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Compliance with Anti–Retroviral Post Exposure Prophylaxis (Pep) Following Needle-Stick Injury among Health Workers in Onitsha, Anambra, Nigeria.

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Abstract: *Health care workers are at risk of occupational exposure to blood-borne pathogens through sharps such as needle-stick injuries hence the importance to compliance with antiretroviral post exposure prophylaxis (PEP) among health care workers. This study is aimed at determining the prevalence of needle-stick injuries and compliance with antiretroviral post exposure prophylaxis (PEP) among health care workers in Onitsha Local Government Areas of Anambra State in South Eastern Nigeria. The study is cross-sectional and involved 750 health care workers. The result shows that 497(66.3%) of the workers had stick injuries. The highest occurrence were in private hospitals 259(73.5%) {P<0.05}. Among the professional groups, laboratory scientists and technicians had the highest incidence of 71(89.9%) {P<0.05}. Gloves are the most commonly used personal protective device. A significantly high number 357 (75.9%) {p<0.05} of the 497 positive respondents with injury washed the wound site with disinfectant (Sodium hypochlorite) and only 100 (20.1%) of them took PEP drugs thereafter. Despite this neglect, PEP is vital in the control of infection of retroviral disease in our environment.*

Key Words: *Compliance, Anti-Retroviral post exposure prophylaxis (PEP), Needle stick injury, Health workers*

I. Introduction

Needle–stick injury is an accidental partial introduction into the body of a health care worker (HCW) during work process of a hollow–bore needle or sharp instrument which includes lancets, scalpels and contaminated broken glass (Efetie and Salami, 2009). Occupational exposure to blood or other body fluids in health facilities constitute a significant risk of transmission of HIV and other blood borne pathogens to healthcare workers. HIV in particular is a major threat in the workplace (ILO, 2011). These risks associated with the exposure affect the quality of care delivered as well as health-care worker's safety and well being (Awases *et al*, 2004). As a result, the exposed workers experience significant fear, anxiety and emotional distress that can result in occupational and behavioral changes (Lee *et al*, 2005). This can be a devastating event even when the risk of contracting blood borne pathogens is low (Magbool, 2002; Judith, 2006).

1.1 Statement of the Problem

Since the discovery of HIV and its continuing spread in epidemic proportion, health care workers across the world have become infected with HIV as a result of their work process injuries (AVERT, 2010). HIV infection is preventable through infection control measures as, use of personal protective devices to prevent occupational injuries and consequently such blood/body fluids exposure or use of post exposure prophylaxis (PEP) anti-retroviral drugs promptly and to the stipulated duration. No matter how low the risk of occupational transmission of HIV among healthcare workers (HCW) maybe, it is of public health significant. This is borne out of the fact that the children and/or other persons that will come in contact with the health worker's blood or body fluid will contract the virus. Those of child–bearing age can transmit the virus to her unborn foetus. The affected healthcare worker can also be a source of spread to other members of his/her population, which he/she may have sexual contact with. This will mitigate the fight to control the spread of HIV infection. Being that HIV has no known cure or developed vaccine, preventive measures should be the key to fighting the spread especially among HCW who are occupationally exposed to this hazard particularly as they provide care and support to HIV/AIDS patients. In UK, PEP is recommended for healthcare workers if they have had a significant occupational exposure to blood or another high risk body fluid which is likely to be infected with HIV (UK Dept. of Health, 2004).

1.1.1 Objective of the Study

Earlier work in five different places in this country indicated very high frequency of needle/stick injury with little adherence to PEP (Adegboye, 1994; Adesunkanmi *et al*, 2003; Okere, 2003; Efetie and Salami, 2009;

Nwankwo and Aniegbue, 2011). This makes it more pertinent to sample more health workers in vulnerable settings and places to ascertain the present frequency of injuries and compliance PEP procedures. This research which borders on health care workers in Onitsha North and South Local Government Areas, Anambra State of South Eastern Nigeria, is important since they must attend to all patients irrespective of their HIV serostatus, and can also become victims of these injury events; and the fact that there is no compulsion in reporting of the events now in Nigeria. Assessment of the rate of needle-stick injury among them and their level of compliance to use of preventive services as PEP is vital, hence this research.

