

# Knowledge of Occupational Hazards and Post Exposure Prophylaxis by Hospital Cleaners to HIV and Other Blood Borne Pathogens: Findings from Ten Hospitals in Abakaliki, Nigeria

O.B Anozie<sup>1\*</sup>, U.J Anozie<sup>2</sup>, Lawani O.L<sup>1</sup>, Mamah E<sup>1</sup>, Ajah L.O<sup>1</sup>, Mathew Igwe Nwali<sup>1</sup>

<sup>1</sup>Department of Obstetrics and Gynaecology. Federal Teaching Hospital Abakaliki, Ebonyi State, Nigeria

<sup>2</sup>Felysussy Hospital Abakaliki, Ebonyi State, Nigeria

\*Corresponding author: okeyanoziey2k@yahoo.com

**Abstract Background:** Medical wastes unlike other waste products constitute a serious health hazard to its handlers, patients and the community at large. **Objective:** This study assessed the level of awareness of hospital cleaners on occupational hazards, safety measures and post exposure prophylaxis to HIV in 10 hospitals in Abakaliki, Ebonyi State, Nigeria. **Materials and methods:** This was a cross-sectional study that was conducted on ninety hospital cleaners working in ten public and privately owned hospitals in Abakaliki. Semi-structured questionnaires were used for data collection and data analysis was done with SPSS version 19. **Results:** This showed that out of 90 respondents sampled, 68 questionnaires were available for analysis. This gave a response rate of 75.6%. It was observed that knowledge of occupational hazards was fairly high (82.4%) among the participants; this was due to training on hospital waste management and experience from the Job. Safety measures to mitigate occupational hazard was inconsistently and incorrectly used by the respondents. A fairly significant proportion of participants were aware of their HIV (72.1%), Hepatitis B (47.1%) and C viruses (48.5%) status. Only half (50%) were immunized for Hepatitis B virus and as well as had knowledge of post- exposure prophylaxis for HIV. **Conclusion:** Occupational exposure of health care providers to hazardous hospital waste is a significant public health problem. Therefore, healthcare managers and policy makers should institute astute measures to improve the knowledge of occupational hazards, as well as provide personal protective device to hospital waste handlers. Post-exposure prophylaxis for HIV should be domiciled in healthcare centre for the benefit of exposed individuals.

**Keywords:** health workers, hospital cleaners, occupational hazards, medical waste, safety measures

**Cite This Article:** O.B Anozie, U.J Anozie, Lawani O.L, Mamah E, Ajah L.O, and Mathew Igwe Nwali, "Knowledge of Occupational Hazards and Post Exposure Prophylaxis by Hospital Cleaners to HIV and Other Blood Borne Pathogens: Findings from Ten Hospitals in Abakaliki, Nigeria." *American Journal of Clinical Medicine Research*, vol. 4, no. 2 (2016): 29-33. doi: 10.12691/ajcmr-4-2-3.

## 1. Introduction

The health and wellbeing of workers in any occupation can be linked to the specificity of their jobs and attending hazards in the workplace [1]. However simple any job may seem there are usually specific hazards associated with it [1]. An occupational hazard is any harmful condition associated with work place, which can result in illness, injury, endangerment, jeopardy, or danger with the possibility of injury, and loss or misfortune [1]. Cleaners in hospital settings are particularly vulnerable to occupational hazard considering the fact that they are directly involved in the collection and disposal of medical waste- some of which are particularly infectious, toxic and could constitute an potential or actual threat to the wellbeing of the worker [2].

There are a numerous consequences of occupational diseases among hospital workers- these include economic,

physical and mental harm to worker and their families [3,4]. According the World Health Organization (WHO); injuries from contaminated needles and poor handling of medical waste is responsible for about 8 to 16 million new cases of Hepatitis B virus, 2.3 to 4.7 million cases of Hepatitis C virus and 80,000 to 160,000 cases of HIV annually [5,6].

