

EFFECTIVENESS OF A NURSE-LED INTERVENTION ON WORK-RELATED INJURY EXPOSURES AND HEPATITIS B VACCINATION UPTAKE AMONG ANCILLARY HEALTHCARE WORKERS IN OSUN OF A TEACHING HOSPITAL WORKER STATE, NIGERIA

ABOSEDE ADEKUNBI FAROTIMI; ROSELINE O. FOLAMI; EMMANUEL O. FOLAMI; OLADAYO D. AKINWALE

ABSTRACT

Ancillary healthcare workers (AHCWs) are usually exposed to body fluids and blood-stained wastes, sharps, surfaces, equipment and various healthcare wastes, which predisposes them to hepatitis B infection. However, despite the availability of Hepatitis B vaccine, the uptake has been observed to be very low among this group of health workers. Therefore, this study assessed the effectiveness of a nurse-led intervention on work-related injury exposures and hepatitis B vaccination uptake among AHCWs of a teaching hospital in Osun State. The study utilized a quasi-experimental one group pre-test post-test design. The total population of the AHCWs was 170. The sample size of 121 was calculated using Taro Yamane. Wards were purposively selected based on the inclusion criteria. Stratified proportionate and simple random sampling techniques were used to select the required participants from each ward. Data were collected with structured questionnaires pre-intervention and eight weeks post-intervention. A one-and-a-half-hour educational training session was conducted daily for two days, in two weeks. Personal protective equipment was distributed to the participants after the training and posters on prevention of work-related hazards and hepatitis B infection were strategically placed to reinforce key messages. Data were analyzed using descriptive statistics of frequencies and percentages as well as inferential statistics of t-test at a 5% level of significance. The socio-demographic characteristics reveal that the majority of the participants, 45 (37.2%), were between the ages of 41-47 years and with a mean age of 46.28 ± 8.01 . The participants were more female dominated 98, (81.0%), and the majority 99, (81.8%) were married. Educationally, the majority 55 (45.5%) had a tertiary education and 6-10 years of working experience. Study further reveals that majority workers as health attendants (83.5%), in maternity wards (13.2%), and pediatric wards (11.6%). Also, work 6 to 10 years within their facilities (32.2%). Result of the study showed that

injury exposure level of pre intervention is high (65.2%) and very low at the post intervention level (15.7%). The level of effectiveness of the intervention program is very high (73%). Secondly, the Pre-intervention score of Hepatitis B vaccination uptake among participants is high (24.8%) and the Post-Intervention score levels of Hepatitis B vaccination uptake among participants is very high (75.2%) and the level of effectiveness is 50.4%. This study also revealed that there is a significant difference between Pre and Post Intervention HBV Vaccination doses 1-3 mean scores ($t=13.279$; $df=120$; $P=0.000$). Lastly, there is a statistically significant relationship between pre and post-intervention uptake of HBV ($t= 15.776$; $df = 120$; $P\text{-value} = 0.000$). In conclusion, the nurse-led intervention decreased the work-related injury exposures and enhanced hepatitis B vaccination uptake among the ancillary healthcare workers of a teaching hospital in Osun State. It was therefore recommended that the management of the teaching hospital begin and maintain a routine training on the prevention of work-related injury exposures for the ancillary healthcare workers.

Keywords: Effectiveness; Nurse Led Intervention; Work-Related Injury Exposures; Hepatitis B Vaccination Uptake; Ancillary Healthcare Workers.

INTRODUCTION

Work-related injury exposures refer to workplace conditions, situations, or hazards that place employees at increased risk of injury, disease, disability, or death in the course of their occupational duties. Among healthcare workers, physical and biological hazards remain particularly significant, with needle-stick and sharp injuries (NSSIs) being among the most frequently reported occupational exposures (Akpınar-Elci et al., 2018; Almoliky et al., 2024; Onubogu et al., 2022). Globally,

the pooled prevalence and annual incidence of needle-stick and sharp injuries among healthcare workers have been reported as 44.5% and 43%, respectively, with Africa recording the highest incidence rate of approximately 51% (Bouya et al., 2020; Hosseinipalangi et al., 2022).

