundice. For many people, hepatitis B is a short-term illness. For others, it can become a long-term, chronic infection that can lead to serious, even life-threatening health issues like cirrhosis or liver cancer (CDC, 2020).

Globally, an estimated 237 million people live with chronic HBV with about 900,000 deaths. The majority of the disease burden is in WHO African and Western Pacific Regions, affecting 6.1% and 6.2% of the adult populations respectively (Spearman *et al*., 2017). Nigeria has an HBV prevalence of 11% and is one of the most highly endemic countries in the world. The country has 22 million people infected with the virus (Abutu, 2018).

The World Health Organization reported that an estimate of about 2 million health workers are at risk of exposure to the Hepatitis B Virus at their workplaces annually and 90% of these infections which develop from these exposures are in low-income countries, especially in Sub-Saharan Africa. The risk of acquiring HBV among health workers is four times greater than the general population (Oni *et al*., 2022). In Nigeria, among health workers, the problem of HBV infection is such that the vast majority of patients with HBV infection are undiagnosed and thus may present an unknown risk to the health workers that manage them. These health workers who deal directly with bodily fluids and exposed wounds of the patient are at the greatest risk of infection (Abiodum *et al*., 2019). Nigeria is HBV holoendemic, with carrier rates as high as 15–37% (Alabi *et al*., 2023). Hence, healthcare workers have a reasonable risk of becoming infected. The prevalence of HBV infection among health workers in Nigeria is about 13.6% (Ijoma *et al*., 2021).

The most effective and feasible means of preventing HBV infection are by avoiding exposure to infected bodily fluids, screening, and vaccination. Screening links people to interventions to reduce transmission through risk behavior counselling and hepatitis B vaccination. However, limited access to hepatitis B diagnosis and treatment in resource-constrained settings is challenging (Awoke *et al*., 2020).

RESEARCH METHODOLOGY

Study Setting

The study was carried out in Karu Primary Health Care (PHC), FCT, Abuja. Abuja, popularly known as Federal Capital Territory (FCT) of Nigeria, is located in the centre of the country. It is bounded on the north by Kaduna State, on south-east by Nasarawa State, on the south-west by Kogi State and on the west by Niger State. Abuja has an estimated population of 1,406,239 (733,172 males and 673,067 females) reported by National Population

Commission (NPC), 2006. It contributes to about 1.3% of the total population of Nigeria. Abuja lies on coordinates 8^0 50' N 7^0 10^0 E. The city has a land mass of 7,753.9 square kilometres and a population density of 740 people per square kilometres. The indigenous inhabitants of the state comprise the Gwari, Koro, Gwandara, Ganagana, Afo, Hausa, Fulani and Bassa ethnic groups. They are primarily dairy farmers. The territory is rich in mineral resources like marble, tin, clay and lead (Akintola *et al*., 2021).

Research design

A cross-sectional descriptive study design was used for this study and was conducted from April through July, 2025.

Population of the study

The permanent health workers serving at Karu Primary Health Care (PHC), FCT, Abuja constituted the target population.

Sampling techniques

The research utilized a simple random sampling technique to select participants) who consented to participate in the study.

Research instrument

The study data on demographics and risk factors was collected using a pre-tested structured questionnaire that was self-administered to the participants. The questionnaire was divided into two sections capturing the socio-demographic information, and the risk factors. The language of communication for the survey questionnaire was English. Data on hepatitis B sero-positivity was collected after testing subjects' collected blood specimens using hepatitis B surface antigen (HBsAg) rapid test kit (Swe-Care Diagnostics Ltd).

Validity of the Study

The study employed face validation by the research Mentor, and the tool was updated accordingly.

Method of Data Collection

The assistance of two health workers who were trained and assisted in data collection was employed. The pre-tested structured questionnaires were self-administered to the participants who completed the questionnaires and returned same to the research assistants.

Hepatitis B sero-positivity was confirmed by the HBsAg rapid kit (Swe-Care Diagnostics Ltd) according to manufacturer instructions. This is a qualitative lateral flow immunoassay test kit device for the detection of both HBsAg in plasma.

Method of Data Analysis

Data generated were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0 and Chi-square (X^2) test was used to measure significant relationship between different sociodemographic characteristics among subjects at 95% confidence level. Results was considered significant at a p-value < 0.05.

Ethical Consideration

The study was approved by the Health Research Ethics Committee of the Federal Capital Territory, Abuja. Each respondent provided informed consent, as participation was voluntary. Records from the screening and information obtained from the questionnaires were treated with strict confidentiality and utilized solely for this research purpose.

RESULTS

Table 4.1: Distribution of HBV prevalence by respondents' Socio-demographic characteristics.

