

Knowledge of Hepatitis B Infection Vaccination Status, Risk Perception and Barriers among Hospital Cleaners at the University of Abuja Teaching Hospital Gwagwalada, Nigeria

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Abstract

Background

Hospital cleaners occupy a frontline position in healthcare infection control, yet remain among the least studied occupational groups in hepatitis B research. This study assessed knowledge of hepatitis B infection and its vaccine, risk perception, vaccination status, and barriers to vaccination among cleaners at the University of Abuja Teaching Hospital (UATH), Gwagwalada, Nigeria.

Methods

A descriptive cross-sectional study was conducted among 145 cleaners selected by systematic random sampling. Data were collected using a structured, interviewer-administered questionnaire covering sociodemographic characteristics, hepatitis B knowledge, risk perception, vaccination status, and barriers to vaccination. Analysis was performed with SPSS version 23, using descriptive statistics and chi-square tests. Ethical approval was obtained from the Health Research Ethics Committee of UATH.

Results

All 145 questionnaires were returned (response rate 100%). Mean age was 40.63 ± 9.96 years; 73.1% were female. Knowledge of hepatitis B was good in 135 participants (93.1%), and knowledge of the hepatitis B vaccine was good in 111 (76.6%). Good risk perception was recorded in 106 participants (73.1%). Despite this, only 49 cleaners (33.8%) had received at least one vaccine dose, and only 19 (13.1%) had completed the full three-dose series. Among those incompletely or unvaccinated, lack of awareness (66.2%), absence of an appropriate hospital vaccination policy (57.9%), inadequate orientation for new staff (53.8%), and unaffordability (37.2%) were the principal barriers identified. Years of work experience ($p = 0.005$) and age ($p = 0.023$) were significantly associated with vaccination status.

Conclusion

Despite generally adequate knowledge and risk awareness, hepatitis B vaccination coverage among hospital cleaners at UATH remains critically low. Systemic institutional shortcomings, particularly the absence of enforceable vaccination policies and structured orientation programs, are more proximate barriers than individual knowledge gaps. Targeted policy reform and workplace vaccination programs are urgently needed.

1. Introduction

Hepatitis B virus (HBV) infection remains one of the most consequential occupational hazards in healthcare settings globally. The virus persists on environmental surfaces for up to seven days and can

be transmitted through contact with infected blood, sharps injuries, mucous membrane splashes, and sexual exposure, all routes that are occupationally relevant to hospital workers.¹ The global burden is substantial: approximately 254 million people are living with chronic HBV infection as of 2022, and an estimated 1.1 million deaths occur annually, predominantly from cirrhosis and hepatocellular carcinoma.²⁻¹⁰⁻¹³⁻¹⁵⁻¹⁶

In sub-Saharan Africa, where Nigeria is situated, chronic HBV surface antigen carriage exceeds 8% in the general population of several countries, placing Africa among the highest-burden regions in the world.³⁻⁶⁻¹¹⁻¹⁷ Nigeria's national pooled prevalence has been estimated at 9.5%, with the North West geopolitical zone reaching 12.1%.⁴⁻⁵⁻¹⁸ Against this epidemiological backdrop, healthcare workers, including the often-overlooked cadre of hospital cleaners, face disproportionate occupational risk through daily contact with contaminated sharps, body fluids, soiled linen, and clinical waste.¹²

The hepatitis B vaccine is safe, highly effective, and capable of conferring protection in approximately 95% of recipients.⁷⁻⁸⁻⁹⁻¹⁴ Yet vaccination coverage among Nigerian healthcare workers remains inconsistent, and among ancillary staff such as cleaners, it is frequently undocumented. Hospital cleaners typically occupy the lower rungs of the institutional hierarchy, possess variable educational attainment, and are less likely than clinical staff to be systematically included in occupational health programs. This combination of high exposure risk and low institutional prioritisation makes them a uniquely vulnerable group.

