

# Awareness and risk perception of Hepatitis B Virus (HBV) infection among healthcare workers of a tertiary healthcare institution in Southeastern Nigeria

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**Background:** Hepatitis B Virus (HBV) is a deadly occupationally acquired infectious disease. Health Care Workers (HCWs) are at higher risk of acquiring HBV than the general population through daily handling and exposure to biomedical wastes and body fluids. We evaluated the awareness level and the occupational risk perceptions of HCWs of the Nnamdi Azikiwe University Teaching Hospital, Nnewi.

**Methods:** The study was a hospital-based cross-sectional survey conducted at the Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, among a convenience sample of 307 HCWs who participated in a hepatitis B virus health awareness and screening campaign. A descriptive analysis of the data was done with SPSS software version 21 with relative frequencies and percentages generated.

**Results:** About 215 (70%) of the 307 respondents were females. The majority of the respondents were 21-30 years (36.2%) and 31-40 years (33.9%). The administrative staff made up the highest proportion (39.1%), while

physiotherapists had the least (3.9%). Only 61/307 (19.9%) had been vaccinated, out of which 19/61 (31.1%) had complete doses (three doses). The most typical reasons for not receiving vaccination were that the thought of going for the vaccine had not come to their mind (25.1%), unavailability (16.0%), and busy schedules (10.7%). About 54.1% correctly identified the meaning of PPE, and 93.2% identified the different kinds of PPEs. Less than half (35.5%) of the respondents complied with PPE use, while 4.2% never used PPE. Only 5.2% of the respondents identified color codes for clinical/highly infectious waste, 17.6% for anatomical waste, 33.9% for non-hazardous/general waste, and 0% for radioactive/chemical/hazardous pharmaceutical waste.

**Conclusion:** Our findings showed adequate awareness about HBV modes of transmission, prevention methods, and moderate occupational risk perception among the respondents interviewed. Nevertheless, respondents' perception of the practice of HBV preventive measures 9 receiving three doses of HBV vaccine and adherence to PPE use was relatively low. We, therefore, recommend that Hospital management have policies that make HBV vaccination and the use of PPE compulsory for HCWs.

**Key Words:** Hepatitis B virus; Awareness; Risk perception; Healthcare workers

## INTRODUCTION

Hepatitis B Virus (HBV) infection is a considerable health problem in the world [1]. Over two million people are infected globally [2]. The high rate of infectivity of HBV may be due to poor public health awareness, improper health facilities, and poor economic status. In sub-Saharan Africa, the primary transmission routes of HBV are horizontal, vertical, and parenteral exposure [3]. Health Care Workers (HCWs) are usually exposed to blood-borne viruses such as HBV, Hepatitis C Virus (HCV), and Human Immunodeficiency Virus (HIV) through contact with contaminated blood/body fluids in the course of their work (occupational) such as needle stick injury [4]. HBV is a vaccine-preventable infection, yet many health care workers, especially in resource-poor settings, remain at risk because of a limited number of them that have received completed doses of vaccine against the HBV [5]. Knowledge about Segregation (separation of waste into separate containers according to type: noninfectious or general waste, infectious, highly infectious, and sharps waste) among most health care workers is low.

Health Care Workers (HCWs) practice standard precautions to protect themselves, the patients, and the environment from the transmission of blood-borne pathogens [6,7]. No patient or HCW can be 100% certain they do not carry Blood-Borne Viruses (BBV). Based on this, all HCWs need to assume that all blood and body fluids from patients are potentially infectious

[8,9]. The use of personal protective equipment (gloves, gowns, aprons, surgical face masks, protective eyewear, and face shields). These PPEs serve as a physical barrier between the user and microorganisms by preventing microorganisms and BBV from contaminating the mucous membranes, airways, skin, clothing, hair, and shoes of the HCW [10,11]. Despite the high knowledge and prevalence of HBsAg among health workers, studies reveal poor safe practices to prevent its transmission among the population [12]. HBV infection eventually results in liver cirrhosis and liver cancer. Health care workers are most at risk of infection through exposure to contaminated blood or body fluids. They should get a complete dosage of the Hepatitis B vaccine [13]. The objectives for carrying out this study were to explore the knowledge of the health care workers of the Nnamdi Azikiwe University Teaching hospital, Nnewi, Nigeria, about HBV transmission, their attitude to vaccination, vaccine status knowledge, and use of Personal Protective Equipment (PPE).