In Nigeria, the burden of needle-stick and sharp injuries (NSSIs) among healthcare professionals remains substantial. Studies reported a prevalence of 47.8%, with prevalence rates of 21.8%, 25.5%, and 27.5% among nurses, doctors, and laboratory scientists, respectively (Kase et al., 2025; Onubogu et al., 2022). Needle-stick and sharp injuries are widely recognized as major routes for the transmission of blood-borne infections, particularly Hepatitis B virus infection among healthcare workers (Alaru et al., 2023)

This risk extends beyond professional healthcare workers to include non-professional personnel, such as porters, orderlies, nurse assistants, and health assistants, who lack formal education and training in the identification, management, and prevention of diseases. Despite this, they work within hospital wards and units, providing essential support in environments where patients with diverse medical and surgical conditions receive care (Joseph and Joseph, 2019). As a result, these workers experience frequent exposure to other hazards of hepatitis B such as bodily fluid splashes (Praisie, 2023; Tawiah et al., 2024) and also medical waste, which also increases their vulnerability to needle-stick and sharp injuries (Ehimen et al., 2020). These incidents significantly heighten the risk of Hepatitis B viral transmission (Senoo-Dogbey et al., 2024),

However, the most effective strategy for preventing Hepatitis B transmission is vaccination with the Hepatitis B vaccine. The vaccine is safe, highly effective, and provides long-term protection of approximately 95% against the Hepatitis B virus (World Health Organization [WHO], 2023). Although several studies have documented frequent exposure of ancillary

healthcare workers to various physical and biological hazards, as well as poor uptake of the Hepatitis B vaccine among this group (Abiodun et al., 2019; Abalkhail et al., 2022 ; Gupta et al., 2024), there remains a dearth of intervention-based studies addressing work-related injury exposures and Hepatitis B vaccination uptake among ancillary healthcare workers.

This emphasizes the urgent need for targeted intervention to mitigate infection risks among the ancillary healthcare workers. This study aimed to determine effectiveness of a nurse-led intervention on work-related injury exposures and hepatitis B vaccination uptake among ancillary healthcare workers of a selected teaching hospital in Osun State.

Research objectives are to:

1. determine the pre and post-intervention work-related injury exposure level among the ancillary healthcare workers?
2. assess the pre and post-intervention hepatitis B vaccination uptake level among the ancillary healthcare workers?

Hypotheses

1. There is no significant difference between the pre- and post-intervention level of work-related injury exposures among the ancillary healthcare workers
2. There is no significant difference between the pre and post-intervention level of hepatitis B vaccination uptake among the ancillary healthcare workers

METHODOLOGY

Study design: The study employed a quasi-experimental one-group pretest, post-test design to assess work-related injury exposures and Hepatitis B vaccination uptake among ancillary healthcare workers in a teaching hospital of Osun State, Nigeria.

Study setting: This study was conducted among the ancillary healthcare workers of the

Uniosun teaching hospital in Osogbo, Osun State. The total population of ancillary healthcare workers was 170.

The inclusion criteria: were the ancillary healthcare workers who work within the wards and units of the hospital (health attendants and porters), responsible for the majority of the housekeeping roles of the hospital and runs the three shifting duties. Ancillary healthcare workers who did not consent to participate and those on leave were excluded from the study.

Sample Size Determination: The sample size was determined using Taro Yamane's formula

$$n = \frac{N}{1 + N(e)^2}$$

where n = sample size,

N = population size

e = level of precision (sampling error, usually 0.05 for 95% confidence level)

With population (N) = 170, and precision level (e) = 0.05, then:

$$n = \frac{170}{1 + 170(0.05)^2}$$

$$= \frac{170}{1.425} = 119, \text{ adding 10\% non-response rate} = 119 + 11 = 130$$

Sampling Techniques: Twenty wards were purposively selected based on the inclusion criteria. A stratified proportionate and random sampling technique (balloting) was used to select the required number of participants from each ward. Out of the 130 participants initially selected, 9 withdrew, resulting in a final sample size of 121. See the table 1.

Table 1: The total population of AHCWs and the required number of trainees from each ward

Name of wards and Units of UNIOSUN TH	Population of the AHCWs per Ward/ Units	Proportionate sample size from each ward	data collection
Paediatric wards			
Paediatric Medical Ward 1	6	$6/170 \times 130 = 5$	Selected
Paediatric Medical Ward 2	6	$6/170 \times 130 = 5$	Selected
Paediatrics surgical ward	5	$5/170 \times 130 = 4$	Selected
Special Baby care Unit SCBU	11	$11/170 \times 130 = 8$	Selected
Children emergency Unit (CEU)	10	$10/170 \times 130 = 8$	Selected
Medical wards			
Female medical	9	$9/170 \times 130 = 7$	Selected
Male medical	8	$8/170 \times 130 = 6$	Selected
Surgical wards			
Male surgical	9	$9/170 \times 130 = 7$	Selected
Female surgical	9	$9/170 \times 130 = 7$	Selected
Psychiatric Ward	6	$6/170 \times 130 = 5$	Selected
Burns Unit	5	$5/170 \times 130 = 4$	Selected
Ear, Nose and Throat Ward	5	$5/170 \times 130 = 4$	Selected
Orthopedic Ward,	7	$7/170 \times 130 = 5$	Selected
Accident and Emergency Unit	12	$12/170 \times 130 = 9$	Selected
Clinics			
IWC	2	Came for the intervention program but were exempted from data collection	
HIV	3		
Medical/Surgical Outpatient Clinic	3		
General Outpatient	3		
Department/ Dressing room			
Staff Clinic	1		
NHIS/ Geriatric clinic	3		
O & Gynecology clinic	2		
Ophthalmic clinic	2		
Maternity wards			
Labor ward	7	$7/170 \times 130 = 5$	Selected
Antenatal ward	6	$6/170 \times 130 = 5$	Selected
Postnatal ward	6	$6/170 \times 130 = 5$	Selected
Gynae ward	6	$6/170 \times 130 = 5$	Selected
ICU	7	$7/170 \times 130 = 5$	Selected
Theatre	8	$8/170 \times 130 = 6$	Selected
Renal ward	3	$3/170 \times 130 = 2$	Exempted
Total	170	130	(non showed up for training)

