*Current Journal of Applied Science and Technology*

***39(15): 8-21, 2020; Article no.CJAST.57639***
***ISSN: 2457-1024***
*(Past name: British Journal of Applied Science & Technology, Past ISSN: 2231-0843, NLM ID: 101664541)*

# Assessment of Standard Precautions' Practices among Health Care Workers in a Rural Area of South-South Nigeria

**Ferguson Ayemere Ehimen[1*], Iboro Samuel Akpan[2], Emmanuel Friday Osagiede[3], A. N. Ofili[4], Pierre Oziegbe Okukpon[5] and I. A. Airefetalor[5]**

*[1]Department of Preventive Healthcare and Community Medicine, Lily Hospital, Warri, Delta State, Nigeria.*
*[2]Department Family Medicine, Lily Hospital, Benin City, Edo State, Nigeria.*
*[3]Department of Community Medicine, Niger Delta University Teaching Hospital, Okolobiri, Nigeria.*
*[4]Department of Community Health, University of Benin, Benin City, Edo State, Nigeria.*
*[5]Department of Community Medicine, Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria.*

***Authors' contributions***

*This work was carried out in collaboration among all authors. Author FAE designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors ISA, EFO and ANO managed the analyses of the study. Authors POO and IAA managed the literature searches. All authors read and approved the final manuscript.*

***Article Information***

DOI: 10.9734/CJAST/2020/v39i1530712
Editor(s):
(1) Prof. David Coman, The Wesley Hospital, Australia and The Lady Cilento Children's Hospital, Australia.
Reviewers:
(1) Rakesh Sharma, All India Institute of Medical Science Rishikesh, India.
(2) Sanjeev Jakati, KLR Lenora Institute of Dental Sciences, Dr NTR University, India.
(3) Sinisa Franjic, International University of Brcko District, Bosnia and Herzegovina.
Complete Peer review History: http://www.sdiarticle4.com/review-history/57639

***Original Research Article***

***Received 22 March 2020***
***Accepted 29 May 2020***
***Published 16 June 2020***

## ABSTRACT

**Introduction:** Occupational exposure to blood and body fluids (BBFs) is a serious public health concern and it constitute a major risk factor for transmission of infectious diseases such as hepatitis B virus (HBV), hepatitis C virus, and human immune deficiency virus. Therefore, regular adherence to standard precautions remains the best strategy advocated by World Health Organization and Centres of Disease Control for controlling occupational exposure to blood and body fluids.
**Objectives:** To evaluate the knowledge and practice of HCWs, as it relates to exposure to BBFs and adherence to standard precautions.

**Corresponding author: E-mail: docehimenferguson@gmail.com;*

**Methods:** A cross-sectional study was carried out within 8 months among primary health care workers. Information on knowledge of exposure to BBFs, standard precaution practices and post-exposure management were collected using interviewers' administered questionnaire and observational checklist. The study was conducted among two hundred and thirteen health care workers in Ekpoma, Edo State. Data were entered, cleaned and analyzed using SPSS for window, version 16 (SPSS Inc., Chicago, IL, USA) statistical package software.
**Results:** Sixty eight (41.7%) of cleaners and 29(17.8%) of nurses/community health extension workers were aware of blood borne infections associated with occupational exposure to BBFs compared to doctors, 3(1.8%) and laboratory workers, 4(2.5%). It was also found out that majority (74.2%) of the participants had poor knowledge of infection control practices.
**Conclusion:** The knowledge and practice of standard precautions was found to be generally poor. Hence, all health care workers should be trained on the principles of infection control and exposure prevention. Also, relevant authorities need to formulate new strategies to create a favorable working environment that will ensure HCWs adherence to standard precautions.

*Keywords: Health care workers; knowledge and standard precaution practice; South-South; Nigeria.*

## 1. INTRODUCTION

Occupational exposure to blood and body fluids (BBFs) remains one of the major hazards experienced by healthcare workers (HCWs) and the burden of these blood borne infections is quite alarming [1,2]. Annually about 2 million cases of HBV infections, 900,000 cases of HCV infections, and 300,000 cases of HIV infections occur as a result of exposure to blood and body fluids [2]. HIV infection, in particular, is a major threat to the life of the HCWs due to its serious consequences. Worthy of mention is that a greater proportion of these infections from exposures to BBFs occur in low income countries like Nigeria [2-5].