While considerable research has examined hepatitis B knowledge and vaccination among physicians, nurses, and laboratory technicians in Nigerian hospitals²⁴⁻³², studies focused specifically on hospital cleaners are sparse. The available evidence from one Nigerian tertiary hospital found that none of the participating cleaners had been vaccinated at the time of the study²⁵, a finding that signals a systemic failure in occupational health provision for this group rather than isolated individual disengagement.

This study was therefore designed to evaluate the knowledge of hepatitis B and its vaccine, risk perception, vaccination status, and barriers to full vaccination among cleaners at the University of Abuja Teaching Hospital, Gwagwalada, a large federal tertiary hospital serving Nigeria's capital territory. The findings are intended to inform hospital management, policymakers, and public health practitioners seeking to improve occupational health protection for ancillary healthcare workers.

2. Materials and Methods

2.1 Study Setting

The study was conducted at the University of Abuja Teaching Hospital (UATH), located in Gwagwalada Area Council, Federal Capital Territory, Abuja, Nigeria. UATH is a 520-bed federal tertiary institution established in its current form in 2006, serving a geographically mixed population that spans urban and peri-urban areas of the FCT. Gwagwalada Area Council had an estimated population of 238,885 as of 2019, with livelihoods centred on civil service, trading, and subsistence agriculture.³³

2.2 Study Design and Population

A descriptive, hospital-based cross-sectional study was conducted among cleaners employed at UATH. The study population comprised all male and female cleaners on active duty at the time of the study who consented to participate. Individuals not employed as cleaners at UATH and those who declined participation were excluded.

2.3 Sample Size and Sampling

The total cleaner population at UATH was 198. Sample size was calculated using the Yamane formula: ³⁴

$$n = N / [1 + N(e)^2]$$

where N = 198 and e = 0.05, yielding n = 132. After adjusting for a 10% non-response rate, the final sample size was 145.

Participants were selected by systematic random sampling with a calculated sampling interval of k = 2 (198 ÷ 145 = 1.37, rounded up). A random starting point was chosen between 1 and k, and every second individual on the cleaner roster was selected thereafter until 145 participants had been recruited. The process was conducted without replacement, with wrap-around when the list end was reached, ensuring equal probability of selection for all eligible cleaners.

2.4 Data Collection

A structured, interviewer-administered questionnaire adapted from a prior Nigerian study²⁵ was used to collect primary data. The instrument contained 39 items organised into five sections: sociodemographic characteristics (Section A), knowledge of hepatitis B infection and vaccine (Section B), risk perception of HBV infection (Section C), vaccination status (Section D), and barriers to vaccination (Section E). Three trained research assistants administered the questionnaire during participants' closing hours, with each interview lasting approximately five to ten minutes.

2.5 Outcome Measures

Knowledge of hepatitis B was assessed across 11 items covering routes of transmission (4 items), at-risk groups (3 items), and preventive methods (4 items). Knowledge of the hepatitis B vaccine was assessed across 5 items. Participants scoring at or above the 50% threshold in each domain were classified as having good knowledge; those below were classified as having poor knowledge.

Risk perception was assessed using 6 items reflecting actual occupational exposure behaviours and experiences (e.g., glove use, history of needlestick injuries, receipt of infection-control training). Participants meeting or exceeding the 50% threshold were classified as having good risk perception.

Vaccination status was defined as the receipt of at least one dose of the hepatitis B vaccine. Complete vaccination was defined as receipt of all three recommended doses.

Barriers to vaccination were assessed among participants who had not received any dose or had not completed the series, using four structured items.

2.6 Statistical Analysis

Data were entered into a spreadsheet and analysed using SPSS version 23. Categorical variables were summarised using frequencies and percentages. Associations between sociodemographic characteristics and outcome variables (knowledge, risk perception, vaccination status) were assessed using the Pearson chi-square test. Statistical significance was set at $p < 0.05$.