Health care workers like people in other occupations have their peculiar occupational hazards. Needle–stick or sharp object injury as well as blood or body fluid splash on mucous surfaces such as conjunctiva, oral or nasal cavity and unprotected micro skin abrasions are few of such very risky hazards. These workers attend to all persons including known Human Immunodeficiency virus (HIV) clients. Needles and sharp objects that have entered the skin of patients can accidentally pierce the health worker skin. Health care workers (HCW) who have accidental occupational exposure to blood and other potentially infectious materials are at risk for acquiring blood-borne infections. *Acquired Immunodeficiency Virus* (HIV), *Hepatitis B Virus* (HBV); and *Hepatitis C Virus* (HCV) among others are of primary significance to the HCW[5]. However emphasis is more on HIV because there is no known vaccine or cure to it unlike others.

1.1.1.1. Anti-Retro Viral Post Exposure Prophylaxis (PEP)

Anti-retroviral Post Exposure Prophylaxis (PEP) services are the only preventive and protective means against sero-conversion to HIV positive after such exposure. These services are commonly available in tertiary health institution, but may not be available in primary and secondary health institutions in Nigeria. Where the drug services are available at these levels, health workers may not report officially or seek the use of these services and as a result, may come down with HIV infection following exposure to HIV-infected blood and/or body fluid exposure. This research will assess the level of compliance of health workers in health institutions in Onitsha urban to anti-retroviral post exposure prophylaxis.

II. Significance Of The Study

Since the discovery of HIV and its continuing spread in epidemic proportion, health care workers across the world have become infected with HIV as a result of their work process injuries (AVERT, 2010). The World Health Organization (WHO) estimates that 3 million percutaneous exposures occur annually among 35 million healthcare workers globally; over 90% occurring in constrained countries (Pruss, *et al, 2005*). Health-care workers in Africa suffer two to four needle-stick injuries per year on the average (Pruss, *et al*, 2003), with Nigeria, Tanzania and South Africa reporting 2.10 injuries per healthcare worker on average (Elizabeth, *et al*, 2005). Worldwide occupational exposure accounts for 2.5% of HIV cases and 40% of Hepatitis B and C cases among Healthcare workers. Each year as a consequence of occupational exposure, an estimated 1000 HIV infections occur among healthcare workers globally (WHO, 2002). In United Kingdom (UK), as of November 2008 the Health Protection Agency (HPA) reported that there have been five (5) documented cases of HIV infection after occupational exposure in healthcare setting, the last being in 1999. The average risk for HIV transmission after blood exposure in United Kingdom (UK) is about 3 per 1000 injuries (Bandolier, 2003; AVERT, 2010). As at December 2006, health workers in United States of America reported 57 occupational HIV infections. Of these, 48 had percutaneous exposure; 5 mucocutaneous exposure; 2, both percutaneous and mucocutaneous exposure; and 2 had unknown route of exposure (CDC, 2006). In addition, 140 possible occupational transmissions have occurred among healthcare workers. There are cases in which a worker is infected with HIV and has a history of occupational exposure, but did not have a HIV screening immediately before and after the possible exposure. As no other risk factors are reported, it is most likely that the infection has occurred as a result of that occupational exposure (CDC, 2006). Needle–stick injury result in at least 100 new cases of healthcare workers diagnosed with HIV every year in the United States of America (Bandolier, 2003).

Most developing countries, Nigeria included may not have surveillance for occupational exposure to blood and body fluids, hence limiting estimation of the exact magnitude of such accidents (Amita, *et al*, 2008); except for researches as this. Every day, thousands of HCW in developing nations like Nigeria experience needle–stick injury (Magbool, 2002). An earlier study 13 years ago in a Nigerian hospital documented a risk of 2 percutaneous injuries (PIs) per surgeon per year; 0.4 PI per Medical per year and 0.6 PI per nurse per year (Adegboye, *et al*, 1994). In Enugu (UNTH), the rate of PIs has been documented as 67.5% among resident Surgeons, adding that in 89 exposures 63% were needle sticks injuries (Nwankwo, *et al*, 2011). It should be noted that because of the voluntary nature of reporting the sharp/stick-injury, there might be some under–reporting of cases (Avert, 2010).

The risk of HIV infection is low with solid needle, superficial on intact skin, small volume of blood on mucous membrane, source is asymptomatic or viral load is less than 1500 copies per milliliter (<1500 copies

/ml). Conversely, the risk is high, if exposure is with large bore needle, deep injury, visible blood on device, needle previously entered into patient artery or vein, large volume of blood splash on mucous membrane, source patient is symptomatic, acute sero-conversion and high viral load source (Federal Ministry of Health, 2005; Judith, 2006). Despite the similarities in their mode of transmission, the risk of HBV infection in health care setting far exceeds that of HIV infection (Avert, 2010). It has been estimated that the risk of acquiring HBV infection ranges from 6% to 30% while that of HIV infection is less than 1% (CDC, 2006). It is said that HIV has a short survival time outside the body, or in dried blood. There is evidence that HIV can survive for hours even when blood dries, or weeks when protected from drying, as in a hollow needle or multi–dose vials (Abdala, 1999). One can understand why health care workers including hospital attendants/ward clerks are at risk to contracting HIV via such needle–stick injuries even from hospital waste bins. The fact that more than 80% of needle-stick injuries can be prevented from occurring through the use of safer equipment is not disputable (Judith, 2006).

