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RESEARCH ARTICLE

Adherence to Hepatitis B Vaccination Among Health Care Workers in State Hospitals in Ibadan, Nigeria

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Abstract

Background: According to WHO and CDC guidelines, hepatitis B virus (HBV) infection is a major public health concern. Healthcare workers (HCWs) are susceptible to HBV infection, HCWs must know the HBV vaccine dosage, take 3-doses of HBV vaccine, at 0,1,6 months, undergo postvaccination serological testing between 1 to 2 months after vaccination. These four procedures are classified as indicators of HB vaccine. The aim of the study is to assess adherence to hepatitis B vaccination among health workers in state hospitals in Ibadan, Oyo state, Nigeria.

Methods: The hospitals based cross-sectional study was carried out between January 2024 and May 2024, 274 HCWs were selected using a random sample technique. The data was gathered using a self-administered electronic questionnaire. Descriptive and inferential statistics were undertaken with Epi Info™ version 7, Microsoft Excel and SPSS

Results: The proportion of health workers who are vaccinated is 52.55% (144/274), while 14.23%(39/274) HCWs adhere to the four indicators of HB vaccination, There is significant association between vaccination status at C.I = 95% with the age (P =0.003) occupation (p = 0.000) work duration (p =0.000).Likewise, the number of HBV dosages taken in this study was also significantly influenced by the age (p = 0.033), occupation (p=0.000) and work duration (p= 0.000).

Conclusion: This study shows poor adherence of health care workers in state hospitals in Ibadan to the four indicators of the HB vaccination for healthcare workers. Adherence to HB vaccination program indicators should be encouraged via facility-led interventions.

Keywords: Healthcare Workers, Hepatitis B, Post-Serological Testing,Vaccination, Infectious Disease.

1. Introduction

A viral infection of the liver, hepatitis B can have both acute and long-term effects. The virus can spread by contact with the blood or other bodily fluids of an infected individual. According to estimates from the World Health Organization (WHO), 100 million persons in the Sub-African region have a chronic hepatitis B virus infection (HBV). The estimated lifetime risk of developing liver cancer for those with persistent infections ranges from 15% to 25%, depending on when the illness first appeared (1). Likewise, the World Health Organization (WHO)

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estimates that two million healthcare workers (HCWs) are exposed to HBV at work annually. 90% of these infections occur in low-income countries, particularly in sub-Saharan Africa. (2, 3). Unfortunately, not enough HCWs are adequately trained on HBV. A significant portion of medical workers, according to WHO data, are not vaccinated against HBV; coverage varies from 18 to 39% in low- and middle-income countries to 67 to 79% in high-income countries. The most common types of occupational exposures are percutaneous injuries, such as needle pricks and sharps, which put healthcare workers (HCWs) at increased risk of contracting HBV from their jobs (4). Furthermore, by using improperly sterilized medical equipment and engaging in risky medical injection procedures, healthcare workers may unintentionally expose their patients to the virus.

The Nigerian government added the HBV vaccine to the country's infant's immunization schedule in 2004. However, the possibilities of HB virus transmission from healthcare providers to patients and vice versa is not addressed by this approach. One important component of infection management in hospital settings is immunizing healthcare workers (HCWs). Many organizations support immunizing healthcare workers not only to protect them from infectious agents but also to prevent nosocomial infection and the consequences that follow (5). Therefore, it is essential that healthcare professionals who have a reasonable chance of coming into contact with HBV be informed about the importance of immunization (6, 7).

According to the guidelines, all HCW immunization campaigns aimed at avoiding HBV transmission in the workplace must include these four markers or indicators. These indicators consist of (i) HCWs must know the number of HB vaccine dosage to be taken (ii) receiving three injections of the hepatitis B vaccine (iii) following a 0month, 1month, 6months, and (iv) doing serological testing one to two months following the vaccination. The best vaccination regimen for HCWs who are at excess risk of contracting HBV is this one, according to the CDC and WHO (8). Building enough antibodies to produce seroprotection against the virus requires a three-dose vaccination program administered according to the proper immunization schedule of 0,1,6 (9). Determining the appropriate post-exposure- prophylaxis regimen for healthcare workers who come into contact with HBV-contaminated blood or bodily fluid while doing their duties requires post-vaccination serological testing (10).