2.7 Ethical Considerations

Ethical approval

was obtained from the Health Research Ethics Committee of the University of Abuja Teaching Hospital, Gwagwalada, Federal Capital Territory, Nigeria. Written informed consent was obtained from each participant before questionnaire administration. Participants were fully informed of the study objectives, their right to withdraw at any stage without penalty, and the confidentiality of their responses. Participation was entirely voluntary.

3. Results

3.1 Sociodemographic Characteristics

All 145 questionnaires were returned, yielding a 100% response rate. The mean age was 40.63 ± 9.96 years (range: 18–70 years), with the 27–35-year age group constituting the largest proportion (31.0%). Women comprised 73.1% of participants, and 77.2% identified as Christian. Most participants were married (78.6%), and only 3.4% had no formal education; 61.4% had attained secondary school level. Regarding ethnicity, 63.4% belonged to groups outside Nigeria's three major ethnic categories, with 13.1% identifying as Gbagyi. Over a third of participants (36.6%) had worked as cleaners for ten or more years, while 6.2% had less than one year of experience (mean: 3.59 ± 1.31 years), as shown in Table 1.

Table 1
Sociodemographic characteristics of hospital cleaners at UATH,
Gwagwalada (n = 145).

Variable	Frequency	Percentage (%)
Age group (years)		
18–26	9	6.2
27–35	45	31.0
36–44	32	22.1
45–53	41	28.3
54–62	16	11.0
63–71	2	1.4
Sex		
Male	39	26.9
Female	106	73.1
Religion		
Islam	33	22.8
Christianity	112	77.2
Marital Status		
Single	23	15.9
Married	114	78.6
Separated	1	0.7
Widowed	7	4.8
Educational Level		
No formal education	5	3.4
Primary	34	23.4
Secondary	89	61.4
Tertiary	17	11.7
Years of Working Experience		
< 1 year	9	6.2
1–3 years	26	17.9

Variable	Frequency	Percentage (%)
Age group (years)		
4–6 years	34	23.4
7–9 years	23	15.9
≥ 10 years	53	36.6

3.2 Knowledge of Hepatitis B Infection and Vaccine

Good knowledge of hepatitis B infection was found in 135 participants (93.1%), with only 10 (6.9%) classified as having poor knowledge (Table 2). Of the 145 respondents, 107 (73.8%) had previously heard of hepatitis B. Among specific transmission routes, blood donation from an infected person was most widely recognized (80.7%), followed by sexual intercourse with an infected person and sharp injuries from contaminated objects (both 78.6%), while mother-to-child transmission during pregnancy was the least recognized route (67.6%). Among at-risk groups, individuals with multiple sexual partners were most frequently identified (82.8%), while injection drug users were least recognized (68.3%). On prevention, appropriate use of personal protective equipment was the most recognized measure (85.5%), followed by avoidance of multiple sexual partners (81.4%), vaccination (75.2%), and proper disposal of sharps (73.8%) (Table 4).

Table 2
Level of knowledge of hepatitis B infection among
study participants (n = 145).

Knowledge Level	Frequency	Percentage (%)
Good knowledge	135	93.1
Poor knowledge	10	6.9
Total	145	100

Regarding the hepatitis B vaccine, 111 participants (76.6%) demonstrated good knowledge and 34 (23.4%) poor knowledge (Table 3). Awareness that healthcare workers should receive the vaccine as a workplace safety measure was high (85.5%), as was knowledge that the full immunisation schedule requires three doses (77.2%) and that the vaccine is highly effective (78.6%). However, fewer than half of all participants correctly identified the time window within which post-exposure vaccination is most effective, only 65 (44.8%) recognized that the vaccine must be administered within 48 hours of exposure to maximise efficacy, and only 74 (51.0%) were aware that it can be used as post-exposure prophylaxis (Table 4).

Table 3
Level of knowledge of hepatitis B vaccine among
study participants (n = 145).

Knowledge Level	Frequency	Percentage (%)
Good knowledge	111	76.6
Poor knowledge	34	23.4
Total	145	100

Table 4
Item-level knowledge responses regarding hepatitis B infection and vaccine (n = 145).