Instrument for Data Collection: Data were collected with a structured, validated questionnaire at two-time intervals: pre-intervention and eight weeks post-intervention. The questionnaire consists of three sections.

Section A: the socio-demographic characteristics (age, gender, marital status, religion, educational level, occupation, and work experience) of the participants.

Section B: work-related injury exposures among the participants. The section comprises 7 questions with a Yes or No response.

Section C: hepatitis B vaccination uptake among participants.

The reliability of the instruments was established through an internal consistency approach in which thirteen questionnaires were administered to thirteen respondents (10 % of the sample size) from another State University Teaching Hospital, which is not in the same state where the research setting is located. The Cronbach alpha coefficient obtained was 0.730.

Method of Data Collection: Before the intervention, visits were made to the Directors of Nursing Services (DNS) and the heads of ancillary healthcare staff to discuss the study objectives, training plans, and data collection procedures. The time, date, and venue for the training were jointly agreed upon and formally communicated to all unit heads and their respective ancillary healthcare workers through official correspondence. Follow-up visits were made to the selected units, during which the purpose and goals of the program were clearly explained to the ancillary staff present on duty. On the day of the training.

Pre-intervention data: were collected on exposure to work-related injuries and the uptake of hepatitis B vaccination.

The Educational Intervention: covered topics such as hospital environment and hygiene, the chain of infection, hand hygiene practices, injection safety, medical waste segregation, proper use of personal protective equipment

(PPE) in line with CDC (2023) guidelines, safe preparation of cleaning and disinfection solutions, and the importance of hepatitis B vaccination. The training was delivered over two days using lectures, audiovisual materials, and hands-on practical demonstrations. PPE were distributed to wards based on identified needs. Informative posters detailing disinfectant dilution ratios, required PPE, hand washing techniques, waste segregation guidelines, and hepatitis B transmission routes were strategically displayed across the wards and units.

Post-intervention data: on work-related injury exposure and hepatitis B vaccination uptake were collected at the eighth week post-intervention.

Data analysis

IBM SPSS version 25 software was used to analyse data. Descriptive statistics of frequencies and percentages were used to summarize demographic information, hepatitis B vaccination uptake, while weighted mean was also used in addition with the initial descriptive statistics used to describe the work-related injury exposures among the ancillary healthcare workers. Inferential statistics of t-test was employed to test the two hypotheses generated at a 0.05 level of significance.

Ethical consideration

Ethical approval with protocol number: UTH/REC/2024/06/963 was obtained from the Uniosun Teaching Hospital ethics and research committee. Informed consent were obtained, participants were informed of voluntary participation and they were assured of confidentiality, anonymity, freedom to or not to divulge information, freedom to withdraw at any stage of the research without any consequences, and at no stage was any of the consented or non-consented participants coerced physically or psychologically or materially to be part of the research study. Questions were entertained and answered with all sincerity. All collected data were securely stored and managed.

RESULTS

The socio-demographic characteristics of the 121 participants in the study are described in Table 2 below. The results reveal that the majority of the participants, 45 (37.2%), were between the ages of 41-47 years and with a mean age of 46.28 ± 8.01 . The participants were more

female dominated 98, (81.0%), and the majority 99, (81.8%) were married. Educationally, the majority 55 (45.5%) had a tertiary education and 6-10 years of working experience. Study further reveals that majority workers as health attendants (83.5%), in maternity wards (13.2%), and pediatric wards (11.6%). Also, work 6 to 10 years within their facilities (32.2%)