The level of awareness of occupational hazards and indeed of post exposure prophylaxis (PEP) for human immune-deficiency virus (HIV) amongst hospital cleaners varies depending on the locality of work [4]. Awareness is low in low income countries where majority of individuals employed as cleaners are of poor socio-economic status, with little or no education and lacking in basic training or orientation on how to handle hazardous waste [4].

Reports from high income countries indicates that the main worries concerning infectious hospital waste were the transmission of HIV/AIDS and more often of Hepatitis B or C virus through injuries caused by sharps and infected body fluids, with hospital cleaners at greatest risk

[3]. The vulnerability of hospital cleaners to occupational hazards stems from their low level of education, lack of training and/or orientation, lack of clear cut policies and protocols for handling of medical waste, poor remuneration, ignorance and little or no insurance cover.

However, evidence has shown that the risk of transmission is higher with larger quantity of blood or other infectious body fluid, prolonged exposure to infectious materials, exposure to the blood of patients with advanced or severe disease, deep percutaneous injury, and injuries from contaminated hollow bore instruments [7]. In such situations, hospital staffs are constantly faced with high level risks of occupational exposure during the course of their duties. Occupational hazards in health facilities may be classified into infections, accident, radiation, noxious chemicals, drug addiction, assault and psychological problems [4]. In order to safeguard health care workers, these hazards should be identified, quantified and standard mode of disposal instituted in hospitals to minimize the risk they pose to health workers [4].

All health care facilities should have protocols and standard operation procedure guild, as well as ensures that all staffs observe universal/standard precautions at work [8]. These precautions should include provision and use of gowns, water proof aprons, surgical masks, water proof boots, protective eye-goggles and gloves to minimize the level of exposure to infectious and toxic materials [7]. Workers should also be educated on the availability of post exposure prophylaxis for HIV in the event of an exposure and Hepatitis B vaccination should be administered to sero-negative individuals handling infectious materials [8,9,10].

Occupational hazards exist wherever health care is practiced, but there is a dearth of information on the level of awareness of such occupational hazards, especially among hospital cleaners working in low resource settings like ours. Unfortunately, in low income countries like Nigeria, were many health concerns are competing for limited resources, it is not surprising that the training of healthcare workers, especially cleaners has received little or no attention in both government and private owned health facilities.

Research on the awareness and experience of hospital cleaners on exposure to hazardous waste and post exposure prophylaxis are lacking in Abakaliki, southeast Nigeria- this work was therefore designed to fill the gap.

## 2. Materials and Methods

### 2.1. Study Area

Ebonyi State is one of the five states in the South-east Geopolitical zone of Nigeria. It was created in 1996 from the largely rural areas of the pre-existing Enugu and Abia states. It has an estimated population of about 2.1 million people (2006 census) and occupies a land mass of 5932km<sup>2</sup>, sharing boundaries in the West with Enugu state, Cross-river in the South and Benue state in the North. It has one Federal Teaching Hospital and several General, missionary and private hospitals attending to the health care needs of the populace.

### 2.2. Materials and Methods

This was a cross-sectional study of respondents distributed across 10 hospitals in Abakaliki and its metropolis. These hospitals include; 3 missionary hospitals and 7 private health facilities. The hospitals have several categories of skilled and unskilled workers, including cleaners- the focus of this study. The studied facilities had a total of 108 cleaners. Pre-tested Semi-structured questionnaires were used for collection of both qualitative and quantitative data. Convenient sampling method was used to select respondents and the information was both in English and Igbo language (which was translated to English) for those who were not proficient with English language. The data was analyzed using SPSS (statistical package for social sciences) version 19.

### 2.3. Ethical Approval

Ethical approval was obtained from the research ethics committees of the various hospitals that participated in this study and consent obtained from the participants.

## 3. Results

A total of 90 questionnaires were administered, only sixty-eight were properly filled and suitable for statistical analysis- representing a 75.6% response rate.