To my best of knowledge, the majority of research (11-13). employed the 3-dose vaccine uptake, or complete immunization, as an indicator to characterize the adherence to HB vaccination. Others measured adherence to HB vaccination by combining 3- doses with post-vaccination serological testing (14). Over the years, there is no research that have use these four indicators such as (1) hepatitis B vaccine dosage knowledge, (2) adherence to three doses, (3) correct timing of 0 months, 1 month, and 6 months, and (4) post-vaccination serological test to assess complete Hepatitis B vaccination adherence among HCWs specifically. This research will combine all these four indicators to assess vaccination adherence of HB vaccine among health care workers.

Nigeria lacks a specified policy for the vaccination of health care workers (HCWs) against disease that can be prevented by vaccines. This study will help us to assess adherence to hepatitis B vaccination among health workers in state hospitals in Ibadan, Oyo state, Nigeria. The findings from this study will reduce the emergence of HB virus in Nigeria, increase vaccination coverage among HCWs and prevent HCWs from nosocomial infection

2. Material and Method

2.1 Study Design

This study was a hospital-based analytical cross-sectional study, this study was conducted between January 2024 and May 2024.

2.2 Study Area

This study was conducted in state hospitals in Ibadan city, Oyo state, south west, Nigeria. There are two state hospitals in the city, one at Yemetu and the other one at Ring Road, Ibadan.

2.3 Study Population

The two hospitals have 1506 health care workers, Yemetu hospital has 652 HCWs while ring road hospital has 854 HCWs. The hospitals offer medical services in the following fields: pathology, public health, pediatrics, obstetrics and gynecology, surgery, and medicine.

The study population included health workers in the two state hospitals in Ibadan, Oyo state which comprised Community health Extension workers (CHEW), Dentist, Doctor, Health administrator, Health Information Officer, Medical lab scientist, Nurse, Pharmacist, Public Health Consultant (PHC), Radiographer, Ward maid, and Anesthesiologists who consented to participate.

2.4 Inclusion Criteria

All healthcare workers who had a minimum of one year work experience in any of the two state hospitals in Ibadan, Oyo state, Nigeria. This was done in order to give them adequate time to develop their perception and demonstrate HBV prevention techniques. Both medical and non-medical health care worker are involved in the study, because there is constants interaction with both medical and non-medical HCWs, hence hepatitis virus can live actively on surface object for at least 7 days and this may lead to the infection transmission.

2.5 Exclusion Criteria

Participants with a confirmed positive hepatitis B status and those who had worked in healthcare for less than a year are not allowed to be in the study.

2.6 Sample Size Determination

A total of 1218 healthcare workers were a qualified to participate in the study based on the inclusion requirements. We calculated our sample size using Epi Info™ version 7 (CDCP, United States). Same study was previously conducted in Ibadan, southwest Nigeria, showed a prevalence value (percentage of respondents with good preventive behaviors for HBV infection) of 71.4% (Ibitoye et al., 2018). With a confidence interval of 95% and an acceptable margin of error of 5%, our minimum sample size is 249. The estimated minimum sample size for this study was adjusted by adding 10%, taking into account the probability of incomplete and non-response questionnaires, 274 was used as our total number of samples, 138 HCWs from State Hospital, Ring Road and 136 HCWs from State Hospital, Yemetu. Adults between the ages of 18 and 65 (mean age =33.98 years and median age =34.5 years) made up the study participants.

2.7 Sampling Technique

The following random sampling procedure was utilized to choose study participants:

Stage 1: The two health facilities were assigned a proportionate number of research participants based on the size of the HCW population in the chosen hospitals

Stage 2: Individual participants were chosen from an eligible cadre of staff using a stratified random sampling procedure. This was done based on the categories of health workers in the two hospital facilities: Community Health Extension workers (CHEW), dentists, doctors, health administrators, health information officers, medical lab scientists, nurses, pharmacists, public health consultants, radiographers, ward maids, and anesthesiologists

Stage 3: According to cadres, the allocation was split equally across all medical facilities. 1218 out of 1506 medical staff members who worked in the two hospitals met the criteria to be included in the study. All told, 274 participants were selected.