Table 2: Descriptive Statistics showing Socio-Demographic Characteristics

Socio-demographic characteristics	Variables	(N=121)	
		F	%
Age	20-26 years	4	3.3
	27-33 years	1	.8
	34-40 years	19	15.7
	41-47 years	45	37.2
	48-55 years	34	28.1
	56-60 years	18	14.9
	Mean Age	46.28 ± 8.01	
Gender	Male	23	19.0
	Female	98	81.0
Marital Status	Married	99	81.8
	Divorced	1	.8
	Widowed	14	11.6
	Single	6	5.0
	Separated	1	.8
Religion	Christianity	87	71.9
	Islam	32	26.4
	Traditional Worshiper	2	1.7
Educational Level	No formal education	3	2.5
	Primary	13	10.7
	Secondary	50	41.3
	Tertiary	55	45.5
Occupation	Health Attendants	101	83.5
	Health Assistants	0	0
	Porter	20	16.5
Work/Unit	Medical wards	12	9.9
	Surgical wards	12	9.9
	Pediatric wards	14	11.6
	Theatre & ICU	13	10.7
	Mental health ward	5	4.1
	Orthopedic wards	7	5.8
	Gynecological ward	5	4.1
	Maternity wards	16	13.2
	Accident and Emergency	10	8.2
	ENT	4	3.3
	Burns and plastic	3	2.5
	SCBU	11	9.1
	CEU	9	7.4
Period of working within this facility	less than a Year	15	12.4
	1-5 years	30	24.8
	6-10 years	39	32.2
	11-15 years	23	19.0
	16-20 years	14	11.5
	Mean year of experience	7.94 ± 5.45	

Pre And Post Intervention Levels Of Injury Exposures Among Participants

Table 3 below shows the pre and post-intervention injury exposure level among the participants. The result revealed that the AHCWs experienced high levels of sharp/prick injuries 74 (61.2%) and exposure to dirty/body fluids with dirty water, vomitus, urine, and faces and other wastes with proportions of 69 (57.5%), 78 (64.5%), 69

(57.5%), 66 (54.6%) and 72 (59.2%) being the most exposure experienced pre-intervention respectively. At post-intervention, there was a reduction in sharp/prick injury exposure level from 74 (61.2%) to 20 (16.5%) and exposures to body fluids also reduced. This study observe that injury exposure level of pre intervention is high (65.2%) and very low at the post intervention level (15.7%)

Table 3 Pre And Post-Intervention Levels Of Injury Exposures Among Participants

Injury exposure level	Pre-intervention (121)		8 weeks Post-intervention (121)	
	Yes	No	Yes	No
	F (%)	F (%)	F (%)	F (%)
Have you ever experienced sharp or prick injuries in the last 6 months	74 (61.2)	47 (38.8)	20(16.5)	101 (83.5)
Have you ever experienced exposure to dirty water/ body fluids such as blood, dirty water, vomitus, feces in the last 6 months	84 (69.4)	37 (30.1)	24 (19.9)	97(80.2)
If yes				
Blood/ Bloody	47 (38.8)	74 (61.2)	12 (9.9)	109 (90.1)
indica water				
te the Waste/dirty water	69 (57.5)	52 (42.5)	2(26.4)	89 (73.6)
fluid Vomitus	78 (64.5)	43 (40.5)	22 (18.2)	99 (81.8)
Urine	69(57.5)	52 (42.5)	10(8.3)	111 (91.7)
Faces	66 (54.6)	55 (45.4)	7(14.0)	104 (85.9)
Others	72 (59.5)	49 (35.5)	19(15.7)	102(84.3)
Weighted average	70 (65.2)	51 (47.2)	19 (15.7)	102 (84.3)

Table 4 presents the level of Hepatitis B vaccination uptake pre and post intervention among the participants. Pre-intervention, only 30 (24.8%) of the participants had received the vaccine. Post-intervention, the results revealed a marked rise in vaccination coverage to 102

(84.3%) among the participants. This study concludes that levels of Hepatitis B vaccination uptake among participants before intervention is very low (24.8%) and at the post- intervention the vaccination uptake is high (84.3%) and the level of effectiveness is 60.5%.

Table 4: Pre and Post-Intervention Levels of Hepatitis B vaccination uptake among participants.

Hepatitis B Vaccination Uptake	Pre-intervention	Post-intervention
	F (%)	F (%)
Yes	30 (24.8)	102 (84.3)
No	91 (75.2)	19 (15.7)
Total	121 (100.0)	121 (100.0)
Analysis of Number of doses taken by participants (24.8%)		
One	9 (7.4)	38 (31.4)
Two	14 (11.6)	32 (26.4)
Three	7 (5.7)	32 (26.4)
Analysis of Number of doses not taken by participants (75.2%)		
None	91 (75.2)	19 (15.7)
Total	121 (100)	121 (100)

The table 5 shows that the mean score for HBV vaccination decreased from 1.7521 (SD = 0.43) at pre-intervention to 1.1570 (SD = 0.36) at post-intervention. The independent samples t-test result indicates that this difference is statistically significant $t = 13.279$; $p = 0.000$. Since the p-value is less than 0.05 ($p < 0.05$), this implies that the observed difference in mean scores between pre- and post-

intervention is not due to chance. The intervention had a significant effect on HBV vaccination uptake, leading to a measurable improvement/change between the pre- and post-intervention periods. This study reveal that there is a significant difference between Pre and Post Intervention HBV Vaccination uptake (doses 1-3 mean scores) ($t=13.279$; $df=120$; $P=0.000$).