Table 1 describes the socio-demographic characteristics of the respondents. The mean age of the respondents is 38.6±5.4years. Their age ranged between 20 to ≥50 years. Majority of respondents were within the age bracket of 20 to 29 years (26/68; 38.2%). Most respondents were females (56/68; 82.4%), while males were only 12(17.6%). A good proportion (95.6%) of the respondents had some formal education, while only 3(4.4%) had no formal education- Table 1.

**Table 1. Demographic characteristics of respondents**

S/No.	Characteristics	Frequency (n)	Percentage (%)
1	<b>Age (Years)</b>		
	20-29	26	38.2
	30-39	18	26.5
	40-49	17	25.0
	≥50	7	10.3
2.	<b>Sex</b>		
	Male	12	17.6
	Female	56	82.4
3.	<b>Level of Education</b>		
	None	3	4.4
	Primary	17	25.0
	Secondary	33	48.5
	Tertiary	15	22.1
<b>Total</b>		68	100

Table 2 describes the work characteristics of the respondents. Most of them 60(88.2%) were fully engaged by their employers, while 8(11.8%) were contract staffs.

Over four-fifth of the respondents 61(90%) had no insurance cover, while a paltry 10% of had insurance. The duration of time spent on the job varied from less than 1 year to more than 11years. Those who had spent between two to ten years made up 67.7%, while 14.7% had spent 11 years or more on the job. On provision of training for the job; 44(64.7%) had received training on occupational hazard, however all the respondents desire training. Vaccination status against Hepatitis B virus was evenly distributed between the respondents as half (50%) had been vaccinated, while the other half (50%) were not.

**Table 2. Work characteristics of respondents**

S/No.	Characteristics	Frequency (n)	Percentage (%)
<b>1</b>	<b>Nature of employment.</b>		
	Full	60	88.2
	Contract	8	11.8
<b>2</b>	<b>Have insurance coverage</b>		
	Yes	7	10
	No	61	90
<b>3</b>	<b>Duration of employment(Years)</b>		
	≤1	12	17.6
	2-5	24	35.3
	5-10	22	32.4
	≥11	10	14.7
<b>4</b>	<b>Training on Occupational Hazards/Safety</b>		
	Trained	44	64.7
	Not trained	24	35.3
<b>5</b>	<b>Desire to be trained on occupational hazards and safety</b>		
	Yes	68	100
	No	0	0
<b>6</b>	<b>Vaccinated against Hepatitis B Virus before or since employment</b>		
	Vaccinated	34	50
	Not Vaccinated	34	50
<b>7</b>	<b>Awareness of HIV, Hepatitis B and Hepatitis C Virus Status</b>		
	HIV	49	72.1
	Hepatitis B	32	47.1
	Hepatitis C	33	48.5

More than two-third; 49 (72.1%) of the respondents were awareness of their HIV status, while 47.2% and 48.5% knew their Hepatitis B virus and Hepatitis C viral status respectively.

Table 3 shows the respondent's level of knowledge of occupational hazards, safety measures and the existence of post exposure prophylaxis to HIV. Fifty-Six (82.4%) of cleaners were aware of the hazards associated with their job and their sources of information were- Employers (61.8%), colleagues (44.1%) and the mass media (82.4%). Their knowledge of the mode of infection or transmission indicates that 82.4% and 73.5% knew that sharps and blood were infectious respectively. Table 3 shows the percentage of cleaners who used some form of protective equipments. Almost two-third; 43(63.2%) of respondents observed standard precautions for hospital waste disposal. Awareness of PEP for HIV was reported by only 34(50%) respondents.