## METHODOLOGY

### Study design and setting

This was a descriptive cross-sectional survey. The study setting was a hepatitis B virus health awareness and screening fair conducted at Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, a public tertiary health care facility that serves Anambra state (and its environs) with a projected population of 5,527,809 in 2016.

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**Sample size and participant recruitment**

The subjects for the study were individuals comprising a convenience sample of 307 health care workers who participated in the health fair. Participants were offered hepatitis B virus screening free of charge. Before being screened for the virus, participants were invited to participate in a survey of knowledge and risk perceptions about hepatitis B. The survey's objectives were explained to the participants. Those who consented were requested to fill in a semi-structured questionnaire.

**Ethical considerations**

Permission for the survey was obtained from the management of NAUTH. Informed consent was obtained from each participant after the objectives and methods of the study were explained. They were also assured of the confidentiality and anonymity of all information supplied for the study and their freedom to withdraw at any point from the study. All participants at the health fair received health education about the hepatitis B virus. However, only the data of the 307 respondents who consented to participate in the study and answer the questionnaire is reported in our study results.

**Data collection and analysis**

Data was collected using a semi-structured questionnaire which was self-administered by the respondents. The questionnaire was divided into five sections that captured data on the respondents' sociodemographic characteristics, hepatitis B virus vaccination status, knowledge of hepatitis B virus, perceptions about hepatitis B virus transmission, their risk of contracting the virus, and knowledge of its prevention of hepatitis B virus transmission. The data obtained were analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 21. Relevant frequencies and percentages and summary statistics in the form of mean and standard deviation were computed.

Respondents' age was converted to ordinal data categories under 20 years, 21 to 30 years, 31 to 40 years, 41 to 50 years, and greater than 50 years. Gender was categorized as a dichotomous variable (female/male). All other variables were categorized as nominal or ordinal.

**RESULTS**

Table 1 summarizes the sociodemographic characteristics of the respondents. The majority of the respondents were in the 21-30 (36.2%) and 31-40 years (33.9%) age groups, married (54.1%), and had a higher national diploma or bachelor's degree as their highest educational qualification (56.7%). Administrators made up the most significant proportion (39.1%), followed by nurses (25.4%), doctors (17.3%), medical laboratory scientists (10.1%), pharmacists (4.2%), and physiotherapists (3.9%) in that order. Those who had 10 or fewer years of practice made up the majority.

**TABLE 1**  
**Sociodemographic characteristics**

Variable	Number	Percentage
<b>Age (years)</b>		
<20	6	2
21-30	111	36.2
31-40	104	33.9
41-50	61	19.8
>50	25	8.1
Mean (SD)	35.46 (9.75)	
<b>Gender</b>		
Female	215	70
Male	92	30
<b>Marital status</b>		
Single	133	43.3
Married	166	54.1
Separated/Divorced	3	1
Widowed	5	1.6
<b>Educational qualification</b>		
O' level	34	11.1
NCE/OND	36	11.7
HND/Bachelor's degree	174	56.7
Master's degree	58	18.9

PhD	5	1.6
<b>Profession</b>		
Doctor	53	17.3
Nurse	78	25.4
Pharmacist	13	4.2
Medical Lab. Scientist	31	10.1
Physiotherapist	12	3.9
Administrator	120	39.1
<b>Years of practice</b>		
Less than one year	67	21.8
1-5	80	26.1
6-10	70	22.8
11-15	26	8.5
16-20	21	6.8
>20	43	14

As shown in Table 2, only 19.9% of the respondents had been vaccinated against hepatitis B virus; 61.6% had not been vaccinated, while 18.6% were unsure about their vaccination status. Among those who had been vaccinated (n=61), only 31.1% had received three doses of the hepatitis B vaccine. For those who had not received the vaccine (n=189), their most common reasons were that the thought of going for the vaccine had not come to their mind (25.1%), unavailability of the vaccine (16.0), and their busy schedules (10.7%) (Table 2).