2.8 Research Instrument

A 20- item semi-structured questionnaire that was self-administered was the instrument utilized to collect data for this investigation. The questionnaire was divided into four sections: Demographic characteristics, HBV vaccination knowledge (vaccine dosage knowledge, vaccine status and time schedule for each dose), HBV post vaccination serological testing, probable factors influencing adherence to HBV vaccine.

The structured questionnaire, which was given to Health Care Workers (HCWs) at the two hospitals through the ward meeting of their respective departments which was facilitated by the heads of the department

Notification boards and social media platforms within the facility were used to disseminate information about the study. The aims and methods of the study were explained to the participants. They were told that the study will only permits individuals who were randomly selected to participate. The procedures for consenting were equally described.

Self-administered interviews were utilized, given that the majority of study participants possessed literacy skills. The questionnaires were only very rarely given out in person under the authors' supervision. At the consulting rooms, nurse station and many other places within the hospital's facilities, each study participants completed the questionnaires on average of ten to fifteen minutes.

2.9 Data Entry and Analysis

Statistical Package for Social Sciences software version 20, statistical Package for Microsoft Excel and Epi Info™ version 7 (CDC and Prevention, United States) were used for data entry, cleaning, and analysis. After entering the data separately, the corresponding author performed comparisons for each variable, frequency distributions were run to look for errors and omissions.

Based on data from similar research and the number of years study participants had worked, age, gender and cadre of staff were categorized, respectively (Bahegwa et al., 2022). Descriptive statistics were

done and variables were analyzed and presented in tables. The composite risk perception scores were classified as either poor (<50) or good (≥50) [20], but for this study values <52 will be classified as poor, while values ≥52 will be classified as good. The total adherence scores were categorized using a four-level interval grading scheme that went from low (≤52%) to high (≥75-100%) (Said et al., 2018). The four indicators are vaccine dosage knowledge, three doses of the HBV vaccination, the proper timing of 0, 1, 6, and postvaccination serological testing were used to calculate the HBV vaccination adherence scores. A positive response was assigned a score of "1," and an erroneous response was assigned a score of "0." A composite score known as total adherence was created by adding together the scores under this category. The overall adherence score that is expected or attainable is "4" (100%). Complete adherence was defined as a score of 100%. An analysis of variance (ANOVA) approach was used to determine whether or not overall vaccination adherence is the same for all HCWs cadre. The inferential analysis among the variables were analyzed using cross tabulation to determine the p-value and Chi- square. When the p-value that is < 0.05 is consider as significant association

2. 10 Ethical approval

The Oyo State Ethical Review Board committee of the Ministry of Health granted ethical approval for the study. Prior to the administration of the questionnaire, all study participants were given with written and informed agreement. Participation in the study was optional and all information gathered will be kept strictly confidential. Data security measures were also followed.

3. Results

Table 1. *Demographic Characteristics of Healthcare workers (N = 274)*

Variables		Frequency	Percentage
Age			
	18-29	124	45.26%
	30-39	60	21.90%
	40-49	60	21.90%
	50-59	27	9.85%
	60-65	3	1.09%
Gender			
	Female	202	73.72%
	Male	72	26.28%
Staff Cadre			
	Anesthesiologists	6	2.19%
	CHEW	6	2.19%
	Dentist	11	4.01%
	Doctor	36	13.14%
	Health Administrator	34	12.41%
	Health Information Officer	24	8.76%
	Medical Lab Scientist	43	15.69%
	Nurse	84	30.66%
	Pharmacist	13	4.74%
	Physiotherapist	2	0.73%
	Public Health Consultant	7	2.55%
	Radiographer	4	1.46%
	Ward Maid	4	1.46%
Education level			
	College and above	260	94.89%
	High School or secondary	13	4.74%
	Junior high school and below	1	0.36%
Years of experience			
	>10 years	94	34%
	<10 years	180	66%

As seen in Table 1, women made up the majority of the HCWs that took part in the study73.72% (202/274). Between 18 to 65 years old, the participants' mean age was 33.98 years, median age is 34.5 years and with a standard deviation of 11.17.