Table 5: t-test showing Comparison between Pre - and Post-Intervention HBV Vaccination Uptake Mean scores

HBV Vaccination uptake	N	Mean (SD)	Mean (SD)	t-value	df	P-value
Pre-Intervention	121	1.7521 (0.43)	0.595 (0.493)	13.279	120	0.000
Post-Intervention	121	1.1570 (0.36)				

Table 6 shows a statistically significant relationship between pre and post-intervention uptake of HBV ($t= 15.776$; $df= 120$; $P\text{-value} = 0.000$) at the 0.05 level of significance. Moreover, there was a significant reduction in

the exposure to various injuries post-intervention. This study noted that there is a statistically significant relationship between pre and post-intervention uptake of HBV ($P\text{-value} = 0.000$).

Table 6: t-test showing Comparison between Pre- and Post-Intervention HBV Vaccination doses 1-3 mean scores

HBV Vaccination doses 1-3	N	$\bar{x}$ (SD)	$\bar{x}$ (SD)	t-value	df	P-value
Pre-Intervention	121	3.471 (0.966)	1.190 (0.829)	15.776	120	0.000
Post-Intervention	121	2.281 (1.058)				

DISCUSSIONS

This study assessed effectiveness of a nurse-led intervention on work-related injury exposures and hepatitis B vaccination uptake among ancillary healthcare workers of a teaching hospital in Osun State. The socio-demographic characteristics showed that majority of the participants were within ages 41-47 years, Female, married and were Christians. Study further revealed that majority had Tertiary education, work as health attendants, in maternity wards and pediatrics ward. Majority of the participants had also worked for 6 to 10 years within their facilities.

The Pre intervention exposure study on the prevention of work-related hazards injury score is very high while the post-intervention score is very low. The level of effectiveness of the intervention program is very high. This study supports Folami et al (2025) who penned that the most frequently reported fluid splash exposures included vomitus, dirty water, urine, blood and lack of training on standard precautions for the past three years reported from the same setting, might be responsible for the pre-intervention high level of injury exposures among the participants. This result is consistent with Ehimen et al (2020), who also reported that over 50% of ancillary healthcare workers experienced body fluid exposure. Similarly, Nkurikiyintwali et al. (2021) observed that more than half of ancillary healthcare workers reported needle-stick and sharp injuries. This study aligns with Tawiah et al. (2024), who reported that 50% of the ancillary healthcare workers were exposed to blood and body fluids. A significant decrease in injury exposure was recorded eight weeks after the intervention (Post test), with less than one-fifth of participants reporting such incidents. This outcome reflects the effectiveness of the training program in the improvement of knowledge of the most prevalent healthcare-associated infections related to poor practices of standard precautions and the importance of hepatitis B vaccination uptake in relation to risks associated with the hospital roles of the ancillary healthcare

workers. The result is consistent with the study by Kandeel et al. (2017), who also reported a significant reduction in needle-stick and sharps injuries following similar interventions, Kandeel et al further emphasize the value of training intervention in promoting safer work environment among ancillary healthcare staff but. However, findings of this study highlight the need for hepatitis B virus infection screening to identify the hepatitis B viral status of the ancillary healthcare workers and for early treatment of the participants that had been infected through these work-related injuries.

The study also found that over three-quarters of participants had encountered at least one occupational hazard, with more than half reporting high incidences of sharp or prick injuries and exposure to body fluids. A particularly significant proportion had contact with various body fluids, including blood, dirty water, vomitus, urine, and feces. Furthermore, Cheetham et al. (2020) suggested that the high incidence of needle-stick injuries may result from limited preventive resources or improper use of personal protective equipment and this study supports that assertion, as most participants were neither aware nor possessed heavy-duty gloves, but latex gloves, are recommended to minimize exposure to chemicals and sharps. The writers highlight the urgent need for periodic training on hazard prevention to enhance and sustain hazard-free work experience among ancillary healthcare workers.