**TABLE 2**  
**HBV vaccination status**

Variable	Number	Percentage
<b>Have you been vaccinated against hepatitis? (n=307)</b>		
Vaccinated	61	19.9
Not vaccinated	189	61.6
Not sure	57	18.6
<b>Number of doses of HBV vaccination received (n=61)</b>		
One dose	19	31.1
Two doses	9	14.8
Three doses	19	31.1
Not sure	14	23
<b>Reasons for not receiving HBV vaccination (n=189, multiple responses)</b>		
It hasn't come to my mind	77	25.1
I'm afraid of injections	7	2.3
I don't believe in immunization	0	0
I have been too busy	33	10.7
I'm not at high risk of contracting HBV	14	4.6
I'm worried about its side effects	7	2.3
It's too costly	28	9.1
The vaccine is not available	49	16
I don't have any reason	13	4.2

Table 3 presents the respondent's knowledge about the hepatitis B virus. More than half of the respondents correctly answered that hepatitis B virus infection is endemic in Nigeria (54.7%). Majority identified hepatitis B as a viral infection (91.9%) and contagious (72.3%). When asked to compare HBV with HIV, 9.1% of the respondents said HIV is more infectious than HBV. In contrast, similar proportions said that HBV is more infectious (43.0%) or that both organisms were equally infectious (44.3%). The majority could correctly identify an HBV carrier as infected but looks healthy without showing any symptoms (Table 3).

**TABLE 3**  
**Knowledge of hepatitis B virus among the respondents**

Variable(n=307)	Number	Percentage
<b>Is Hepatitis B endemic in Nigeria?</b>		
Yes	168	54.7
No	26	8.5
Not sure	113	36.8
<b>What type of infection is Hepatitis B?</b>		
Viral	282	91.9
Bacterial	5	1.6
Fungal	1	0.3

**Awareness and risk perception of Hepatitis B Virus (HBV) infection among healthcare workers of a tertiary healthcare institution in Southeastern Nigeria**

Parasitic	3	1
Not sure	16	5.2
Is Hepatitis B contagious?		
Yes	222	72.3
No	14	4.6
Not sure	71	23.1
Compared to HIV	133	133
HBV is more infectious	132	43
HIV is more infectious	28	9.1
They are both equally infectious	136	44.3
Not sure	11	3.6
Correct knowledge of who an HBV carrier is		
Yes	258	84
No	49	16

The respondents' perceptions about how HBV can be transmitted are shown in Table 4. Most respondents believed that patients could transmit HBV to health workers (89.3%). At the same time, a slightly lower proportion agreed that health workers could transmit HBV to patients (77.9%). The most commonly identified persons at risk for HBV infection were sexual partners of infected persons (77.2%) and infants born to infected mothers (73.6%). In comparison, the least commonly identified persons were travelers to countries with a prevalence of hepatitis B infection (46.3%). Various means of transmission were identified by the respondents which include, "Puncture through the skin or mucosal contact with blood or body fluids" (83.7%), "Sexual intercourse" (83.1%), "During pregnancy/childbirth" (82.7%), "Blood transfusion" (86.0%), "Sharing toothbrushes" (77.9%) and so on (Table 4).

**TABLE 4**  
**Perceptions about Hepatitis B virus transmission among the respondents**

Variable (n=307)	Number	Percentage
Patients can transmit HBV to health workers		
Yes	274	89.3
No	4	1.3
Not sure	29	9.4
Health workers can transmit HBV to patients		
Yes	239	77.9
No	14	4.6
Not sure	54	17.6
Who is at risk for HBV infection? (multiple responses)		
Sexual partners of infected persons	237	77.2
Infants born to infected mothers	226	73.6
People who inject drugs	184	59.9
Household contacts of a person with chronic HBV infection	180	58.6
Health care and public safety workers	174	56.7
Men who have sex with men	158	51.5
Hemodialysis patients	145	59.9
Travelers to countries with a high prevalence of HBV infection	142	46.3
How can HBV be transmitted		
Puncture through the skin or mucosal contact with blood or body fluids		
Yes	257	83.7
No	6	2
Not sure	44	14.3
Sexual intercourse	49	49
Yes	255	83.1
No	10	3.3
Not sure	42	13.7
Injection drug use that involves sharing needles, syringes, or drug-preparation equipment		
Yes	259	84.4
No	5	1.6
Not sure	43	14
During pregnancy/childbirth		
Yes	254	82.7

No	7	2.3
Not sure	46	15
Avoiding needle sharps injury		
Yes	114	37.1
No	141	45.9
Not sure	52	16.9
Needle sticks or sharp instrument exposures		
Yes	249	81.1
No	16	5.2
Not sure	42	13.7
Proper disposal of sharps, needles, and blood		
Yes	102	33.2
No	162	52.8
Not sure	43	14
Blood transfusion		
Yes	264	86
No	13	4.2
Not sure	30	9.8
Sharing toothbrushes		
Yes	239	77.9
No	19	6.2
Not sure	49	15.9
Contact with open sores		
Yes	244	79.5
No	16	5.2
Not sure	47	15.3

As shown in Table 5, just over half of the respondents correctly identified the full meaning of PPE-Personal Protective Equipment (54.1%). Many were however able to identify different kinds of PPEs such as gloves (93.2%), laboratory coats (79.2%), face masks (77.2%); less proportions selected goggles (67.4%), boots (62.5%), aprons (61.6%) and ward coats (59.0%). The proportion of respondents who always used PPEs in their work was low (35.5%), while those who never used PPEs made up 4.2%. However, many said they always washed their hands after caring for a patient (78.2), while none responded negatively.