94.84% of the participants (260 out of 274) had completed college education. Among the participants, nurses made up 30.66% (84/274), Medical Lab Scientist made up 15.69% (43/274), doctors made up 13.14% (36/274), and Physiotherapist made up the least professional group with 0.73% (2/270). The bulk of health care workers, 66% (180/274), had fewer than ten years of experience in the field.

3.1 Guidelines and Recommendations for Health Worker HBV Vaccination

There should be a consistent vaccination regimen for HBV that applies to all healthcare workers. (Poland et al., 2004) At 0 months, 1 month, and 6 months, three standard doses of the recombinant HBV vaccination should be given intramuscularly in the deltoid region, preferably with a needle that is 1-1.5 inches long. Following the first, second, and third doses of the recombinant vaccine, protection (defined as an Anti-HBs level greater than or equal to 10 mIU/ml) has been reported to be 20–30%, 75–80%, and 90–95%, respectively. (Mast et al., 2006) The administration of other vaccines is not contraindicated, and the hepatitis B vaccine can be given concurrently with other vaccinations without causing any interference with the other vaccines' antibody response. The second dosage should be given as soon as feasible if the vaccine series is stopped after the first one. At least two months should elapse between the administration of the second and third dosages. The third dose should be taken whenever it is convenient if it is the only one that is delayed. (US Public Health Service, 2001)

For legal and medical reasons, it is recommended in the majority of western countries that individuals who have not been vaccinated against HBV get vaccinated before enrolling in medical schools and before working in the healthcare sector (Averhoff et al., 1998).

Figure 1 Shows the vaccine dosage knowledge of all the HCWs involved in the study.It can be deducted in the figure 1 above that 52% of people in the study knows the correct of HBV vaccine dosage as this study is concerned.

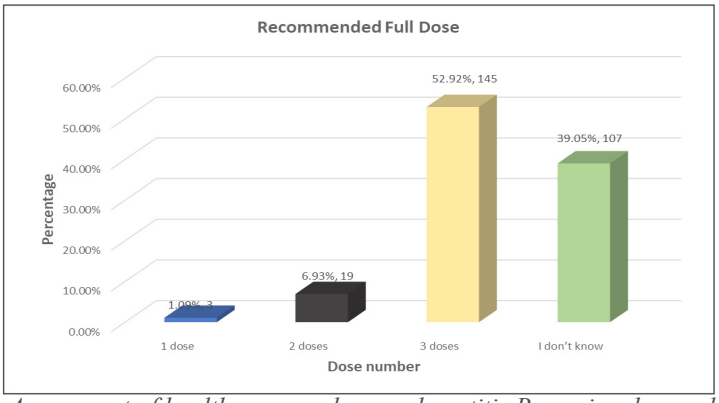

Figure 1. *Assessment of health care workers on hepatitis B vaccine dosage knowledge*

3.2 Adherence with the Indicators of HB Vaccination indicators among the participants

Table 2. *Total HBV Vaccination Adherence N= 274*

Vaccinated Participants (minimum of one dose)	Frequency	Percentage
Participants		
Vaccinated	144	52.55%
Unvaccinated	130	47.45%
3 Doses Completion		
Complete	88	32.16%
Incomplete	186	67.88%
3 Doses Completed in 6 months		
Complete	76	27.74%
Incomplete	198	72.26%
Adherence to total HBV vaccination protocol		
Total Adherence	39	14.23%
Partial Adherence	105	38.32%
Non-Adherence	130	47.45%

According to Table 2, 52.55% (144/274) of participants acknowledged receiving the HB vaccine at least once, 47.45% (130/274) of HCWs have never received zero dose of HB vaccine, and 32.12% (88/274) took the correct three doses of the vaccine, while 27.74% (76/274) finished the three-doses series in 6 months, 14.23% (39/274) of respondents followed the guideline for post-vaccination serological testing.