Realizing the enormous problem generated from exposure to infected blood and body fluid, the Centre for Disease Control and Prevention recommended for the establishment of infection control strategy known as standard precautions [6]. This strategy is the most important means of preventing or reducing accidental exposure to infected blood and body fluids. The key elements of standard precautions include; hand hygiene; use of personal protective equipment; safe injection safety practices; safe handling of potential contaminated surfaces or equipment; respiratory hygiene/ etiquette [6,7].

Even though standard Precautions measures have been shown to significantly reduce BBFs exposure, the practice of standard precautions is still very low, hence increasing the incidence of accidental exposure to BBF [8].

An observational study conducted among PHC workers in Northern, Nigeria, showed that Nineteen percent (19%) and 55% of the HCWs cleaned their injury with spirit swab and antiseptic respectively after exposure [9]. Similarly, other studies in developing countries have revealed poor adherence to standard precautions compared to the improved reported adherence rate in developed world [10,11,12,13].

Occupational exposure and threats faced by health personnel in Nigeria have received increasing attention but existing data and HCWs receptiveness to standard precautions are inadequate to describe the range and extent of health care workers adherence. Also, the evidence base surrounding standard precaution practices in this resource poor setting remains limited. Therefore, there is need to regularly carry out study on HCWs adherence to standard precautions and to continuously emphasized the importance of standard precautions in health care settings.

This study aims to investigate and determine HCWs' knowledge, practice and adherence to standard precautions.

## 2. METHODOLOGY

### 2.1 Site and Population

The study was conducted in Esan West LGA of Edo state. The Local Government area (LGA) is situated in Edo Central Senatorial district, Edo State, Nigeria. The LGA has an area of 502km [2] and population of 127,718 at the 2006 census. [14] It is located in Esan land and it's indigene are mainly Ishan speaking. It is predominantly an agrarian community yielding produce like yams, rice and cassava. The LGA is bounded in the South by Orhionmwon LGA in Edo state and Ika LGA in Delta state. On the east it is bounded by Esan central LGA, on the

west by Uhunmwode and Igueben LGA and on the north by Owan west LGA of Edo state. Esan west LGA, Ekpoma is divided into 10 political wards.

## 2.2 Study Design

The study was a descriptive cross-sectional study.

## 2.3 Study Population

The study population was HCWs working at the primary health care facilities in Esan West LGAs of Edo State.

## 2.4 Study Duration

The study exercise was carried over a period of eight months.

### 2.4.1 Inclusion criteria

All consenting doctors, nurses, laboratory workers and ward assistants who were involved in direct patient care and have worked in the primary health setting for at least 6months prior to the study.

### 2.4.2 Exclusion criteria

HCWs that were on leave (annual, maternity, sick leave) are to excluded.

### 2.4.3 Data collection/ sampling technique

Data was collected using interviewers' administered questionnaires and observational checklists (check appendix 1 & 2). The entire populations of HCWs in the 23 Primary health care centres were recruited for the study (total population survey). However in order not to go below the minimum sample size for every population, a sample size was calculated using the formula for cross sectional study designs. The minimum sample size of 150 was used as a guide in order not to go below required minimum sample size for the study. However, 213 HCWs were studied.

### 2.4.4 Measurement of variables /data management

The dependent variable in this study was adherence to standard precautions. The grading of adherence to standard precautions (poor, fair and good adherence) was adapted and modified based on report from previous study [9].

The explanatory variables include sex, age, marital status, level of education, cadre of the HCWs. The variables were measured as nominal, ordinal and numerical variables. Frequencies and percentages were derived for the categorical variables while mean and standard deviation were derived for numerical variables. All p-values were two tailed and considered as statistically significant if $P < 0.05$.

Data were entered, cleaned, and analyzed using SPSS for window, version 16 (SPSS Inc., Chicago, IL, USA) statistical package software. [15] Descriptive statistics like frequencies and proportions were used to summarize the data.

## 3. RESULTS

Large proportions (about 42%) of the health care workers were within the age group of 21-30 years. Regarding gender of the respondents, Females constituted the majority (88.7%) of the respondents studied. About 56% of the respondents were married (55.9%). Also, most (50.7%) of the respondents had tertiary level of education while majority, 89(41.8%), of the HCWs studied were cleaners.