**TABLE 5**  
**Prevention of Hepatitis B**

Variable	Number	Percentage
Identified full meaning of PPE (personal protective equipment)		
Correct	166	54.1
Wrong	128	45.9
Most common kinds of PPE identified		
Gloves	286	93.2
Laboratory coats	243	79.2
Face masks	237	77.2
Goggles	207	67.4
Boots	192	62.5
Apron	189	61.6
Ward coats	181	59
Frequency of use of PPE		
Always	109	35.5
Sometimes	139	45.3
Rarely	21	6.8
Never	13	4.2
Not sure	25	8.1
Frequency of hand washing following patient care		
Always	240	78.2
Sometimes	50	16.3
Rarely	7	2.3
Never	0	0
Not sure	10	3.3
Knowledge of proper waste segregation		
Clinical/highly infectious waste (yellow bin)		
Correct	16	5.2
Wrong	291	94.8
Anatomical waste (yellow bin)		

Correct	54	17.6
Wrong	253	82.4
Non-hazardous or general waste (black bin)		
Correct	104	33.9
Wrong	203	66.1
Radioactive waste (lead bin)		
Correct	0	0
Wrong	307	100
Chemical/hazardous pharmaceutical waste		
Correct	0	0
Wrong	307	100
Means of preventing HBV (multiple responses)		
Promoting Hepatitis B vaccination	246	80.1
Safely disposing of sharps and blood-contaminated materials	237	77.2
Developing safe work practices for handling needles and other sharp devices	234	76.2
Eliminating unnecessary needle use	220	71.7
Use barriers to prevent blood/body fluid contact	214	69.7
Using devices with safety features	202	65.8
Treating all patients as potentially infectious	201	65.5
Preventing percutaneous injuries	177	57.7

Knowledge of colour coding of the bin for segregating certain types of waste among the respondents was low. Only 5.2% could correctly identify the colour code for clinical/highly infectious waste, while 17.6% could identify the code for anatomical waste. A higher proportion was able to identify the code for non-hazardous/general waste (33.9%); however, none of the respondents could identify the code for radioactive and chemical/hazardous pharmaceutical waste.

The respondents identified various means of preventing HBV infection, the most common of which were promoting hepatitis B vaccination (80%), safely disposing of sharps and blood-contaminated materials (77.2%), while the least common responses were treating all patients as potentially infectious (65.5%) and preventing percutaneous injuries (57.7%) (Table 5).

## DISCUSSION

The majority of our respondents were 21-30 years, and the mean age was 35.5 years. The majority age range of our respondents was higher than the figure reported by Sahana et al. [14], where most of their respondents were in the age range of 18-24 years [15]. However, lower than the 30-44 years with a mean age of 40.2 years reported by Muvunyi et al. [16]. The majority of the respondents were females (70%), close to the 78.2% reported by Rao et al. [17]. Our finding was in agreement with the WHO report that women comprise over 70% of the workforce in the healthcare sectors in over 104 countries, making them indispensable as contributors to the healthcare delivery services [16]. However, two other studies reported male predominance [18,19].

Our respondents were screened for HBsAg, and only those negative to HBsAg were allowed to receive the vaccine. The Gastroenterology department advised vaccination for only the staff members that are negative to HBsAg antibodies. However, the study [20] showed that only 37% of their respondents were screened before vaccination, while 63% were unscreened. HBV vaccination without HBsAg and the anti-HBs test is a wrong practice that can lead to false-positive HBsAb and vaccine protection to infected individuals, thereby making them prone to chronic HBV disease complications. The Ministry of Health and Hospital policy should make screening for HBsAg mandatory for HCWs and the general population before vaccination.