Total adherence (participant with accurate dosage knowledge, who received three doses at interval of 0month,1months, 6 months and who performed post-vaccination serological test between one and two months after vaccination)

Partial adherence (participant who received one, two, or three doses at the recommended /convenient interval and who did not undergo serological testing) Non adherence (participant who was not administered any vaccination doses)

3.3 Total adherence to HBV vaccination guidelines among healthcare workers

The participants total adherence with the HBV vaccination protocol, including dosage information, three doses, schedules 0, 1, 6, and post-vaccination testing, was evaluated. As shown in Fig. 3, 14% (39/274) of the 274 HCWs whose data were evaluated fully adhered to the HB immunization protocol (3 doses, proper schedule, post-serological testing), earning 100%. With ratings below 100%, the majority of 52.55% (144/274) indicated partial or imperfect adherence to all three guidelines.

3.3 Factors linked to the general adherence to HB immunization guidelines (3 doses at 0, 1, 6 months schedules, and post-vaccination assessment)

Table 3. *Assessment of HBV vaccination cost and awareness*

Characteristics	Is HBV awareness more than other infectious diseases (%)	Is HBV Vaccine free (%)
I don't know	18 (6.57)	0 (0.00)
No	212 (77.37)	181 (66.06)
Yes	44 (16.06)	93 (33.94)
Grand Total	**274**	**274**

A comprehensive assessment was conducted to identify personal and occupational characteristics that may impact the general adherence to vaccination recommendations. From the data in this study as shown in table 3, 66% (181/274) reported that the vaccine is not free to health care workers and also there is no standard policy for the administration of the vaccine to HCWs, neither is there organized plan for post serological testing. Participant who adheres completely to the vaccination procedure are 14.23% who are informed by virtue of academic and good medical practice training. There was no recent campaign on HBV especially among HCWs, health campaign has focus more on HIV (Human immunodeficiency virus), TB (tuberculosis) and little or less work has been done on HBV as data from this study shows in table 3 that 77.37% (212/274) are more aware of infectious diseases such as HIV, TB preventive measure than HBV

Table 4. *Cross Tabulation of Demography with HBV vaccination status*

Demography	Vacc (%)	Unvacc(%)	Uncer (%)	X^2	P-Value
Gender					
Male	41 (56.9)	31 (43.1)	0 (0.00)		
Female	103 (51.0)	99 (49.0)	0 (0.00)	66.4	0.233
Age					
18-29	56 (45.2)	68 (54.8)	0 (0.00)		
30-39	29 (48.3)	31 (51.7)	0 (0.00)		
40-49	43 (71.7)	17 (28.3)	0 (0.00)		
50-59	16 (59.3)	11 (40.7)	0 (0.00)		
60-65	0 (0.0)	3 (100)	0 (0.00)		
>65	0 (0.0)	0 (0.0)	0 (0.00)	15.0	***0.003**
Occupation					
Doctors	28 (77.8)	8 (22.2)	0 (0.00)		
Pharmacist	3 (23.1)	10 (76.9)	0 (0.00)		
Nurses	55 (65.5)	29 (34.5)	0 (0.00)		

Med. Lab. Scient	23 (53.5)	20 (46.5)	0 (0.00)		
Dentist	5 (45.5)	6 (54.5)	0 (0.00)		
Radiographer	2 (50.0)	2 (50.0)	0 (0.00)		
Physiotherapist	1 (50.0)	1 (50.)	0 (0.00)		
CHEW	3 (50.0)	3 (50.)	0 (0.00)		
Anesthesiologist	2 (33.3)	4 (66.7)	0 (0.00)		
Health Admin	14 (41.2)	20 (58.8)	0 (0.00)		
Ward Maid	3 (75.0)	1 (25.0)	0 (0.00)		
Public Health Consultant	1 (14.3)	6(85.7)	0 (0.00)		
Health info officer	4 (16.7)	20 (83.3)	0 (0.00)	39.580	* **0.000**
Work Duration					
1-4 years	44 (36.1)	78 (63.9)	0 (0.00)		
5-10 years	36 (69.2)	16 (30.8)	0 (0.00)		
10-15 years	46 (73.0)	17 (27.0)	0 (0.00)		
>15	18 (58.1)	13(41.9)	0 (0.00)	36.70	* **0.000**