Sixty eight (41.7%) of cleaners and 29(17.8%) of nurses and Chews respectively knew of blood borne infections associated with occupational exposure to BBFs compared to 3(1.8%) and 4(2.5%) of doctors and laboratory workers respectively. In addition while less than fifteen percent of rest HCWs knew of Blood borne infections. Also, twenty six (24.1%) and 37(34.4%) of the nurses and cleaners knew that Sharp injuries were the main sources of occupationally acquired viral infections. Majority of the HCWs knew that HIV is one of the infections contacted via occupational exposure to BBFs being that, 29(22%), 32(23.9%) and 46(34.3%) of nurses, chews and cleaners knew that HIV is contacted via exposure to BBFs respectively Table 2.

Table 3 shows the knowledge of respondents regarding exposure to blood and body fluids. It was found that majority (74.2%) had poor knowledge. Also, 38(17.8%) and 17(8.0%) of respondents had fair and good knowledge of factors associated with occupation exposure to blood and body fluids respectively.

Table 4 shows the various actions taken by respondents when exposed to blood and body fluids. Of the 160 health care workers exposed, majority, 95(59.4%), of respondents immediately washed their hands with soap and water while 30(18.8%) reported to their supervisors.

However, 17(10.6%) and 2(1.3%) of respondents immediately got tested for HIV and HBV respectively. Only 1(0.6%) of the respondent sought for post exposure prophylaxis immediately. Other immediate actions taken include; sucking the wound site, washing with JIK, and applying plaster and this represented 5.0%.

**Table 1. Socio-demographic profile of the health care workers**

| Variables | Frequency (n = 213) | Percentage (%) |
|---|---|---|
| **Age (years)** | | |
| <20years | 5 | 2.3 |
| 20 - 30 years | 89 | 41.8 |
| 31 - 40 years | 68 | 31.9 |
| 41 - 50 years | 40 | 18.8 |
| >50 years | 11 | 5.2 |
| | **Mean= 33.94±=8.94** | |
| **Gender** | | |
| Male | 24 | 11.3 |
| Female | 189 | 88.7 |
| **Marital status** | | |
| Single | 67 | 31.5 |
| Married | 119 | 55.9 |
| Divorced | 10 | 4.7 |
| Separated | 2 | 0.9 |
| Widowed | 15 | 7.0 |
| Total | 213 | 100.0 |
| **Level of education** | | |
| Primary | 8 | 3.8 |
| Secondary | 97 | 45.5 |
| Tertiary | 108 | 50.7 |
| **Cadre of HCWs** | | |
| Doctor | 3 | 1.4 |
| Laboratory scientist | 4 | 1.9 |
| Nurse | 38 | 17.8 |
| CHEW | 43 | 20.2 |
| Cleaners | 89 | 41.8 |
| Porters | 36 | 16.9 |

**Table 2. Knowledge on some of the factors associated with exposure to BBFs**

| Knowledge variable | Job category | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Doctor** | **Nurse** | **LW** | **Chews** | **Cleaners** | **Porters** | **Others** |
| **Blood borne infections** | 3(1.8%) | 29(17.8%) | 4(2.5%) | 29(17.8%) | 68(41.7%) | 21(12.9%) | 9(5.5%) |
| **Main source of exposure to BBFs** | | | | | | | |
| Needle stick injury | 2(1.9%) | 26(24.1%) | 3(2.8%) | 16(14.8%) | 37(34.4%) | 10(9%) | 14(13%) |
| Splash | 1(1.1%) | 13(14.3%) | 1(1.1%) | 16(17.6%) | 48(52.7%) | 12(13.2%) | 0(0.0%) |
| Sutures | 0(0.0%) | 4(28.6%) | 1(3.8%) | 6(42.9%) | 4(28.6%) | 15(57.7%) | 0(0.0%) |
| **Main Infections Contracted Via xposure To BBFs** | | | | | | | |
| HIV | 2(1.5%) | 29(22%) | 2(1.5%) | 32(23.9%) | 46(34.3%) | 19(14.2%) | 6(4.5%) |
| HBV | 1(1.1%) | 23(33.8%) | 3(4.4%) | 19(27.9%) | 17(25%) | 5(7.4%) | 0(0.0%) |
| HCV | 2(4.4%) | 16(35.6) | (0.0%) | 18(40.0%) | 9(20.0%) | 0(0.0%) | (0.0%) |
| *Others | 0(0.0%) | 11(22.9%) | 2(4.2%) | 6(12.5%) | 25(52.1%) | 4(8.3%) | 0(0.0%) |