The vaccination status of participants in our study was 19.9% for those who received at least a dose. In comparison, 6.2% had been fully vaccinated (three doses). Our finding was in tandem with the report of Djeriri et al. [21], who reported that only 19.8% of their respondents received at least one dose of the hepatitis B vaccine. Our finding also agrees with the 18-19% estimated by the WHO as coverage rate for developing settings; however, the 15.8% observed by Talaat et al. [22] in Egypt. The report of Odusanya OO, Meurice FP, Hoer B [23] in Ile Ife, Nigeria, among HCWs of a tertiary healthcare institution that received three doses of HBV vaccine was 38.7%. At least one to two doses of HBV was 91.8%. In a survey conducted by Dannetun et al.

[24], in Sweden in 2006 among HCWs showed a higher rate (79%) of those that had received at least one dose of HBV vaccine, while only 40% of them reported that they were fully vaccinated and 21% (76/369) had not been vaccinated at all. The vaccination coverage of the participants was lower than the World Health Organization's 80% recommendation to establish herd immunity [25].

For the unvaccinated participants, the significant reasons for not being vaccinated were: it has not crossed their minds, or they were too busy for the uptake of HBV vaccine, and vaccine not always available. The barrier to vaccine uptake by the HCWs studied by [24] was that the vaccine was not offered to them and for non-implementation of the vaccination policies. Similarly, the non-compliance to the three dosages uptake recommendation was unavailability (stock-out) of the vaccine in the hospital as well as the failure of the hospital management to ensure that vaccination policies are implemented.

## Knowledge of HBV transmission and prevention

Slightly more than half of our respondents correctly answered that hepatitis B virus infection is endemic in Nigeria. Majority identified hepatitis B as a viral infection and as being contagious. A more significant proportion of our respondents showed good knowledge about Hepatitis B and C transmission (such as puncture through the skin or mucosal contact with blood or body fluids, sexual intercourse, pregnancy/childbirth, blood transfusion, sharing toothbrushes, and so on. Our findings align with the findings of [26-28] that medical students and HCWs have adequate knowledge about the Hepatitis mode of transmission. In contrast, Yamazhan et al. reported in a multi-center cross-sectional study among nurses. They observed a low level of knowledge about the nature of hepatitis disease [29].

Several other studies observed high knowledge of HCWs on Hepatitis transmission and prevention: Ayalew et al. [30], revealed that 73.1% of their respondents had good knowledge of HBV Transmission and prevention, the survey conducted by Soad et al. in Kuwait revealed that knowledge of the various aspects of HBV was generally high [31].

In contrast to our result, the report by Vanderveen and colleagues in a study conducted among the Turkish community in the Netherlands revealed low knowledge transmission and prevention. However, the population they studied was non-healthcare professions [32]. Also, in the findings of Abeje and Age [33], only 52% of the respondents scored above the mean knowledge score about hepatitis B infection. This shows a gap in knowledge expectation of HCWs'

Respondents most commonly identified persons at risk for HBV infection were the sexual partners of infected persons and infants born to infected mothers. In contrast, the least commonly identified persons were travelers to countries with a prevalence of hepatitis B infection.

In our question on whether HBV was more infectious than HIV, only 43.0% of the respondents answered correctly that HBV was more infectious than HIV. The knowledge level of our respondents was lower compared to the 95% reported by Azage that Hepatitis B was more infectious than HIV [34]. Similarly, the studies done in Dublin, Ireland, where 82% of nurses knew that HBV transmission was 100 times more ineffective than HIV, and the investigation done in Nigeria by Ekpeyong and colleagues on the awareness of hepatitis B virus among health care workers revealed that HBV was more infectious than HIV [35].

The majority of the respondents (89.3%) affirmed that patients could transmit Hepatitis to HCWs, whereas; a little less proportion of them (77.9%) affirmed that HCWs could equally transmit hepatitis to the patients. Among susceptible HCWs, in the absence of post-exposure prophylaxis, the exposure rate from a patient contaminated needle-stick injury is 37%-62%, especially if the patient is HBeAg positive. There are variable rates of hepatitis transmission from HCWs to patients, ranging from  $\leq 1\%$  to 13% [36]. Transmission from HCWs usually involves invasive procedures performed by dentists and surgeons with skin conditions (for example, bleeding lesions, exudative dermatitis, or cuts). The contributing factors to patient's transmission from HBV infected HCWs includes being HBeAg positive, contamination of a patient's surgical wound or traumatized tissue from the HCW during invasive procedures, or a break in infection-control practices such as not wearing gloves during an invasive procedure) [37].