Keys: *Vacc: Vaccinated, Unvacc: Unvaccinated, Uncer: UncertainP-values < 0.05 were considered statistically significant at 95% confidence interval*

According to table 4, Doctors have the highest percentage of vaccinated participants (77.78%) based on their education and extensive exposure to HBV, whereas public health consultants (PHCs) have the lowest percentage (14.29%). PHC should be knowledgeable about immunizations since they are in charge of most health promotion initiatives for both non-healthcare workers and healthcare workers, therefore this poses a severe concern. Notably, out of the four groups (doctor, nurse, medical lab scientist, and ward maid) with high risk of exposure to HBV. Medical lab scientist has the lowest vaccination rate (53.49%), which is not really good, because they are the HCWs with the highest level of exposure, they work with different body fluids (especially blood) as test sample.

Table 3 shows that, there is no statistically association in vaccination status based on gender because the p-value is 0.233, which is > 0.05.

Age is a statistically significant factor in HBV vaccination status, as the p-value is P-value: 0.003, Chi-Square (X^2) = 15.0, C.I = 95%. Higher vaccination rates are seen in older age groups, 40-49 years: 71.7% vaccinated and 50-59 years: 59.3% vaccinated.

A highly significant relationship exists between occupation and HBV vaccination p = 0.000, Chi-Square (X^2) = 39.580, C.I = 95%. Doctors (77.8%) Ward maid (75%) and nurses (65.5%) have the highest vaccination rates, likely due to their constant exposure to blood and infectious materials, emphasizing the need for vaccination in these roles. On the other hand, health information officers (16.7%) and pharmacists (23.1%) have much lower vaccination rates, possibly reflecting differences in perceived risk or access to vaccination programs.

There is a statistically significant association between work duration and vaccination status p = 0.000, Chi-Square X^2 = 39.580, C.I = 95%. Workers with 5-10 years of experience (69.2%) and 10-15 years (73.0%) show the highest vaccination rates, while those with 1-4 years of experience (36.1%) are less likely to be vaccinated. This suggests that workers with more experience are either more knowledgeable about the risks of HBV or have had more opportunities to be vaccinated over time. Age, occupation, and work duration are significant determinants of HBV vaccination status. Middle-aged healthcare workers, those in high-risk occupations (doctors, nurses), and those with longer work experience are more likely to be vaccinated.

Table 5. *Cross Tabulation of Demography with the number of HBV vaccines dose taken*

Demography	Zero Dose (%)	I Dose (%)	II Dose (%)	III Dose (%)	X^2	P-Value
Gender						
Male	31 (43.1)	4 (5.6)	6 (8.3)	31 (43.1)		
Female	99 (49.0)	14 (6.9)	32 (15.8)	57 (28.2)	0.634	0.096
Age (years)						
18-29	68 (54.8)	11 (8.9)	11 (8.9)	34 (37.4)		
30-39	31 (51.7)	1 (1.7)	8 (13.3)	20 (33.3)		