Item	Correct/Yes n (%)	Incorrect/No n (%)	Not Sure n (%)
Awareness			
Ever heard of hepatitis B	107 (73.8)	36 (24.8)	2 (1.4)
Routes of transmission			
Sharp injuries from contaminated objects	114 (78.6)	22 (15.2)	9 (6.2)
Blood donation from infected person	117 (80.7)	24 (16.6)	4 (2.8)
Sexual intercourse with infected person	114 (78.6)	26 (17.9)	5 (3.4)
Mother-to-child during pregnancy	98 (67.6)	37 (25.5)	10 (6.9)
At-risk groups			
Healthcare workers	105 (72.4)	32 (22.1)	8 (5.5)
Individuals with multiple sexual partners	120 (82.8)	19 (13.1)	6 (4.1)
Injection drug users	99 (68.3)	32 (22.1)	14 (9.7)
Methods of prevention			
Proper disposal of sharps	107 (73.8)	32 (22.1)	6 (4.1)
Avoidance of multiple sexual partners	118 (81.4)	21 (14.5)	6 (4.1)
Appropriate use of PPE	124 (85.5)	16 (11.0)	5 (3.4)
Vaccination	109 (75.2)	23 (15.9)	13 (9.0)
Vaccine knowledge			
Vaccine is highly effective	114 (78.6)	16 (11.0)	15 (10.3)
Can be used as post-exposure prophylaxis	74 (51.0)	49 (33.8)	22 (15.2)
Healthcare workers should receive it as workplace safety	124 (85.5)	12 (8.3)	9 (6.2)
Effective if given within 48 hours of exposure	65 (44.8)	56 (38.6)	24 (16.6)
Requires 3 doses for full immunisation	112 (77.2)	14 (9.7)	19 (13.1)

3.3 Risk Perception of Hepatitis B

Good risk perception was recorded in 106 participants (73.1%), while 39 (26.9%) demonstrated poor risk perception (Table 5). The majority of cleaners (89.0%) reported routinely wearing gloves when performing tasks involving body fluids, a favourable indicator of behavioural safety. However, notable

occupational exposures were documented: 33.1% reported experiencing at least one needlestick injury in the preceding year, and 33.8% reported sustaining a cut injury in the same period. Among all participants, 48.3% reported having received infection-related training in the past year, while 51.0% had not. A minority reported direct mucosal or cutaneous blood exposures, 16.6% had experienced a blood or body fluid splash to the mouth or eyes, and 13.1% had had blood contact with cuts or unprotected skin (Table 6).

Table 5
Overall risk perception classification among study participants (n = 145).

Risk Perception	Frequency	Percentage (%)
Good perception	106	73.1
Poor perception	39	26.9
Total	145	100

Table 6
Item-level risk perception responses (n = 145).

Item	Yes n (%)	No n (%)	Not Sure n (%)
Wear gloves for tasks involving body fluids	129 (89.0)	15 (10.3)	1 (0.7)
Needlestick injury in the past year	48 (33.1)	97 (66.9)	—
Cut injury in past year	49 (33.8)	96 (66.2)	—
Received infection-related training in past year	70 (48.3)	74 (51.0)	1 (0.7)
Blood/body fluid splash to mouth or eyes (ever)	24 (16.6)	121 (83.4)	—
Blood splash on cuts or unprotected skin (ever)	19 (13.1)	125 (86.2)	1 (0.7)

3.4 Vaccination Status

Only 49 participants (33.8%) had received at least one dose of the hepatitis B vaccine; 95 (65.5%) had received none, and one participant (0.7%) was unsure (Table 7). Among the vaccinated, 40 (27.6% of the total sample) received their doses at a hospital facility, and 6 (4.1%) at a pharmacy. In terms of schedule completion, 14 (9.7%) had received one dose, 16 (11.0%) two doses, and only 19 (13.1%) the full three-dose course. Among the 49 who had received at least one dose, 39 (79.6%) reported no adverse reactions, and 43 (87.8%) indicated they would recommend the vaccine to friends and family.