Characteristics	No. Tested (N = 70)	No. Positive (%)	X^2 values	P-value
Gender				
Males	31 (44.3%)	4 (12.9%)		
Females	39 (55.7%)	1(2.6%)	2.784	0.095
Age group (yrs)				
≤ 29 years	19 (27.1%)	2 (10.5%)		
30 – 39 years	24 (34.3%)	2(8.3%)		
40 – 49 years	11 (15.7%)	1 (9.1%)		
≥50 years	16 (22.9%)	1 (6.3%)	0.206	0.975
Educational qualification				
Secondary	11 (15.7%)	1 (9.1%)		
Tertiary	46 (65.7%)	3(6.5%)		
Post Graduate	13 (18.6%)	1(7.7%)	0094	0.954
Marital Status				
Single	21 (30%)	2 (9.5%)		
Married	31(44.3%)	2 (6.5%)		
Divorced/Separated	7 (10%)	0 (0%)		
Widow/Widower	11 (15.7%)	1 (9.1%)	0.803	0.849
Years of Working Experience				
1 - 5 years	24 (41.4%)	2 (8.3%)		
6-10 years	31 (37.1%)	2 (6.5%)		

> 10 years	15 (21.4%)	1 (6.7%)	0.074	0.964
Work Cadre				
Medical Doctors	3 (4.3%)	0 (0%)		
Lab Scientist/Technicians	5 (7.1%)	0 (0%)		
Nurses/Midwives	10 (14.3%)	0 (0%)		
Pharmacist/Pharmacy technicians	3 (4.3%)	0 (0%)		
Community health extension workers	9 (12.9%)	1 (11.1%)		
Health Information Management Staff	11 (15.7%)	1 (9.1%)		
Attendants	13 (18.6%)	1 (7.7%)		
Other Staff	16 (22.9%)	2 (12.5%)	2.546	0.918

Table 4.1 reports the demographics of respondents and the distribution of hepatitis B virus infection. From the table above, females constituted higher percentage (55.7%) of the respondents. Substantial proportion of respondents interviewed in this survey was in the age range of 30-39 years. A large proportion of the respondents had work for 6 - 10 years. Just 11(15.7%) respondents had below tertiary education. Furthermore, occupational distribution revealed that 4.3% of respondents were medical doctors, 7.1% were Laboratory personnels, 14.3% were nurses and midwives, 4.3% were pharmacy scientists/technicians, 12.9% were community health extension workers, 15.7% were from the health information management cadre, 18.6% were attendants and other staff made up 22.9%. Hepatitis B prevalence was more prevalent in males, those who were below 29 years, those who were still single, those with 1 - 5 years experience and attendants following distribution based on gender, age group, educational qualification, marital status, years of work experience and work cadre respectively.

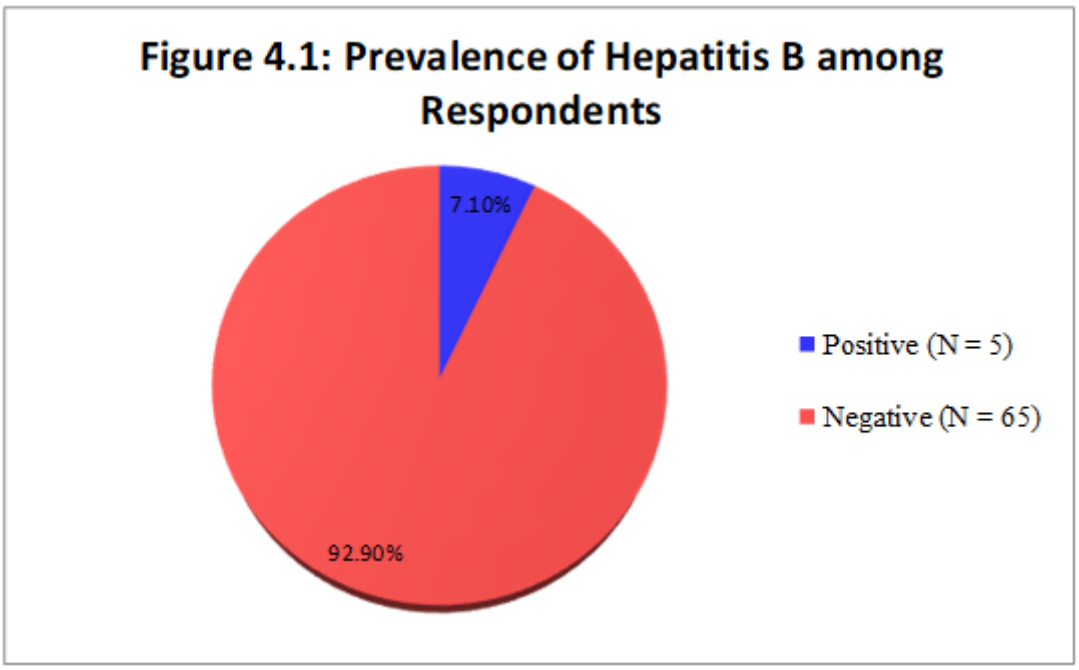

Figure 4.1 reports the overall prevalence of hepatitis B among studied population. Out of the 70 subjects recruited for this study, 5 were positive for hepatitis B representing 7.1% while 65 were negative representing 92.9%.