40-49	17 (28.3)	5 (8.3)	14 (23.3)	24 (40.0)		
50-59	11 (40.7)	1 (3.7)	5 (18.5)	0 (0.00)		
60-65	3 (100)	0 (0.0)	0 (10.0)	0 (0.00)		
>65	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.00)	22.46	*0.033
Occupation						
Doctors	8 (22.2)	1 (2.8)	2 (5.6)	25 (69.4)		
Pharmacist	10 (76.9)	1 (7.7)	0 (0.0)	2 (4.2)		
Nurses	29 (34.5)	6 (7.1)	24 (28.6)	25 (29.8)		
Med. Lab. Scientist	20 (46.5)	0 (0.00)	2 (4.7)	21 (48.8)		
Dentist	6 (54.5)	4 (36.4)	0 (0.00)	1 (9.1)		
Radiographer	2 (50.0)	2 (50.0)	0 (0.00)	0 (0.00)		
Physiotherapist	1 (50.0)	0 (0.00)	0 (0.00)	1 (50.0)		
CHEW	3 (50.0)	3 (50.0)	0 (0.00)	0 (0.00)		
Anesthesiologist	4 (66.7)	0 (0.00)	1 (16.7)	1 (16.7)		
Health Admin	20 (58.8)	0 (0.00)	7 (20.6)	7 (20.6)		
Ward Maid	1 (25.0)	0 (0.00)	0 (0.00)	3 (75.0)		
PHC	6 (85.7)	0 (0.00)	0 (14.3)	0 (0.00)		
Health info officer	20 (83.3)	1 (4.20)	1 (4.20)	2 (8.30)	134.07	*0.000
Work Duration						
1-4 years	78 (63.9)	10 (8.2)	12 (9.80)	22 (18.0)		
5-10 years	16 (30.8)	2 (3.8)	3 (5.8)	31 (59.6)		
10-15 years	17 (27.0)	4 (6.30)	20 (31.7)	22 (34.9)		
>15 years	13 (41.9)	2 (6.50)	3 (9.70)	13 (41.90)	63.19	*0.000

Note: *I=Single, II= Double, III= Triple, D: Dose/Doses. P-values < 0.05 were considered statistically significant at 95% confidence interval*

Table 5 shows that, the p-value = 0.096 indicates that vaccination status is not statistically influenced by gender.

There is a significant relationship between age and the number of HBV dosages taken p = 0.033; Chi-Square (X^2): 22.46, C.I = 95%.

Younger age groups are more likely to have taken no doses, particularly those between the ages of 18 and 29 (54.8%) and 30-39 (51.7%) are unvaccinated. The age groups of 40–49 (40.0%) and 18–29 (37.3%) is more likely to have completed all three doses, while no one over 60 has done so because of late introduction of the vaccine to Nigeria CDC in 2004 and the cost of the vaccine. This shows that middle-aged groups likely to complete vaccinations, while younger workers tend to have more partial doses.

Likewise, the number of dosages taken and occupation have a highly significant association p = 0.000, Chi-Square = 134.07, C.I = 95%

Ward maid exhibit the highest rate of completing all three doses (75.0%), followed by doctor (69.4%), then medical lab scientists (48.8%) and nurses (29.8%) because of their high-risk of exposure and comprehensive training. They prioritize getting all of their vaccines.

The professions with the highest percentages of zero doses include pharmacists (76.9%), health information officers (83.3%), and anesthesiologists (66.7%) because they believe they have a low risk of exposure.

Furthermore, work Duration and vaccination status had a strong significant connection p = 0.000, Chi-Square = 63.19, C.I = 95%.

Less experienced workers (1-4 years) have the lowest completion rate (18.0%) and the highest percentage of zero doses (63.9%).

Employees with longer tenure have greater completion rates, especially those with 5–10 years (59.6% with three doses) and 10-15 years (34.9%).

Young, less experienced HCWs, as well as those in specific occupations like pharmacists, dentists, health information officers, and health care administrators, should pay particular attention to vaccine adherence.

4. Discussion

The majority of responders were female73 .72%; this finding was also observed in another study (15) where 66.8% of the HCWs were female. A large number of study participants (52.92%) showed strong vaccination dose knowledge. This is a promising finding because

changing one's behavior requires knowledge. This was consistent with a study conducted at Olabisi Onabanjo University Teaching Hospital (OOUTH) in Sagamu, Ogun state, Southwest, Nigeria, which found that 64.7% of healthcare personnel had good understanding of HBV infection (15).

HCWs in this study reported that, doctors have the highest percentage of vaccinated participants (77.78%) due to their comprehensive training and high exposure to HBV, while public health consultants (PHC) have the lowest percentage of vaccinated participants (14.29%). This raises a serious concern because PHC should be well-versed in vaccinations as they oversee the majority of health campaign programs for both non-health care workers and health care workers.