Much of the focus of Government is on the tertiary health institutions. HCWs at primary, secondary levels do the same work as those in tertiary health institution level and are equally exposed to the same occupational health hazards or risks as those in the tertiary health institution level. This research is designed to look at the compliance of HCWs to PEP at these three levels of health institutions, (Primary, Secondary and Tertiary), in Onitsha Urban.

2. 1. ARD for PEP

Research evidence seems to suggest that the use of antiretroviral drugs (ARD), if given soon after an injury can reduce the rate of sero-conversion to HIV infection among healthcare workers. Such treatment is referred to as post exposure prophylaxis (PEP). PEP is up to 80% effective but requires speed, thought and action; a combination of primate and human studies suggests PEP is mostly likely to be effective when initiated as soon as possible, the gold standard is an hour and certainly within 48-72 hours of infection and continued for at least 28 days (Tolle, *et al*, 2010), (Cardo, *et al*, 1997). PEP is recommended for health care workers if they have had a significant occupational exposure to blood or another high risk body fluid which is likely to be infected with HIV (UK Dept. of Health, 2004) ;(FMOH, 2005). This is further supported by the report that, ‘’early initiation of anti-retroviral treatment in HIV-infected adults, beginning when the CD4+T-cells count drop below 350cells/mm3, is associated with a 4-fold lower rate of death and a 2-fold incident for tuberculosis, compared with the standard of waiting to initiate treatment until CD4+T-cells count fall below 250cells/mm3 (Martha, 2010).

According to Federal Ministry of Health in the National guidelines for the use of Antiretroviral Drugs (ARD), it has been shown that immediate administration of ARD may prevent infection with HIV from occurring following occupational exposure to sero-positive blood (FMOH, 2005). Exposure to blood and contaminated materials that should be considered for PEP is as advised by CDC (CDC 2007).

Treatment as in the case with PEP can prevent sero-conversion of a HCW to HIV positive, However if the HCW seroconverts to HIV positive, any further treatment is for long term care and support as drug therapy can only slow the course of the disease; or he/she is left at the mercy of the ability of the victim’s immune system to generate antibodies as, VRC01 and VRC02 that have been identified in HIV-infected blood attach to CD4+ binding site for HIV and appear to prevent the virus attaching to and infecting the T-cells (Peter, 2010).

III. Methodology

3.1. Sampling

The study is a one year prospective study carried out in Onitsha Urban in Anambra State, South East Nigeria in 2013. Onitsha is situate between latitude $5\text{-}10^0$ North of equator and longitude $5\text{-}10^0$ West of Greenwich in the West African Map (Macmillian, 1984). It is one of the major urban cities in Anambra State and covers a land mass of about ten (10) kilometer square. It is within the rain forest zone with a total annual rain fall of between 2000-2500mm^3 and distinct dry and rainy seasons, with temperatures ranging from $25\text{-}38^0$C. Onitsha is one of the foremost commercial cities in Nigeria and the West African sub-region and hence has a large pool of high–risk population and settings; sex workers, transport workers, bars, brothels, truck parks and night clubs.

There is a large number of health institutions; primary, secondary and tertiary in the city. The Global HIV/AIDS Initiative Nigeria (GHAIN) programme has been in operation in all the Faith Based Health institutions (St Charles Borromeo Hospital, Immanuel Hospital In-land Town, Waterside Hospital and Immaculate Sister Hospital), and also in the General Hospital Onitsha, Guinness Eye Clinic (Ophthalmic Department of Nnamdi Azikiwe University Teaching Hospital Nnewi, and some private hospitals (New Hope Diagnostic Center and Toronto Hospital) since 2005 to date. HIV infected clients and other patients seek medical attention in these hospitals. Health care workers in the above-mentioned hospitals and others in

scattered private hospitals, maternity homes and health centers where HIV/AIDS clients visit are equally exposed to percutaneous injuries and possible HIV infection. This makes the study area suitable for the research The study is a cross sectional one. The study area was divided into four (4) clusters. Systematic random sampling technique was applied to get the sampled private hospitals in each cluster in the order of one (1) after every three (3) hospitals which sum up to thirty-two (32) out of one hundred and twenty-eight (128) private hospitals in the study area. A total of seven (7) out of twenty-eight (28) health centers (two each from three of the four areas and the only one in the remaining area) were sampled. The Four (4) Faith Based Hospitals, the only one General Hospital (GH) and Nnamdi Azikiwe University Teaching Hospital (NAUTH), Onitsha branch which is also called Guinness Eye Clinic were all included in the study. The whole health institutions sampled totalled forty-five (45) out of the total 162 health facilities in the area.