**Table 3. Awareness of Occupational Hazards/Safety and post-exposure prophylaxis for HIV**

S/No.	Characteristics	Frequency (n)	Percentage (%)
<b>1</b>	<b>Knowledge of occupational Hazards.</b>		
	Aware of Hazards	56	82.4
	Not Aware of Hazards	12	17.6
<b>2</b>	<b>Source of Information regarding occupational hazards</b>		
	Employer	42	61.8
	Colleagues	30	44.1
	Mass media/Posters	56	82.4
<b>3</b>	<b>Knowledge of Hazardous/Infectious wastes.</b>		
	Sharps/Needles.	56	82.4
	Blood	50	73.5
	Body Parts	30	44.1
	Other body fluids	20	29.4
<b>4</b>	<b>Protective measures to prevent Hazards/Infection</b>		
	Use of Gloves	43	63.2
	Use of Masks	49	72.1
	Use of Boots	20	29.4
	Use of Aprons	18	26.5
<b>5</b>	<b>Use of standard waste disposal units</b>		
	Yes	43	63.2
	No	25	36.8
<b>6</b>	<b>Knowledge of Post-exposure prophylaxis to HIV</b>		
	Aware	34	50
	Not Aware	34	50

## 4. Discussion

Healthcare workers are occupationally exposed to a variety of infectious diseases during the performance of their duty. The delivery of healthcare services requires a broad range of workers such as physicians, nurses, technicians, house-keepers (cleaners), mortuary attendants, administrative staff, social workers and this diversity of jobs keeps them at different degrees of occupational hazards as those who come in direct contact with medical wastes, with cleaners particularly vulnerable to the hazards associated with medical wastes [11].

Health care waste as defined by WHO means untreated materials from healthcare activities on humans or animals which have the potential of transmitting infectious agents to humans. These include discarded materials or equipment used for diagnosis, treatment and prevention of disease, assessment of health status- contaminated with blood and its derivatives, tissues, tissue fluids or excreta, or wastes from infectious wards [12,13,14].

The mean age of the respondents was similar to the findings by Faremi et al in Ile-Ife, where the mean age of the responders was 39.6±6.2years [1]. The reason for the preponderance of young people is likely because they constitute the active working age group. However, knowledge of occupational hazards had no bearing on the participants' age. Surprisingly, females made up majority of the study population. Traditionally, in the African setting females are more involved in house-keeping, while men engage in farm work and other similar activities.

This study found that only 4.4% of respondents had no formal education. This is encouraging as someone with some level of formal education is more likely to understand the implication of occupational hazards in a hospital setting, and may likely take measures to prevent or mitigate such, by adhering strictly to written instructions on simple safety rules, practice guidelines and proper use of protective aids.

The length of time the respondents had spent on the job was also observed to vary and appears to correlate with their level of awareness of hazards associated with their cleaning Job. Those who had spent up to two years on the job and above were more likely to have higher level of knowledge on occupational hazards and protective measures. This is because the experience and information garnered over the years may offer some advantage over those who were younger on the job and who are not trained- consistent with the findings of Shabab and colleagues [2].

Half of the participants had vaccination against Hepatitis B virus- consistent with the 52.2% reported by Al-Hazmi [15]. This could go a long way in protecting health care workers and their families from Hepatitis B virus. Maintenance of immunity is an essential part of prevention and infection control program for healthcare workers [8]. Optimal use of vaccines safeguards the healthcare worker from being infected following exposures [8,16]. The CDC recommends routine vaccination for individuals involved in the management of hospital waste, especially against Hepatitis B virus [8].

The importance of training on the hazards associated with handling of medical waste and its disposal cannot be over emphasized. Our findings showed that 64.7% of the cleaners surveyed had received some forms of training on occupational hazards and safety, and they were equally more informed than those not trained. All of them indicated their desire to be trained/re-trained on risks associated with their job and how to mitigate them. Adequate orientation and training should form an essential part of the health care waste management policies for the generality of healthcare staffs and cleaners in particular [10,12,14,17,18].

In the present study, respondents' awareness of their HIV, hepatitis B and hepatitis C viruses' status was highest for HIV followed by Hepatitis C virus. The reason for this disparity could be because HIV is an pandemic disease with lots of public health enlightenment provided, particularly in our Sub-region- which bears the greatest burden of HIV/AIDS. Indeed healthcare workers should be counseled and those who consent should be tested appropriately.