Table 7
Hepatitis B vaccination status among study participants (n = 145).

Variable	Frequency	Percentage (%)
Vaccination against hepatitis B		
Yes	49	33.8
No	95	65.5
Not sure	1	0.7
Vaccination site (among vaccinated)		
Hospital	40	27.6
Pharmacy	6	4.1
Not sure	3	2.1
Number of doses received		
1 dose	14	9.7
2 doses	16	11.0
3 doses	19	13.1
Adverse reaction experienced		
Yes	10	6.9
No	39	26.9
Would recommend vaccine		
Yes	43	29.7
No	3	2.1
Not sure	3	2.1

3.5 Barriers to Vaccination

Among participants who had received no dose or an incomplete series, lack of awareness was the most frequently cited barrier (66.2%), followed by the absence of a supportive hospital policy (57.9%), inadequate orientation for newly employed healthcare workers (53.8%), and unaffordability of the vaccine (37.2%) (Table 8).

Table 8
Barriers to hepatitis B vaccination among incompletely vaccinated and unvaccinated participants (n = 126).

Barrier	Yes n (%)	No n (%)	Not Sure n (%)
Lack of awareness	96 (66.2)	29 (20.0)	1 (0.7)
Unaffordability of vaccination	54 (37.2)	69 (47.6)	3 (2.1)
Absence of an appropriate hospital policy	84 (57.9)	40 (27.6)	2 (1.4)
Inadequate orientation for new healthcare workers	78 (53.8)	42 (29.0)	6 (4.1)

3.6 Association Between Sociodemographic Characteristics and Outcome Variables

Chi-square analysis revealed statistically significant associations between sex and knowledge of the hepatitis B vaccine ($p = 0.032$), sex and risk perception ($p < 0.001$), and ethnicity and knowledge of hepatitis B ($p = 0.042$). Age ($p = 0.023$) and years of working experience ($p = 0.005$) were both significantly associated with vaccination status. Educational level, religion, and marital status showed no statistically significant associations with any outcome variable (Table 9).

Table 9
Association between sociodemographic characteristics and outcome variables among study participants.

Variable	Knowledge of HBV (χ^2 , p)	Knowledge of HBV Vaccine (χ^2 , p)	Risk Perception (χ^2 , p)	Vaccination Status (χ^2 , p)
Age at last birthday	2.65, 0.753	4.23, 0.517	7.51, 0.185	20.75, 0.023*
Sex	2.92, 0.088	4.61, 0.032*	19.71, 0.000*	4.22, 0.121
Religion	0.32, 0.571	0.02, 0.902	0.90, 0.343	4.05, 0.132
Ethnicity	9.90, 0.042*	1.05, 0.902	1.74, 0.783	1.57, 0.992
Marital status	0.91, 0.824	2.43, 0.489	2.81, 0.422	9.95, 0.127
Educational level	2.78, 0.427	3.94, 0.268	0.78, 0.853	3.60, 0.731
Years of working experience	2.17, 0.705	3.81, 0.432	7.06, 0.133	22.02, 0.005*

*Significant at $p < 0.05$. HBV = hepatitis B virus.

4. Discussion

The participant pool was predominantly female (73.1%) and middle-aged (mean 40.63 years), reflecting the typical demographic composition of hospital cleaning services in many Nigerian public institutions. The 100% response rate compares favourably to the 90.8% reported in a similar study at Babcock University Teaching Hospital, Ogun State, ²⁵ and likely reflects the direct, in-person approach to data collection during work closing hours. The relatively high proportion with secondary-level education (61.4%) and the near absence of participants with no formal schooling (3.4%) suggest a better-educated sample than might be assumed for this occupational category, which has important implications for the feasibility of targeted health communication.