The institutions were visited, the heads or proprietors were contacted, and the aim of the visit made known to them and to the participants. Informed consent was sought from both the institution heads or proprietors and individuals concerned who are staffers of the indexed institutions.

3.1.1. Data collection and analysis

Questionnaire was formulated in line with the set objectives and were tested and standardized. Copies were distributed to the health institutions that fall into the study group as follows; NAUTH = 100 copies, GH =120 copies, Faith Based Hospitals (FBH) = 34 copies each (136 copies), Private Hospitals (PH) = 11 copies each (352 copies), and Health Centers (HC) = 6 copies each (42 copies). The questionnaire was in each case distributed to the health care workers in the order of one (1) after every two (2) to get 750 study population out of the 2250 population of the targeted health workers in the health institutions and later collected back after 45 minutes maximum time limit. A total of 750 copies of questionnaire were returned completed and used in the study. Field HIV screening was not carried out as it is not part of the research. Data collected were tallied, tabulated and presented in numbers, percentages and charts. Chi square was used to analyze differences between variables.

IV. Results

The 750 respondents were made up of 112(14.9%) male and 638(85.1%) females. Of the total number, 81 (10.8%) were medical doctors, 519 (69.2%) were nurses, 79 (10.5%) were laboratory scientists, while 71(9.5%) were cleaners. By numbers of years in service, 451(60.0%) of the respondents have worked in hospitals between 0 to 10 years, 243(32.4%) for 11-20years, 33(4.4%) for 21-30 years and 23(3.1%) for more than 31 years (Table 1).

The overall percentage of stick injury occurrence among interviewed health workers was high (66.3%), and among institutions, the highest percentage occurred among health workers in the private hospitals (73.5%), followed by those in faith based hospitals (70.6%), while those in NAUTH reported the least (47.0%)(Table 2). By professional subgroups, laboratory scientists had the highest frequency (89.9%), followed by medical doctors (79.0%), while cleaners had the least (45.1%) (Table 2). Intra-group analysis showed that medical doctors 37(58.8%), and nurses 176 (53.3%), working in private hospitals had significantly {P<0.05%} higher cases of needle-stick injuries than their counterparts in other hospitals (Table 2).

All the respondents from NAUTH (Guinness Eye Clinic), General Hospital and Faith Base Hospitals said they had full scale PEP services, in-service training for PEP and Needle-sticks Incidence Form. For private hospitals only 22(6.3%) reported presence of all the facilities, while 14(33.3%) of the respondents from health centers reported presence of in-service training for PEP only (Table 3). Private hospitals respondents that reported presence of these facilities were those that work in private hospitals where GHAIN services are available (New Hope Diagnostic Center and Toronto Hospital). Of the 497 respondents that have had needles/sharps injury, 328(66.0%) reported that such objects were pre-contaminated with blood or body fluid while 169(34.0%) were injured by sterile needles/sharps (Fig 1). The protective device utilized most by all respondents and their institutions was gloves 750(100.0%), followed by disinfectant 676(88.9%) and pre-operative HIV test on patients 665 (87.5%), while the least was use of eye glasses 263 (34.6%) (Table 4). However, the General Hospital made significantly {P<0.05%} higher use of eye glasses (for operative cases) (72.5%) than others. By institution, the General Hospital, followed by NAUTH, made significantly {P<0.05} higher use of all the devices than others, while health centers made the least use of the devices (Table 4).

A significantly {P<0.05} higher number 357(75.9%) of the 497 respondents that had needle-stick injury washed the wound site with disinfectant (Sodium hypochlorite), followed by squeezing out blood from the wound site 348(70.0%), while only 107(21.5%) and 100(20.1%) reported their exposure to PEP Unit officially and took PEP drugs respectively (Table 5). Of the total number pricked, only 230 (46.3%) checked their HIV status immediately after the prick, although none tested positive (Table 5). By institutions, taking of precautionary measures were practiced more in NAUTH and the General Hospital, while health centers utilized them least (Table 5).