The fact that only 82.4% were aware of occupational hazards associated with their job- consistent with the findings by Bdour et al, Akuma et al and Manuel et al [3,14,19], but less than the finding by Sheller in Germany [20], brings to the fore the need for training and orientation on hazards associated with hospital waste, and ways of preventing them. Knowledge of hazardous waste among the respondents also showed that there was greater awareness (82.4%)-less than the 96.3% reported in Tanzania [21].

Safety measures such as Universal precautions and use of other personal protective equipment meant to protect the workers from direct exposure to healthcare wastes

should be implemented in line with the recommendations of other scientist and researchers [5,6,10]. The findings from this study indicates that personal protective devices were either unavailable or in very short supply. This is a fall out of poor funding and healthcare managers appropriating scarce resources to other more profit yielding ventures such as purchase of drugs- leaving the cleaners to their fate. Fadeyi et al reported that 41.5% of health workers were unaware of standard precautions (SP) and 25.4% do not observe SP- indicating the deficit in the awareness of SP among laboratory personnel which demonstrates that attitude and practice of safety rules are unsatisfactory [22].

Segregation (sorting and appropriate storage) of medical waste ought to be the standard practice in health care facilities [23,24], but that doesn't seem to be the case from our findings- as only 43(63.2%) of the respondents observed standard precautions and practiced safety measures. This was less than the 94.8% of clinicians who used personal protective devices, reported by Enwere in Southeast, Nigeria [25]. Common mode of disposal was open dumping and in some cases waste bins, without following the recommended standards of waste segregation. This probably constituted the greatest risk to workers and should be discouraged.

Surprisingly, there was poor knowledge to post-exposure prophylaxis for HIV displayed by a significant proportion (50%) of the respondents in this study. In Tanzania, Moshoto et al reported that one third of healthcare workers did not have comprehensive knowledge on causes of occupational HIV transmission and did not know when post exposure prophylaxis is indicated [21], while Aminde et al in Cameroon reported that only 12.5% of HCW had received training on PEP [26].

In conclusion, it is apparent that there is still a wide gap to be closed regarding the level of knowledge of hospital cleaners on occupational hazards and necessary steps to take following exposure to hazardous substance. Government and policy makers should ensure adequate training and re-training of such vulnerable group of workers, provide adequate personal protective devices. Healthcare workers should equally be mandated to observe universal precautions in discharging their duties.

## References

- [1] Faremi F A, Ogunfowokan A A, Olatubi M I, Ogunlade B, Ajayi O A. Knowledge of occupational hazards among cleaning workers: A case study of cleaners of a Nigerian University. *Int J Health Sci Res.* 2014;4(8):198-204.
- [2] Azzawi S A. Hospital waste and cleaning workers in Baquba Teaching Hospital. *Diyala J Med.* 2012;2(1):79-83.
- [3] Bdour A N, Tarawneh Z, Al-Monani T, El-Mashaleh M. Analysis of hospital staff exposure risks and awareness about poor medical waste management- A case study of the Tabuk regional healthcare system-Saudi Arabia. *J Comm Dis.* 2015;47(2):1-13.
- [4] Manyele S V, Ngonyani H M, Eliakimu E. The status of occupational safety among health service providers in hospitals in Tanzania. *Tanza J Health Res.* 2008;10(3):159-165.
- [5] World health organization. Unsafe injection practices and transmission of blood borne pathogens. *Bull World Health Org.* 1999;77:787-819.
- [6] Townsend W K, Cheeseman C R. Guidelines for the evaluation and assessment of the sustainable use of resources and of wastes management at health care facilities. *J Waste Manag Res.* 2005; 23:398-408.