The mean duration of employment — 3.59 ± 1.31 years — was somewhat shorter than the 5.20 ± 2.65 years reported at Babcock University Teaching Hospital, ²⁵ though over a third of participants had spent ten or more years in the role. This spread of tenure is consequential: longer service was significantly associated with having received at least one vaccine dose, suggesting that institutional exposure over time, rather than any formal onboarding process, may be driving what limited vaccine uptake exists.

The 93.1% rate of good knowledge regarding hepatitis B infection in this study is considerably higher than the 10.1% reported among cleaners at Babcock University Teaching Hospital in 2016. ²⁵ While methodological differences in scoring thresholds and questionnaire design may account for some of this divergence, the finding does suggest meaningful improvements in disease awareness among this population group over the intervening years. It is also consistent with the broader trend observed in a systematic review across Africa, where more than half of included studies reported good HBV awareness among healthcare workers. ²²

Several important knowledge gaps nonetheless persist. Mother-to-child transmission was the least recognized transmission route (67.6%), suggesting that educational programs for this group have historically emphasised occupational and sexual transmission over perinatal risk. The identification of vaccination as a preventive measure by only 75.2% of participants, despite the vaccine's well-established efficacy, points to a disconnect that is particularly troubling in an occupationally exposed group. On specific vaccine knowledge, only 44.8% of participants correctly identified the 48-hour window for effective post-exposure vaccination, and only 51.0% knew that the vaccine can be used as post-exposure prophylaxis, strikingly low figures given that these cleaners are precisely the workers most likely to need this information following an occupational needlestick injury.

The knowledge profile found here is broadly comparable to, though somewhat more favourable than, findings from studies among similar populations in Ethiopia^{27–31} and Cameroon.²³ In the Cameroonian study, only 67.6% of healthcare workers, including sanitary staff, had adequate knowledge of transmission routes, a figure that closely mirrors this study's results for specific knowledge items.²³ The Afghanistan study, which involved more formally trained clinical staff, found higher overall knowledge scores (92.23%),^{19–20} reinforcing the point that knowledge levels vary substantially by occupational category and level of formal health training.

Good risk perception was recorded in 73.1% of participants, which is comparable to the 76.8% found among students of tertiary institutions in Jos²⁸ and considerably more favourable than the low self-assessed risk found among cleaners at Babcock University Teaching Hospital, where 51.7% of participants could not estimate their hepatitis B risk at all.²⁵ The high rate of routine glove use (89.0%) suggests that basic infection control practices are reasonably embedded in this workforce.

The more pressing concern lies in the objective exposure data. One in three cleaners (33.1%) reported at least one needlestick injury in the preceding year, and a similar proportion (33.8%) reported a cut injury. These are not trivial proportions: at a single institution, they represent dozens of workers sustaining potentially infectious percutaneous injuries annually. The finding that only 48.3% of participants had received any infection-related training in the preceding year compounds this risk, as training is the primary mechanism through which appropriate post-exposure behaviour, including knowledge of the 48-hour window for vaccination prophylaxis, would ordinarily be reinforced. The significant association between sex and risk perception warrants further investigation.

The 33.8% rate of receipt of at least one vaccine dose and 13.1% rate of complete three-dose coverage represent the most consequential findings of this study. This figure is lower than the 46.7% single-dose coverage reported at Federal Medical Centre Nguru²⁴ and markedly lower than the 80% rate of at least one dose found among healthcare workers in Makueni County, Kenya,³⁰ but comparable to the 69.44% full vaccination rate reported in an Indian tertiary hospital study.^{21–26}

The finding that 65.5% of cleaners remained completely unvaccinated contrasts sharply with the generally good knowledge and risk perception scores in this cohort. This dissociation between knowledge and behaviour points away from individual ignorance as the primary driver and toward systemic institutional factors, specifically the institutional barriers that accounted for the majority of responses in Section E of the questionnaire.