A significant {P<0.05} number 61(61%) of the 100 respondents who started the drugs took it as required (four weeks and more), while 18 (18.0%) took them for just one week. Compliance was more among health care workers in private hospital 24 (85.7%), followed by those in health centers 2(67.7%), while those in NAUTH faulted most 10 (38.5%) (Table 6).

A significantly {P<0.05} higher number of the interviewees 62(62.0%) waited till the 6th month after exposure to re-check their HIV status, while 19 (19%) each did theirs at the 6th week and 3rd month (Table 7). At the 3rd month one interviewee (1.0%) sero-converted to HIV positive while 2 others showed positive at the 6th month giving a total of 3 (3.0%) out of the hundred respondents who took PEP drugs and rechecked their HIV status after the drugs (Table 7). This showed that 3(0.9%) of the 328 respondents exposed to needles/sharps contaminated with patient blood or body fluid, sero-converted to HIV positive. One (1) of the 3 respondents that sero-converted to HIV positive status works in the General Hospital, while the remaining two (2) work in Faith Based Hospital (Table 7).

V. Tables And Figures

Tables 1: Demographic Distribution of the 750 Respondents by Sex, Professional Subgroup and Number of Years in Service.

Parameter	
Sex.	Number(%)
Male:	112(14.9%).
Female:	638(85.1%)
TOTAL	750 (100%)
Professional Subgroup.	
Doctors	81(10.8%)
Nurses	519(69.2%)
Laboratory Scientists	79(10.5%)
Hospital Cleaners	71(9.5%)
TOTAL	750 (100%)
Number of Years in Service	
0-10 years	451(60.1%)
11-20years	243(32.4%)
21-30years	33(4.4%)
Above 31years	23(3.1%)
TOTAL	750(100.0%)

Table 2: Distribution of Cases of Stick Injury by Professional subgroup and Institution

Professionals	Health Institutions					
	NAUTH:	GH:	FBH:	PH:	HC	TOTAL
Doctors	8(12.5%)	12(18.8%)	7(10.9%)	37(58.8%)	0 (0.0%)	64(79.0%)
Nurse	828(.5%)	39(11.8%)	62(18.8%)	176(53.3%)	25(7.6%)	330 (63.6%)
Lab. Sc.	5(7.0%)	9(12.7%)	18(33.3%)	37(52.1%)	2(2.8%)	71(89.9%)
Attendant	6(18.8%)	6(18.8%)	9(28.1%)	9(28.1%)	2(6.3%)	32(45.1%)
TOTAL	47 (47.0%)	66 (55.0%)	96 (70.6%)	259 (73.5%)	29 (69.0)	497(66.3%)

NB: NAUTH = Nnamdi Azikiwe University Teaching Hospital, Onitsha branch; GH = General Hospital; FBH=Faith based Hospitals; PH = Private Hospitals; HC = Health Centers

Table 3: PEP Policies Present by Health Institutions.

	Health Institutions				
Policies:	NAUTH:	GH:	FBH:	PH:	HC:
PEP services:	100(100%)	120(100%)	136(100%)	22(6.3%)	0(0.0%)
In-service train:	100(100%)	120(100%)	136(100%)	22(6.3%)	14(33.3%)
Incidence form:	100(100%)	120(100%)	136(100%)	22(6.3%)	0(0.0%)