Furthermore, the number of HBV dosages taken in this study was also significantly influenced by the HCWs age ($p = 0.033$; Chi-Square (X^2): 22.46, C.I = 95%.), occupation ($p = 0.000$, Chi-Square = 134.07, C.I = 95%) and work duration ($p = 0.000$, Chi-Square = 63.19, C.I = 95%.). This suggests that vaccination adherence improves with increase in occupation and work experience

In this study, Doctors are part of the participants with highest rate of completing all three doses (69.4%), followed by medical lab scientists (48.8%) and nurses (29.8%) because they are at optimal risk of exposure to HBV and 3 doses will provide complete protection against HBV infection, which is in agreement with a review from Cleveland clinic (9).

66% of HCWs in this study reported that HBV vaccine is not free. These findings are consistent with a study on the immunization status of Nigerian health workers for Hepatitis B. In a nationwide survey conducted from January to June 2021, a sizable portion of participants (47.2%) who had not received the HBV vaccine stated that their facility does not offer HBV vaccine for free (16).

52.55% of participants said they have received the HB vaccine at least once, which is consistent with research on the vaccination status for Hepatitis B among Nigerian health workers, which was conducted through a national survey conducted between January and June 2021.Most of the HCWs 71.1% received at least one dose (16).

Among the 274 healthcare workers in this research, 144 (52.55%) have received an HBV vaccination. Furthermore, among the 144 healthcare workers who received the vaccine, only 88 (61.11%) received the recommended 3 doses of the HBV vaccine, which was in agreement with research conducted at the Usmanu Danfodiyo University Teaching Hospital in Sokoto, which found that 40.3% of HCWs received the immunization and that 56% of recipients received three doses of the vaccine (17).

Testing for anti-HB levels between one and two months after immunization has been highly suggested as the most objective technique to assess the efficiency of hepatitis B immunization at both individual and population levels (18). Only 14.23% of research participants underwent post-immunization serological testing, according to this study. This outcome agrees with the Ghanaian research (19). One possible explanation for the low degree of adherence to this individual-level signal is a lack of awareness about the value and expense of immunity testing.

In order to decide whether to give HBV Immunoglobulin (HBIG) following occupational exposure to blood and bodily fluids, serological testing following immunization is crucial, healthcare workers exposed to HBV must understand and document their immune status as part of proper Post Exposure Prophylaxis (PEP) management. Therefore, in populations deemed to be at "risk," documentation and understanding of immunological status are essential (20).

The total adherence (14.23%) that was reached in this study by combining the four indications may be new, and it shows a significantly lower degree of adherence than what other studies that have used one or two or three indicators HB vaccine protocol have revealed. It is clear that the adherence measure used in this study is far stricter than others, and this might have played a role in the remarkably low levels of adherence discovered.

The results of this study will have a significant impact on the WHO worldwide target for all Member States to reduce new cases of hepatitis by 90% and fatalities by 65% between 2016 and 2030. In the case that health-related institutions fail to provide adequate HBV vaccinations and awareness campaigns, the prevalence and incidence of HBV is likely to rise.

5. Conclusion

This study shows poor adherence of health care workers in state hospitals in Ibadan to the HB vaccination protocol advised for healthcare workers. Achieving seroprotection or developing antibodies against Hepatitis B may be affected if the recommended 3-dose series of the HBV vaccination is not given at the approved 0,1,6 months schedule. The results of this study suggest that age, occupation,

and length of employment have a significant impact on the uptake of HBV vaccinations. The prompt management of post exposure prophylaxis (PEP) after occupational exposures may be affected if post-vaccination testing is not conducted 1-2 months following HBV immunization. Facility-led HCW vaccination programs should be guided by all the essential elements of an HBV vaccination program. Adherence to HB vaccination program components should be encouraged via targeted interventions, which are therefore required to increase vaccine adherence, particularly in certain occupational categories and among younger and less experienced HCWs.

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