Age was significantly associated with vaccination status. Older cleaners, many of whom would have accumulated longer work experience, were more likely to have been vaccinated. This aligns with the significant association observed between years of working experience and vaccination status and suggests that vaccine uptake in this setting is driven primarily by duration of institutional exposure rather than any organised occupational health program.

The barrier profile revealed by this study is particularly instructive because it shifts explanatory weight firmly toward institutional responsibility. Lack of awareness (66.2%) was the most frequently cited barrier, but this figure should be read in context: many cleaners may understand hepatitis B as a disease entity without knowing that vaccination is available, accessible, and recommended for them through their employer. The second and third most cited barriers, absence of an appropriate hospital vaccination policy (57.9%) and inadequate orientation for new healthcare workers (53.8%), are unambiguously institutional failures. Effective occupational hepatitis B vaccination programs depend on hospital policies that make vaccination an explicit workplace entitlement, orientation programs that introduce

new staff to occupational health services from day one, and periodic reminders that ensure follow-up doses are completed.

Unaffordability (37.2%) was a less dominant, though not negligible, barrier, suggesting that cost remains an exclusionary factor for a meaningful minority. Given that hospital cleaners in Nigerian public institutions are typically among the lower-paid workers and that vaccination series completion requires multiple clinic visits, the financial dimension of non-vaccination should not be dismissed.

5. Conclusion

This study found that hospital cleaners at the University of Abuja Teaching Hospital possess generally good knowledge of hepatitis B and adequate risk awareness, yet hepatitis B vaccination coverage among them is critically low: fewer than one in seven participants had completed the full vaccine schedule. The disconnect between knowledge and vaccination behaviour is attributable less to individual ignorance than to systemic institutional shortcomings, principally the absence of workplace vaccination policies and structured induction programs that would make vaccine access routine rather than discretionary. Age and years of employment were the only significant sociodemographic predictors of vaccination status, reinforcing the interpretation that institutional tenure, rather than any intentional program, currently drives whatever limited uptake exists.

The primary implication is for UATH management and the Federal Ministry of Health: hepatitis B vaccination should be made a mandatory component of occupational health onboarding for all new clinical and ancillary staff, with subsidised on-site vaccine delivery and a tracking system to ensure schedule completion. Public health education campaigns should address not only general HBV awareness but the specific, actionable knowledge that is currently lacking, particularly post-exposure prophylaxis timing. Research into this occupational group in other Nigerian and African institutions is warranted to determine whether the pattern identified here is generalisable.

Declarations

Funding

This study received no external funding.

Authors' Contributions

A.A.O. and B.N. conceived and designed the study. A.A.O., B.N., A.-G.E.M. and D.F.A. coordinated data collection and questionnaire administration. B.N. supervised the research process, contributed to data interpretation, and drafted the initial manuscript. H.T.A. assisted with statistical analysis and interpretation of findings. S.A.A. drafted the final manuscript. All authors contributed to manuscript revision, critically reviewed the content for intellectual quality, and approved the final version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

Availability of Data

The datasets supporting the conclusions of this article are available from the corresponding author upon reasonable request.

Clinical Trial Number

Not applicable.

Declarations

Ethical Approval

This study was approved by the Health Research Ethics Committee of the University of Abuja Teaching Hospital, Gwagwalada, Federal Capital Territory, Nigeria (HREC-UATH). The study was conducted in accordance with the Declaration of Helsinki (2013 revision) and the National Code for Health Research Ethics of Nigeria. All procedures performed in this study involving human participants were consistent with the ethical standards of the institutional ethics committee that approved the study.

Consent to Participate

Written informed consent was obtained from all participants prior to the commencement of data collection. Participants were fully informed of the study objectives, their right to withdraw at any stage without penalty, the voluntary nature of participation, and the confidentiality of their responses. By stating that informed consent was obtained, the authors confirm that each participant was made aware of the study purpose, potential risks, and expected benefits before agreeing to take part.

Consent to Publish

Written informed consent for the publication of aggregated, anonymised data derived from this study was obtained from all participants. No individually identifiable information is reported in this manuscript.

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