Fig. 1: Distribution of Pricked Respondents by Sterile Nature of Needles/Sharps

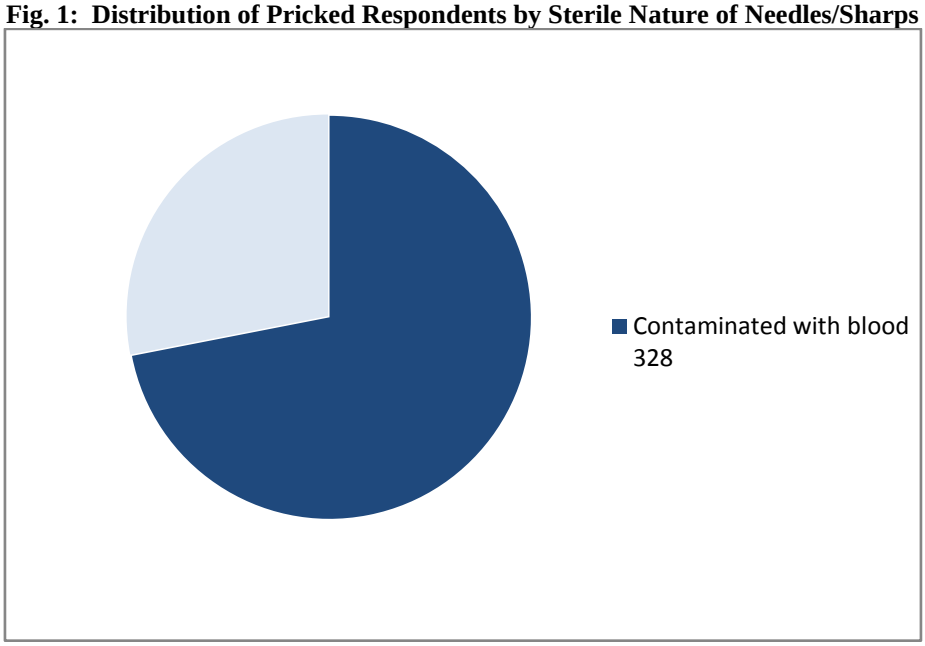

Table 4: Distribution of the Use of Personal Protective Devices by Health Institution

Facilities:	NAUTH:	GH:	FBH:	PH:	HC:	Total
Gloves	100(100%)	120(100%)	136(100%)	352(100%)	42(100%)	760 (100.0%)
Eye glass:	28(28.0%)	87(72.5%)	56(41.2%)	84(23.9%)	8(19.0%)	263 (34.6%)
Cover shoe:	57(57.0%)	96(80.0%)	66(48.5%)	130(36.9%)	3(7.1%)	352 (46.3%)
Gowns:	72(72.0%)	87(72.5%)	72(52.9%)	223(63.4%)	18(42.9%)	472 (62.1%)
Face mask:	64(64.0%)	96(80.0%)	70(51.5%)	186(52.8%)	1(2.4%)	417 (54.9%)
Disinfectant:	85(85.0%)	108(90.0%)	120(88.2%)	325(92.3%)	38(90.5%)	676 (88.9%)
Tap water:	96(96.0%)	99(82.5%)	130(95.6%)	186(52.8%)	28(66.7%)	539 (70.9%)
Pre-Op/HIV/Test:	100(100%)	108(90.0%)	126(92.7%)	325(92.3%)	6(14.3%)	665(87.5%)

Table 5: Distributions of First-Aid Measures Adopted by the 497 Respondents After Exposure by Health Institutions

First Aid Measure	NAUTH:	GH:	FBH:	PH:	HC	Total:
Squeezed blood:	47(100%)	66(100%)	54(56.3%)	170(65.6%)	12(41.4%)	348 (70.0%)
Rinsed with water:	47(100%)	66(100%)	58(60.4%)	147(56.8%)	12(41.4%)	330(66.4%)
Rinsed with Jik:	47(100%)	66(100%)	58(60.4%)	168(64.9%)	18(64.1%)	357 (75.9%)
Reported to senior:	32(68.1%)	52(78.8%)	58(60.4%)	133(51.4%)	12(41.4%)	287 (57.8%)
Reported to PEP:	30(63.8%)	15(22.7%)	36(37.5%)	14(5.4%)	12(41.4%)	107 (21.5%)
Had HIV test:	38((80.9%)	57(86.4%)	63(65.6%)	63(24.3%)	9(31.0%)	230 (46.3%)
Tested HIV +ve	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
PEP drugs	26(55.3%)	13(19.7%)	30(31.2%)	28(10.8%)	3(10.3%)	100 (20.1%)

Table 6: Distribution of Duration on PEP Drug Intake by the 100 Respondents Who Started PEP Drugs Intake According to Health Institutions

	HEALTH INSTITUTIONS					
PEP Duration:	NAUTH	GH	FBH	PH	HC	Total
1week	8(30.8%)	1(7.7%)	5(18.8%)	4(14.3%)	0 (0.0%)	18(18.0%)
2 weeks	5(19.2%)	2(15.4%)	6(18.8%)	0(0.0%)	0 (0.0%)	13(13.0%)
3 weeks	3(11.5%)	4(30.8%)	0 (0.0%)	0 (0.0%)	1(33.3%)	8(8.0%)
>4 weeks	10(38.5%)	6(46.2%)	19(59.3%)	24(85.7%)	2 (67.7%)	61(61.0%)
Total	26(26.0%)	13(13.0%)	30(30.0%)	28(28.0%)	3(3.0%)	100(100%)

Table 7: Distribution of the 100 Respondents According to Time of Repeat of HIV Test after PEP Drugs Intake and Result of HIV Test by Health Institutions.