### **Compliance and perception about PPE among HCWs**

More than half of our respondents correctly identified the full meaning of PPE (Personal Protective Equipment). They identified the different PPEs (gloves, laboratory coats, face masks, eye goggles, boots, aprons, and ward coats). However, the proportion of respondents who always used PPEs in their work was low (35.5%), while those who never used PPEs made up 4.2%. Despite recommendations in numerous guidelines and the high risk of blood-borne diseases condition, HCWs still exhibit low rates of PPE use which is one of the best lines of protection against hazardous exposures.

The low knowledge level observed in our study could be because the majority of the respondents were administrative staff and pharmacists that do not carry invasive medical or surgical procedures with patients. Other possible reasons for the low compliance to PPE use are lack of supervision and leadership that de-motivates staff using this equipment [37]. In addition, unavailability and access to PPE for use when performing medical or surgical procedures may reflect the lack of commitment to the hospital management; however, this can also relate to cost and late ordering of Supplies, and lack of access when needed [38,39]. The finding of Lymer et al. [40] reveals that nurses were more willing and likely to use PPE when the supervisor was knowledgeable, capable, committed, approachable, and able to organize staff to improve the safety culture [41]. Other researchers reported that HCWs were more willing to use PPE if they received any form of motivation to use PPE when appropriate, accessible, and senior staff members were willing and role models in using PPE [42,38]. Notably, an essential aspect of establishing a safety culture is to ensure open lines of communication among employees while routinely involving staff members in policy development.

### **PPE education and training**

Education and training are pivotal because whether a healthcare worker uses PPE depends on the perceived risk inherent in their task. Several researchers have demonstrated that risk perception depends on the worker's level of education/awareness, experience, and propensity to adhere to safety measures. Suppose the occupational risk is not perceived to be accurate. In that case, the use of risk reduction interventions will be far less probable [43]. Healthcare institutions need to foster and promote a strong culture of safety that includes access to safety equipment, commitment to workers' safety, and extensive training efforts that utilize protocols that necessitate specific safety action with stipulated consequences for non-compliance. This can be achieved by incorporating safety expectations into the job requirements of newly employed staff as part of their job responsibilities and that worker safety is a high priority in the institution. Also, for supervisors' feedbacks on PPE adherence, enforcement of disciplinary actions for non-compliance is pivotal to achieving compliance to PPE use among healthcare workers [44].

### **Waste segregation/colour code**

Our findings showed poor knowledge and practice of participants regarding the identification of color coding of bins for segregating wastes (such as color code for clinical/highly infectious waste, anatomical waste, non-hazardous/general waste, and radioactive/chemical/hazardous pharmaceutical waste). Our finding was in keeping with [45] report of poor practices regarding waste management, especially the separation of waste, and that some healthcare workers are non-compliant with protocol in the context of medical waste separation. Our finding was also in line with the reports of other scholars about poor adherence to waste segregation standards [46-48]. Inappropriate medical waste separation in hospitals is a significant reason for the high rate of exposure of HCWs and waste handling workers to infections, injuries, and other occupational risks [49]. There is a dire need to raise the awareness level of staff during orientation and from time to time for older staff regarding the risks that are associated with medical waste as recommended by scholars for different countries with poor knowledge about the risks that are associated with hazardous waste generated in healthcare settings [50].

### **Respondent's practices toward hand washing**

From a total of 307 respondents, 240 (78.2%) always wash their hands following patient care, 16% sometimes does, 2.3% never, and 3.3% weren't sure if they carry out aseptic procedures following patient's care. Conversely, in a study conducted in Ethiopia, Sound reported that only 33 out of 91 respondents (36.3%) washed their hands before and after aseptic procedures. Only 18/91 (19.8%) of them always washed their hands before and after individual patient contact [50,51].

### **CONCLUSION**

The majority of the study respondents were knowledgeable. However, their level of knowledge of Hepatitis transmission, the risks, and the preventive measures did not translate into the practice of receiving complete doses of vaccine, the use of PPEs, and regular hand washing.

### **RECOMMENDATION**

- Education and training are pivotal because whether a healthcare worker uses PPE depends on the perceived risk inherent in their task.
- Availability and access to PPE for staff use.
- Hospital management should have policies that make complete vaccination compulsory and one of the medical fitness required for employment.
- The hospital authorities are responsible for posting the general PPE guidelines for the staff at each procedure and hand washing sites.

### **STUDY LIMITATIONS**

This study also has certain caveats that need to be taken into account. First, the answers are self-reported; hence could not be validated.

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