**others-Malaria, Typhoid and Lassa fever*

**Table 3. Knowledge regarding exposure to BBFs**

| | Frequency (n=213) | Percentage (%) |
|---|---|---|
| **Knowledge** | | |
| Good | 17 | 8.0 |
| Fair | 38 | 17.8 |
| Poor | 158 | 74.2 |

**Table 4. Actions taken by respondents when exposed to BBFs**

| Immediate action taken | Frequency (n=160) | Percent (%) |
|---|---|---|
| Wash hands with soap | 95 | 59.4 |
| Report to supervisor | 30 | 18.8 |
| Get tested for HIV | 17 | 10.6 |
| Squeeze to extract blood | 6 | 3.8 |
| Others(suck the wound, use JIK, apply plaster etc) | 8 | 5.0 |
| Wash hands with iodine | 1 | 0.6 |
| Get tested for HBV | 2 | 1.3 |
| Seek post exposure prophylaxis | 1 | 0.6 |
| **Other actions taken** | **n=102** | |
| Squeeze to extract blood | 37 | 36.3 |
| Wash hands with soap | 24 | 23.5 |
| Get tested for HIV, HBV, HCV | 21 | 20.6 |
| A combination of Get tested plus any other action | 16 | 15.7 |
| Seek post exposure prophylaxis | 2 | 2.0 |
| Other sorts of combination (wash hand with liquid antiseptics, suck wound etc) | 2 | 2.0 |

Majority, that is, 102 of the total 160 health care workers exposed went further to take other actions. Almost thirty seven percent of respondents squeezed the wound to extract blood even after they must have immediately washed with soap and water, reported to their supervisor or taken other immediate actions. 20.6% % went ahead to get tested for HIV and screened for HBV and HCV. Almost sixteen percent of the respondents had a combination of several other actions, that is; washed hands with water, sucked the wound, squeezed to extract blood, got tested for HIV etc. However, only 2% of the respondents went further to seek post exposure prophylaxis after the immediate action. Other immediate actions taken include; sucking the wound site, washing with liquid antiseptics and this represented 2.0% of the action taken.

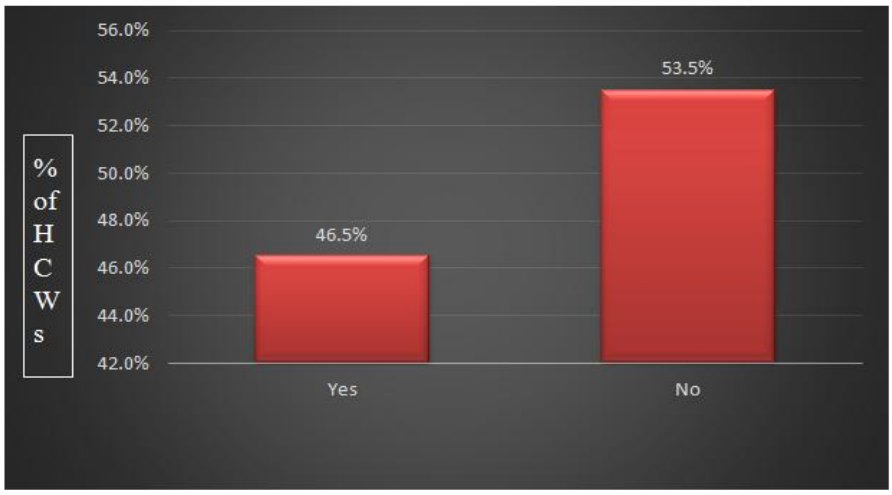


**Fig. 1. Proportion of HCWs who received training on standard precautions**

*A lesser proportion (46.5%) of the HCWs s had received training on standard precautions while 53.5% had not*

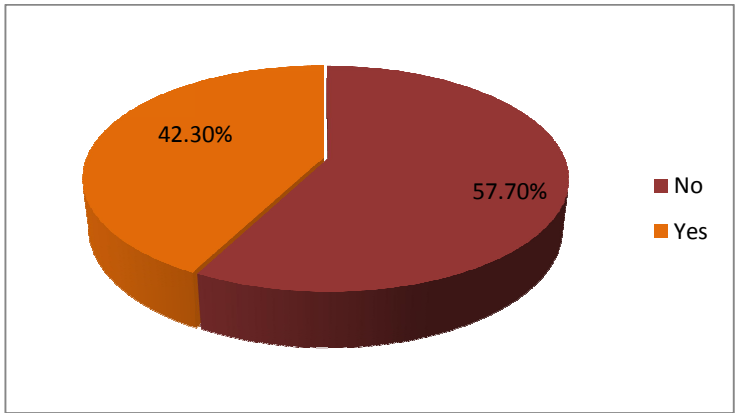


**Fig. 2. Respondent's report of HBV vaccination**

*Significant proportion (57.7%) of respondents have not received hepatitis B vaccination, however, only 42.3% had received the vaccine*