	HEALTH INSTITUTIONS					
Duration:	NAUTH	GH	FBH	PH	HC	TOTAL

3 weeks	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0 (0.0%)	0(0.0%)
6 weeks	5(7.7%)	3 (23.1%)	4(13.3%)	6(21.4%)	1(33.3%)	19 (19.0%)
3 months	3(11.5%)	6(46.2%)	5(16.7%)	4(14.3%)	1(33.3%)	19 (19.0%)
6 months	18 (69.2%)	4(30.8%)	21(70.0%)	18(64.3%)	1(33.3%)	62 (62.0%)
Tested HIV results per institution						
Positive After:						
3 weeks	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
6 weeks	0(0.0%)	0 (0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
3 months	0(0.0%)	1(7.6%)	0(0.0%)	0(0.0%)	0(0.0%)	1 (5.3%)
6 months	0(0.0%)	0 (0.0%)	2(6.3%)	0(0.0%)	0(0.0%)	2(3.2%)

VI. Discussion.

The prevalence of needle-sticks injury among health workers in Onitsha was high (66.3%), and all surveyed health institutions and professional subgroups were involved in an almost equal proportion, although the rates were higher in private hospitals. The prevalence of pricks caused by pre-exposed or contaminated needles and sharps was equally high (66.0%), meaning that such a percentage carry the potential for HIV transmission and/or other blood borne pathogens. This is in line with the observations by (Magbool 2002), that thousands of health care workers in developing nations like Nigeria experience needle–stick injury every day.

Some earlier researchers obtained varied percentages, ranging from 10.5% at the Obafemi Awolowo Teaching University Ile Ife (Southwest Nigeria) among general surgeons, to 53% at the University of Nigeria Teaching Hospital Enugu (Adesunkanmi *et al*, 2003; Okere, 2003). A more recent work by Efetie and Salami (2009), reported a much higher prevalence of 90.3% needle-sticks injury among gynecologists at the National Hospital Abuja. The differences observed may be attributed to differences in hospital settings and other inherent factors. However, the fact remains that the rate of needle-stick injuries among health workers of all classes in Nigeria is at an alarmingly high rate and spells out danger. This is even so scaring judging from the fact that most private hospitals and health centers surveyed lack PEP policies and apart from use of gloves, all the hospitals majorly the faith based, private hospitals and health centers made little use of all the other protective devices.

It was discovered during the survey that the small fraction of the private hospitals with PEP policies are those covered by Global HIV/AIDS Initiative Nigeria (GHAIN) services. The government must as a matter of urgency, ensure that these services are available in all the hospitals; private or government owned in order to protect the citizenry from avoidable infections from needle-stick injuries. The fact still remains that even at the National Hospital Abuja as of 2009, Efetie and Salami reported 37.1% availability of PEP policy and lack of sufficient use of available protective devices by interviewed gynecologists. Hopefully, the situation must have improved as reflected by this survey in the General Hospital, Onitsha.

Cichocki (2010) rightly claimed that reporting cases of needle-stick injury on time and taking the prescribed post exposure prophylaxis drugs reduces the incidence of HIV transmission through stick injuries. But in this survey it was discovered that though more than half of the health workers interviewed had had needle/sharps injuries and about half got suspicious pricks from needles/sticks contaminated with blood/body fluids only very little proportion reported to the PEP Units and checked their HIV status. And of the number that reported very little consented to start PEP drug therapy. The result corroborated the findings of earlier researchers (Adesunkanmi *et al* , 2003; Okere, 2003; Efetie and Salami, 2009), in different health institutions in Nigeria.

When asked to explain verbally reasons for refusing PEP services, some mentioned; fear of knowing their HIV status, fear of starting PEP drugs and the possible drug-reactions. Because of that, most preferred not to go for the test in the first instance and some of those who even tested negative refused to start the prophylaxis drug therapy. This was in line with the observations made by CDC in 2006.

The poor compliance of health workers to PEP drugs regimen following blood exposure as shown in this study is a source of concern in the fight to control HIV infection in Nigeria. Of the little number that started PEP drugs some stopped after the first week and the 3 interviewees who later sero-converted to HIV positive were among those who stopped taking their drugs after the first week. The timing for repeat of HIV test (6 weeks, 3 months and 6 months) after PEP drug therapy as stipulated by CDC (2005) and FMOH (2005), was poorly adhered to. Majority waited till the sixth months, which could delay commencement of HIV therapy on time and for a risky exposure, the victim must have sero-converted to HIV positive at this time span. Fear of consequences listed earlier, may have made them to wait till the last time frame and have it once and for all. The last as evidenced by this study is lack of availability of these facilities in some of the hospitals. Those affected went to hospitals covered by GHAIN.