DISCUSSION

The study enrolled 70 health workers across in Karu Primary Health Care, FCT, Abuja, Nigeria. Substantial proportion of respondents interviewed in this survey was in the age range of 30-39 years, followed by the age group < 29 years. These age groups represent the bulk of the economically productive section of the Nigerian population. In a similar study carried out at Usmanu Dan Fodiyo University Teaching Hospital (UDUTH), Sokoto, North-West Nigeria, the researchers reported that a higher proportion of respondents were in the younger age groups (Hassan *et al*., 2016). A large proportion of the respondents had work duration of 6 -10 years. Majority of the respondents were females. This finding is consistent with the other studies where females made up the highest proportion of respondents (Omar *et al*., 2025; Osagiede *et al*., 2020).

Regarding the prevalence of HBV (HBsAg), the overall prevalence for HBV in this study was 7.1%. This finding agrees with the results from other surveys as this observed prevalence was found to be similar to reports from countries with intermediate population HBV prevalence: example, Tanzania with adult population HBsAg prevalence of 6% and among HCWs as 7.4% (Mueller *et al*., 2015). This finding was much lower when compared with findings from regions with high HBV endemicity like Cameroon, the population prevalence

is estimated at 10.1% and HCWs' prevalence of 23.6% for HBV (Zampino *et al*., 2025). The finding in this study is also lower than the estimated population prevalence for Nigeria with HBsAg adult population positivity of about 13.6% and that of HCWs at about 17% with higher rate among surgeons (25.7%) (Osagiede *et al*., 2020). The observed lower prevalence in the study may be because the study population is likely to be more exposed to health information than the general population which in turn may positively influence their lifestyle and habits, given that HBV can also be acquired outside the occupational environment.

HBsAg positivity usually indicates either an active hepatitis B infection or a chronic carrier state, both of which could eventually lead to life threatening liver diseases like cirrhosis and hepatocellular carcinoma (Tatsilong *et al*., 2016). Positive HCWs are not only a risk to their families but most especially to the patients they cater for.

The findings from this study is however higher than findings from similar studies in Nigeria and certain countries such as 2.9 % in Rwanda (Kateera *et al*., 2015), 4.9% reported in Cameroon (Ngekeng *et al*., 2018) and 1.4% by in South South Nigeria (Osagiede *et al*., 2020), and the 1.1% in Ekiti; south Western Nigeria (Alese *et al*., 2016). The difference in prevalence in the different studies may be due to difference in population studied.

In this study HBsAg prevalence was higher in men than in women although the difference was not statistically significant ($P > 0.005$). A similar study conducted by Ngekeng *et al.* (2018) in Cameroon also reported a higher prevalence in males than females. Other studies have also reported similar higher prevalence in men (Mueller *et al.*, 2015). Multiple sexual partnership polygamy and the care-free nature of men that allows for the sharing of sharps such as nail cutters and barbing clippers may be responsible for the gender-based prevalence recorded.

The odds of HBsAg positivity was slightly lower in those above 30years than those 29 years and below even though age was not found to be significantly associated to HBsAg prevalence. Those who had worked for 6 years and more had a lower chance of having the disease than those who had worked for less. Hepatitis B prevalence was not significantly associated with marital status and this is similar to findings of Ngekeng *et al.* (2018) where duration of work, and age were not significantly associated with hepatitis B prevalence. This was found to be inconsistent with findings from others studies suggesting that the longer the duration of work or practice as a health care personnel, the higher the prevalence of HBV (Lewis *et al*., 2015; Mueller *et al*., 2015). There was no association of hepatitis B and marital status, level of education and working cadre. Even though profession too was not

significantly associated to HBsAg prevalence, doctors, pharmacists, medical laboratory personnels and nurses had lower risk of infection compared to other cadre. As observed from the current study, the prevalence result does not agree with the findings of Osagiede *et al*. (2020) which recorded infections only in nurses and doctors. This could be because doctors, nurses, pharmacists and medical laboratory personnels in the current study may be more informed about the mode of transmission and prevention of hepatitis B compared to their counterparts.

CONCLUSION

The study which was carried out to determine the prevalence of hepatitis b virus infection among health care workers in Karu Primary Health Care, FCT, Abuja recorded a prevalence of 7.1%. Hepatitis B prevalence was more prevalent in males, those who were below 29 years, those who were still single, those with 1 - 5 years experience and attendants following distribution based on gender, age group, educational qualification, marital status, years of work experience, and work cadre respectively.

Recommendations

1. There should be intensified health education and awareness campaign in the hospitals and general population in order to dispel some of the current misconceptions regarding HBV infection. This approach should start as early as possible and include primary and secondary schools.
2. Advanced diagnostic testing should be made affordable and accessible for individuals to ensure proper diagnosis of hepatitis B as the routine serological test (anti-HBsAg) cannot differentiate between current and past infections.
3. More efforts should be employed in vaccination of hepatitis B especially healthcare workers so as to prevent the spread of infection.

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