**Table 5. Association between job category and hand washing activities of respondents**

| Variables | Frequency(n=213) | | |
|---|---|---|---|
| | Before any form of patient contact | | |
| **Job category** | **Always** | **Most times** | **Never** |
| Doctor | 2(66.7%) | 1(33.3%) | 0(0.0%) |
| Nurse | 21(55.3%) | 12(31.6%) | 5(13.2%) |
| CHEW | 21(48.8%) | 18(41.9%) | 4(9.3%) |
| Cleaners | 49(55.1%) | 32(36.0%) | 8(8.9%) |
| Porters | 13(36.1%) | 23(63.9%) | 0(0.0%) |
| Laboratory scientist | 1(25.0%) | 3(75.0%) | 0(0.0%) |
| **Fishers exact test=14.621; P=0.146** | | | |
| | Before any patient procedure | | |
| | **Always** | **Most times** | **Never** |
| Doctor | 2(66.7%) | 1(33.3%) | 0(0.0%) |
| Nurse | 21(55.3%) | 16(42.1%) | 1(2.6%) |
| CHEW | 25(58.1%) | 17(39.5%) | 1(2.3%) |
| Cleaners | 57(64.0%) | 20(22.5%) | 12(13.5%) |
| Porters | 13(36.1%) | 23(63.9%) | 0(0.0%) |
| Laboratory scientist | 4(100.0%) | 0(0.0%) | 0(0.0%) |
| **$X^2$=24.568; df=12; P=0.00071** | | | |
| | After handling patient's body fluid | | |
| | **Always** | **Most times** | **Never** |
| Doctor | 0 (0.0% ) | 3(100.0%) | 0(0.0% ) |
| Nurse | 12(31.6%) | 22(57.9%) | 4(10.5%) |
| CHEW | 7 (16.3%) | 36(83.7%) | 0(0.0%) |
| Cleaners | 47(52.8%) | 37(41.6%) | 5(5.6%) |
| Porters | 16(44.4%) | 19(52.8%) | 1(2.8%) |
| Laboratory scientist | 4(100.0%) | 0(0.0% ) | 0(0.0% ) |
| **$X^2$=33.521; df=12; P=0.0002** | | | |

Association between the job categories of respondents and hand washing activities were also tested as shown in Table 5. Significant proportions (66.7%) of respondents who were doctors always washed their hands before any form of patient contact compared 25.1% of the laboratory scientist. The practice of always washing hand before any procedure was highest among the laboratory scientist and lowest among the porters, being 13(36.1%)and 10(45.5%) respectively, however the association was statistically significant (p=0.0071). Similarly, All the laboratory scientist always wash their hands after contact with BBFs of patients compared

0.0% and 31.6% recorded among the doctors and nurses respectively, this association was found to be statistically significant (p=0.0002).

The associations between the sex of respondents and use of personal protective equipments (PPEs) were depicted in the table above. There was no significant association between the sex of respondents and the use of facemask, aprons and gloves. However, association between the sex of respondents and use of goggles was however observed to be significant (p=0.011) with more males than females tending to use goggles always. Of the total 24 males interviewed in this study, 6(25%) used goggles always, whereas, only 19(10.1%) of the total 189 females interviewed used goggles always.