- [7] Jed S L. A quick guide to postexposure prophylaxis in the healthcare setting. Mountain plains AIDS education and training centre, 2006 guideline.
- [8] Centre for disease control and prevention; morbidity and mortality weekly report and recommendations. Immunization of healthcare workers. 1997;46(18):1-51.
- [9] Centre for disease control and prevention; morbidity and mortality weekly report and recommendations. Updated CDC recommendations for the management of Hepatitis B virus-infected health-care providers and students. 2012;61(3):1-16.
- [10] Fayaz S H, Higuchi M, Hirosawa T, Sarker M A, Zakhro D, Nobuyuki H. Knowledge and practice of Universal precautions among healthcare workers in four National hospitals in Kabul, Afghanistan. *J Infect Dev Ctries*. 2014;4(8):535-542.
- [11] Occupational safety and Health administration. Infectious diseases in healthcare setting. Available from [www.osha.gov/SLTC/healthcarefacilities/infectious\\_diseases.html](http://www.osha.gov/SLTC/healthcarefacilities/infectious_diseases.html) #Accessed 02/04/2016.
- [12] Abah S O, Ohimain E I. Healthcare waste management in Nigeria: A case study. *J Public Health Epidemiol*. 2011;3(3):99-110.
- [13] Salkin F I. Review of health impacts from microbiological hazards in healthcare wastes. World Health organization 2004 document. Pp.1-23.
- [14] Akum F A. An assessment of medical waste management in Bawku Presbyterian hospital of the upper east region of Ghana. *Merit Res J Environ Sci Toxicol*. 2014;2(2):027-038.
- [15] Al-Hazmi A. Knowledge, attitudes, and practice of medical students regarding occupational risks of hepatitis B virus in college of medicine, aljouf university. *Ann Med Health Sci Res*. 2015 Jan-Feb;5(1):13-9.
- [16] Daboer J, Chingle M P, Banwat M E. Knowledge, risk perception and vaccination against Hepatitis B infection by primary healthcare workers I Jos, North Central Nigeria. *Niger Health J*. 2010;10(1-2):09-13.
- [17] Sarsour A, Ayoub A, Lubbad I, Omran A, Shahrour I. Assessment of medical waste management within selected hospitals in Gaza strip Palestine: A pilot study. *Int J Sci Res Environ Sci*. 2014;2(5):164-173.
- [18] Manuel M, Daphnie L, D'cunha S, Suresh S. A study to assess the awareness regarding occupational health hazards among the employees in the Laundry department of a selected Hospital. *Muller J Med Sci Res*. 2015;6(1):40-44.
- [19] Shareefdeen Z M. Medical waste management and control. *J Environ Protection*. 2012;3:1625-1628.
- [20] Scheller B, Wicker S, Rabenau HF, Marzi I, Wutzler S. Risk estimation of blood-borne infections by emergency room personnel. *Unfallchirurg*. 2014 Nov 6. [Epub ahead of print]
- [21] Mashoto KO, Mubyazi GM, Mushi AK. Aknowledge of occupational exposure to HIV: a cross sectional study of healthcare workers in Tumbi and Dodoma hospitals, Tanzania. *BMC Health Serv Res*. 2015 Jan 22;15:29.
- [22] Fadeyi A, Fowotade A, Abiodun MO, Jimoh AK, Nwabuisi C, Desalu OO. Awareness and practice of safety precautions among healthcare workers in the laboratories of two public health facilities in Nigeria. *Niger Postgrad Med J*. 2011 Jun;18(2):141-6.
- [23] Gabela S D, Knight S E. Healthcare waste management in clinics in a rural health district in Kwazulu-Natal. *South Afr Epidemiol Infect*. 2010;25(1):19-21.
- [24] Patwary M A, O'Hare W T, Sarker H M. Assessment of occupational and environmental safety associated with medical waste disposal in developing countries: A qualitative approach. *J Safety Sci*. 2011;49:1200-1207.
- [25] Enwere OO, Diwe KC. Knowledge, perception and practice of injection safety and healthcare waste management among teaching hospital staff in south east Nigeria: an intervention study. *Pan Afr Med J*. 2014 Mar 19;17:218.
- [26] Aminde LN, Takah NF, Dzudie A, Bonko NM, Awungafac G, Teno D, Mbuagbaw L, Sliwa K. Occupational post-exposure prophylaxis (PEP) against human immunodeficiency virus (HIV) infection in a health district in Cameroon: assessment of the knowledge and practices of nurses. *PLoS One*. 2015 Apr 16;10(4):e0124416.