Study reveals that Pre-intervention score is low and the Post-Intervention score levels of Hepatitis B vaccination uptake among participants is very high and the level of effectiveness is high. The writers quipped that the pre-intervention score may be due to limited training and awareness of the most common and highly contagious healthcare-associated infections linked to their hospital duties, including potential exposure to hepatitis B. Additionally, many participants are in middle adulthood, a stage often marked by multiple financial responsibilities, such as

supporting children in higher education, caring for aging parents, and saving for retirement. In this context, the cost of the full hepatitis B vaccination series, three doses at roughly ten thousand Naira each, poses a significant financial burden, especially given the income levels of the research population and other family obligations. However, considering the high endemicity of hepatitis B in Nigeria and the increased prevalence among healthcare workers (Chikwendu et al., 2023), implementing an intervention study targeting this group is both necessary and timely.

The findings of this study does not agree with Gupta et al (2024), who observed that hepatitis B vaccination uptake among healthcare workers at a tertiary care hospital in Bihar, was least only 13.2% vaccinated against hepatitis B. This study is inconsistent with Afework et al. (2023) and Nema et al. (2021) who reported slightly higher hepatitis B vaccine uptake rates of 22.9% and 26.7%, respectively, among ancillary healthcare workers, while Abiodun et al (2019) is in contrast reported that none of the ancillary healthcare workers had been vaccinated against hepatitis B. Despite regional differences, these findings highlight a common trend, clearly indicating that the hepatitis B vaccination coverage among ancillary healthcare workers remains below 50%. This underscores the urgent need for targeted interventions to improve hepatitis B vaccine uptake within this vulnerable group.

Furthermore, findings from the pre-intervention of this study also revealed that most vaccinated participants had received a maximum of two doses of the hepatitis B vaccine. This can be attributed to the participants' lack of understanding of the importance of a complete hepatitis B vaccination, although it may also mean that some were not yet due for the next dose of the vaccine. These results align with the findings of Nkurikiyintwali et al. (2021), who reported varying levels of hepatitis B vaccination uptake among ancillary healthcare workers, with some completing all three doses while others had not initiated the vaccination

process. In tandem with the findings from this study, Nyasa et al. (2023) reported vaccination increased post-intervention among the AHCWs. This indicates that educational intervention effectively improved the ancillary health workers knowledge of the importance of hepatitis B vaccine in the prevention of Hepatitis B infection.

However, the increase in post-intervention hepatitis B vaccination uptake in this study does not rule out the fact that some of the population might have already been infected with the hepatitis B virus before the post-intervention hepatitis B vaccination uptake. Hepatitis B vaccine cannot cure an existing hepatitis B infection and therefore re-emphasizes the importance of mass hepatitis B viral screening among this population for early detection, treatment, and the prevention of the spread of the disease.

The pre-intervention stage of this study is consistent with Nema et al (2021), Afework et al, (2023), Abiodun et al (2019); Nyasa et al (2023) who observe low hepatitis B vaccination uptake among the ancillary healthcare workers. However, the low uptake may also be linked to complacency when some healthcare workers, including ancillary staff, remained unvaccinated despite being aware of the risks associated with hepatitis B exposure (Issa et al, 2023).

Furthermore, the findings of this study revealed that only a few of the vaccinated prior intervention had completed their doses, while the majority of the vaccinated had received fewer doses of the hepatitis B vaccine. This aligns with the results reported by Nkurikiyintwali et al. (2021), who highlighted varying levels of hepatitis B vaccination uptake among ancillary healthcare workers, some having completed the full three-dose regimen, while others had not initiated vaccination at all. However, a significant increase in vaccine uptake was observed post-intervention in the present study, suggesting that the intervention effectively motivated participants to take prompt action. This trend is consistent with the findings of Nyasa et al.

(2023), where a marked rise in vaccination rates among ancillary healthcare workers was recorded following an intervention. Similarly, the current findings corroborate those of Nema et al. (2021), who emphasized that increased awareness and understanding of the importance of hepatitis B vaccination achieved through targeted information campaigns and the use of reminder systems such as posters and training sessions are crucial strategies for improving vaccination coverage across all categories of healthcare workers.

Limitations of the study

This study was conducted at Uniosun Teaching Hospital, Osogbo. This limits the findings of the study to this research setting.

Acknowledgements

We appreciate all the ancillary healthcare workers of the Uniosun Teaching Hospital Osogbo, their leaders, and the Director of Nursing Services of the hospital for their immense support for which made this study a reality.