The survey further revealed that 3(0.9%) of all the respondents that had needle-stick injury, sero-converted to HIV infection. Although, none of the pricked respondents who did not report to PEP Units or took PEP drugs claimed to have contacted the infection, their HIV status can never be ascertained till they have had

HIV test, and since the incidence has lasted for more than 6 months, the source of infection could be debatable if the test was just done during this investigation.

The risk of HIV transmission to health workers by this study is high when compared to those outside Nigeria. The UK Department of Health (2004) reported 5 cases of HIV infections after occupational exposure in the health care setting, the last being in 1999. CDC (2007) reported 57 occupation HIV infections in the USA for up until 2006, giving an average risk for HIV transmission after such exposure to infected blood to be 3 per 1000 injuries for percutaenous injuries; and less than 1 per 1000 for mucocutaenous exposures. It is true as noted by AVERT (2010) that because of the voluntary nature of reporting the sharp/stick injury and/or sero-conversion to HIV positive, there might be some under–reporting of cases. Nevertheless, the result from this study and the differences observed between the Nigeria situation and that of the outside world; confirm the assertion of UK Department of Health (2004)that PEP drugs compliance and adherence given soon after dirty exposure can reduce/protect health workers from sero-conversion to HIV infection. Therefore, there is very urgent need for more advocacy, strict compliance and unbiased implementation of PEP policies and services as well as provision of all protective devices in all Nigerian health institutions in order to reduce to the barest minimum transfer of HIV to health workers and subsequent spread of such to families and patients under the care of these workers. Close attention must be given by the government and its agencies to the International Labour Organization (ILO) proposed measures to prevent, reduce or eliminate risk of HIV infections to hospital personnel as listed by the American Nurses Association (2002). These measures include among others; a comprehensive national policy on occupational health, establishment of occupational health services, access to health surveillance, preferably during working hours and at no cost to the health care worker concerned, and medical confidentiality of health surveillance. If all these measures are put in place, Nigeria Health Workers will be spared of the occupational risk of HIV infection.

VII. Conclusion

Prevalence of needle-stick injuries among sampled health workers in Onitsha area is high. Majority of health workers do not take appropriate actions after exposure. Employing universal precautions imply taking adequate care with everybody seen as patients. Thus health workers do not have to make assumptions about people's lifestyle, rather treat everyone or blood sample as positive until proven otherwise. Health workers should have the right to be able to protect themselves against infections – HIV, hepatitis or other blood-borne infections.

Although exposure through needle-stick injury can be avoided by simply following good working practices, health workers should consider the implications and benefits of taking PEP; also doing so at the right time within zero to 72 hours post exposure.

The voluntary nature of reporting is another issue for discuss because of the high level of under-reporting associated with it. Given the high level of under-reporting among all health workers and in all the health facilities, health workers may play a significant role in the spread of HIV virus. The health workers that sero-convert to HIV infection are and will still be part of the society socially or otherwise.

VIII. Recommendations

It is therefore recommended that; Comprehensive PEP drugs and reporting services be instituted in all health institution levels to facilitate access to the services if one is exposed and aid proper reporting. Continual education programme for health workers at all levels on the risks of and interventions to prevent needle-sticks/sharps injuries be set up in all health facilities. All health institutions should have a working needle-sticks/sharps policy, this should be made available to all health workers, placed in strategic locations and boldly marked for recognition. All health workers should be continually reminded of the need to take appropriate actions after exposure. The use of bold posters or otherwise should be placed at strategic points in all levels of hospital to remind health workers to put on the necessary protective devices. Such devices should be strategically displayed in the accident and emergency unit and offices for health workers.

In case of needle-stick injury, encourage bleeding at the site of injury, do not panic, report the incident, check HIV status of both yourself and the person whose blood has been transferred, take prophylaxis medication (known as post exposure prophylaxis – PEP) preferably within an hour if the person you were exposed to is HIV positive and your status is HIV negative and have a follow up testing and medical supervision for your recovery. Work place knowledge should encompass, familiarize or update oneself on what you will do in your work place if a needle-stick injury occurs. Seek further advice about the do's and don'ts regarding needle-stick injury, avoid unnecessary distractions when working and ensure safe working practices in a health care environment at all times.

It is therefore suggested that there be a shift from 'HIV post exposure prophylaxis' to 'HIV pre-exposure prophylaxis' for health workers; more research in this area of pre-exposure prophylaxis is needed.

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