Conflict of interest

The authors have no conflict of interest

REFERENCES

- Abiodun, O., Shobowale, O., Elikwu, C., Ogbaro, D., Omotosho, A., Mark, B., & Akinbola, A. (2019). Risk perception and knowledge of hepatitis B infection among cleaners in a tertiary hospital in Nigeria: A cross-sectional study. *Clinical Epidemiology and Global Health*, 7(1), 11-16. <https://doi.org/10.1016/j.cegh.2017.12.001>
- Afewerk, A., Aiggan Tamene, Abera Tafa, Tesfaye, A., & Sisay Gemed. (2023). The Prevalence of Occupational Accidents and the Associated Factors Among Janitorial Staff at a University Teaching Hospital in South Ethiopia. *Risk Management and Healthcare Policy*, 16, 1499-1507. <https://doi.org/10.2147/rmhp.s425313>
- Ajuwon, B. I., Yujuico, I., Roper, K., Richardson, A., Sheel, M., & Lidbury, B. A. (2021). Hepatitis B virus infection in Nigeria: a systematic review and meta-analysis of data published between 2010 and 2019. *BMC Infectious Diseases*, 21(1). <https://doi.org/10.1186/s12879-021-06800-6>
- Akpinar-Elci, M., Bidaisee, S., Durgampudi, P., Radix, R., Rodriguez-Guzman, J., Nguyen, M. T., & Elci, O. C. (2018). Needlestick injury prevention training among health care workers in the Caribbean. *Revista Panamericana de Salud Pública*, 42. <https://doi.org/10.26633/RPSP.2018.93>
- Alaru M., Kyiu, C., Yariga, F. Y., & Osman, A. (2023). Prevalence of Needle Stick Injury among Healthcare Workers in Savelugu Municipal Hospital. *Asian Journal of Medicine and Health*, 21(12), 127-136. <https://doi.org/10.9734/ajmah/2023/v21i12968>
- Almoliky, M. A., Elzilal, H. A., Alzahrani, E., Abo-Dief, H. M., Saleh, K. A., Alkubati, S. A., Massoud, & Sultan, M. A. (2024). Prevalence and associated factors of needle stick and sharp injuries among nurses: A cross-sectional study. *PubMed*, 12(12). <https://doi.org/10.1177/20503121231221445>
- Bouya, S., Balouchi, A., Rafiemanesh, H., Amirshahi, M., Dastres, M., Moghadam, M. P., Behnamfar, N., Shyebak, M., Badakhsh, M., Allahyari, J., Al Mawali, A., Ebadi, A., Dezhkam, A., & Daley, K. A. (2020). Global Prevalence and Device Related Causes of Needle Stick Injuries among Health Care Workers: A Systematic Review and Meta-Analysis. *Annals of Global Health*, 86(1), 35. <https://doi.org/10.5334/aogh.2698>
- CDC. (2022). Cleaning and Disinfecting Your Facility. Centers for Disease Control and Prevention. <https://www.cdc.gov/hygiene/cleaning/facility.html>

- CDC. (2024). Environmental Cleaning Procedures. Healthcare-Associated Infections (HAIs). <https://www.cdc.gov/healthcare-associated-infections/hcp/cleaning-global/procedures.html>
- Cheetham, S., Ngo, H. T., Liira, J., & Liira, H. (2021). Education and training for preventing sharps injuries and splash exposures in healthcare workers. *Cochrane Database of Systematic Reviews*, 2021(4). <https://doi.org/10.1002/14651858.cd012060.pub2>
- Chikwendu, A., Unikutelle, H. L., Olumide, A. T. (2023). Hepatitis B and C virus prevalence among patients and healthcare workers' prevention practices towards the viruses in a secondary healthcare facility in Northern Nigeria. *Pan African Medical Journal*. 46:82 doi: 10.11604/pamj.2023.46.82.40530 PMID: 38314232; PMCID: PMC10837276.
- Ehimen F. A., Akpan, I. S., Osagiede, E. F., Abah, S., Piere Okukpon, & Ivie Airefetalor. (2020). A multi-center study of the comparative evaluation of occupational exposure to blood and body fluids among health care workers in Edo central senatorial district, Nigeria. *PAMJ - One Health*, 2(2). <https://doi.org/10.11604/pamj-oh.2020.2.11.23520>
- Folami, R.O., **Farotimi, A. A.**, Folami, E.O., Akinwale, O.D. & Akinbowale, B.T (2025). Nurse led intervention on knowledge and practices of standard precautions among ancillary health workers of a teaching hospital in Osogbo, Osun state. *Integrated Journal of Medicine & Medical Sciences* 4(2); 1-26 e-ISSN: 3026-8192
- Gupta, P., Chaubey, A.K., Kumari, P., Singh, J., Sarker, G., & Bhattacharyya, K (2024). Hepatitis B vaccination among health care workers: a study on coverage and associated factors at a tertiary care hospital of Bihar. *Int J Acad Med Pharm*. 6 (3); 1002-1004 <https://10.47009/jamp.2024.6.3.206>
- Hosseinipalangi, Z., Golmohammadi, Z., Ghashghaee, A., Ahmadi, N., Hosseinifard, H., Mejareh, Z. N., Dehnad, A., Aghalou, S., Jafarjalal, E., Aryankhesal, A., Rafiei, S., Khajehvand, A., Nasab, M. A., & Kan, F. P. (2022). Global, regional and national incidence and causes of needlestick injuries: a systematic review and meta-analysis. *Eastern Mediterranean Health Journal*, 28(3), 233 – 241. <https://doi.org/10.26719/emhj.22.031>
- Issa, A., Yekeen Ayodele Ayoola, Mohammed Baba Abdulkadir, Rasheed Olayinka Ibrahim, Oseni, A., Abdullahi, M., Rasheedat Mobolaji Ibraheem, Aishat Funmi Lawal, Bolade Folasade Dele-ojo, Bilkis Iyabo Owolabi, & Chidiebere Peter Echieh. (2023). Hepatitis B vaccination status among health workers in Nigeria: a nationwide survey between January to June 2021. *Arch Public Health*, 81(1). <https://doi.org/10.1186/s13690-023-01142-y>
- Joseph, B., & Joseph, M. (2019). The health of the healthcare workers. *Indian Journal of Occupational and Environmental Medicine*, 20(2), 71–72. <https://doi.org/10.4103/0019-5278.197518>
- Kase, S. N., Abdulkarim, E. L., Ninani, G., Amaechi, D., Fredrick, C. C., Jonah, D., & Kwaji, M. J. (2025). Assessment of Occupational Hazards and Safety Measures Among Health Care Workers in Northern Nigeria. *Journal of Public Health and Environmental Research*, 1(1 (July-December)), 34-39.
- Kandeel, A. & El-Gilany, A. (2017). Needle stick and sharp injuries (NSSIs) among

- housekeepers in a Saudi hospital: An intervention study. *International Journal of Infection Control*. 13(1), . <http://doi:10.3396/IJIC.v13i1.005.17>
- Nema S, Saraf A, Ayer S, Singh A K, & Biswas D. (2021). Awareness and vaccination status of Hepatitis B among health care workers in a tertiary care teaching hospital of Central India. *Indian Journal of Microbiology Research*, 8(2), 152-156. <https://doi.org/10.18231/j.ijmr.2021.031>
- Nkurikiyintwali, J. M. V., Nizeyimana, F., Okova, R., & Rutayisire, E. (2021). Factors Influencing Hospital Cleaners' Knowledge and Practices toward Hepatitis B prevention in Northern Province of Rwanda. *Journal of Public Health International*, 4(3), 1-14. <https://doi.org/10.14302/issn.2641-4538.jphi-21-3950>
- Nyasa, M., Chipungu, J., Ngandu, M., Chilambe, C., Nyirenda, H., Musukuma, K., Lundamo, M., Simuyandi, M., Chilengi, R., & Sharma, A. (2023). Health care workers reactions to the newly introduced hepatitis B vaccine in Kalulushi, Zambia: Explained using the 5A taxonomy. *Vaccine: X*, 13(11), 1 0 0 2 7 4 . <https://doi.org/10.1016/j.jvacx.2023.100274>
- Onubogu, C. U., Nwaneli, E. I., Chigbo, C. G., Egbuniwe, M. C., Egeonu, R. O., Chukwurah, S. N., Maduekwe, N. P., Onyeyili, I., Umobi, C. P., & Emelumadu, O. F. (2022). Prevalence of Needle Stick and Sharps Injury and Hepatitis B Vaccination among Healthcare Workers in a South-East Nigerian Tertiary Hospital. *West African Journal of Medicine*, 39(1), 24-30. <https://pubmed.ncbi.nlm.nih.gov/35156784/>
- Praisie,R., Anandadurai, Nelson, S. B., Sriandaal Venkateshvaran, & Manoj Thulasiram. (2023). Profile of Splash, Sharp and Needle-Stick Injuries Among Healthcare Workers in a Tertiary Care Hospital in Southern India. *Cureus*, 15(7) . <https://doi.org/10.7759/cureus.42671>
- Senoo-Dogbey, V.E., LillianAkorfa Ohene, & Wuaku Delali Adwoa. (2024). Occupational Exposure to Hepatitis B Virus, Disease Burden and Pathways for Postexposure Prophylaxis Management: Recommendations for Healthcare Workers in Highly Endemic Settings. *Infection Prevention in Practice*, 6(2), 1 0 0 3 5 4 – 1 0 0 3 5 4 . <https://doi.org/10.1016/j.infpip.2024.100354>
- Tawiah, P. A., Appiah-Brempong, D., Okyere, E.P., & Ashinyo, M. E. (2024). Splash of body fluids among healthcare support staff in Ghana: a cross-sectional study. *SAGE Open Medicine*, 12. <https://doi.org/10.1177/20503121241234473>
- World health organization. (2023). Overview: Hepatitis B is preventable with safe and effective vaccines Retrieved from: <https://www.who.int/southeastasia/activities>