**Table 6. Association between sex of respondents and use of PPEs**

| Variables | Frequency (n=213) | | |
|---|---|---|---|
| | Facemask | | |
| **Sex** | **Never** | **Sometimes** | **Always** |
| Male | 4(16.7%) | 16(66.7%) | 4(16.7%) |
| Female | 64(33.9%) | 111(58.7%) | 14(7.4%) |
| **$X^2$=4.358; df=2; P=0.113** | | | |
| **Goggles** | | | |
| Male | 6(25%) | 12(50%) | 6(25%) |
| Female | 104(55.%) | 66(34.9%) | 19(10.1%) |
| **$X^2$=9.094; df=2; P=0.011** | | | |
| **Apron** | | | |
| Males | 5(20.8%) | 14(58.4%) | 5(20.8%) |
| Females | 81(42.9%) | 80(42.3%) | 28(14.85) |
| **$X^2$=4.292; df=2; P=0.117** | | | |
| **Hand gloves** | | | |
| Males | 0(0.0%) | 14(58.3%) | 10(41.7%) |
| Females | 2(1.1%) | 96(50.8%) | 91(48.1%) |
| **$X^2$=0.677; df=2; P=0.713** | | | |

**Table 7. Level of practice/adherence to standard precautions**

| Variables | Frequency | Percent (%) |
|---|---|---|
| Good | 42 | 19.7 |
| Fair | 157 | 73.7 |
| Poor | 14 | 6.6 |
| Total | 213 | 100.0 |

**Table 8. Observation for availability of standard precautions' infrastructures/Injection safety practices**

| Variables | Frequency (n=21) | Percentage (%) |
|---|---|---|
| **Availability of gloves** | | |
| Yes | 14 | 66.7 |
| No | 7 | 33.3 |
| **Availability of waste segregation bins** | | |
| Yes | 8 | 38.1 |
| No | 7 | 33.3 |
| Don't know | 6 | 28.6 |
| **Availability of safety box** | | |
| Yes | 19 | 90.5 |
| No | 2 | 9.5 |
| **Needles seen outside the safety box?** | | |
| Yes | 5 | 23.8 |
| No | 16 | 76.2 |

Only 19.7% of respondents had good practice/adherence to standard precautions while majority (73.7%) of respondents had fair practice of standard precautions. However, 14(6.6%) of respondents had poor practice of standard precautions.

Table 8 shows the standard precautions infrastructure available in the health care facilities observed. Of the total 21 Primary Health Care facilities checked, 66.7% had gloves available for use. Only a few (23.8%) had facemask available for use. Almost twenty four of the PHC had gown available for use. In majority of the centres (90.5%) a safety box was seen. Also, in majority (76.2%) of the centres, needles were not seen outside the safety boxes. Furthermore, Waste segregation bins were available in only 38.1% of the PHC.

## 4. DISCUSSION

Standard Precautions are work practices required to achieve an utmost level of infection control for the treatment of all clients regardless of diagnosis. It refers to all policies, procedures and activities which aim to prevent or minimize the risk of transmission of infectious disease at health care institutions [4].

The knowledge of the respondents regarding factors associated with exposure to blood and body fluids was found to be significantly low in this study, this observations regarding knowledge was in accordance with the findings reported in Northern Nigeria [9]. Nevertheless, a study conducted in Cameroun and Saudi Arabia revealed that greater than Fifty percent of the HCWs had good knowledge of factors associated with needle stick injuries [16,17].

Furthermore, significant proportion of those who had accidental exposure to blood and body fluids was had their hands with soap and water (59.4%). The findings is consistent with the data reported in other studies in Nigeria and other developing countries, where majority of the respondents had the habit of washing their hands after exposure [2,17-19].

It was further stated that less than three percent of the HCWs studied sought for Post exposure prophylaxis after exposure, this figure was far lower compared to what was reported in other studies, where the HCWs that sought for post exposure prophylaxis after exposure were greater than ten percent [18,20,21]. The low rate of utilization of PEP may be a serious challenge to infection control, as more HCWs are likely to develop occupationally acquired viral infections. Therefore, there is urgent need to give health education to PHC workers, regarding importance of post exposure prophylaxis.

Almost twenty percent of the respondents in this study reported their exposure to concerned authorities. Similar observations were reported among HCWs in earlier studies [2,9,22,29].

The study also reported that the less than half of the respondents reported to have had Hepatitis B vaccination. This simply meant that, more HCWs will probably have hepatitis B infections if exposed to hepatitis B positive body fluids. The value stated in this study is higher than the figures reported in other studies in Nigeria, where only 32.4% and 21% HCWs reported to have received Hepatitis B vaccination [9,21]. However, a study conducted among HCWs in developing and developed countries revealed that greater than seventy percent of the respondents had received Hepatitis B vaccinations [16,22,23]. Generally, the discrepancies in knowledge and practice regarding accidental exposure to blood and body fluid may not be unrelated with differences in level of awareness of infections associated with accidental exposure to blood and body fluids, knowledge of infection control practices and availability of hepatitis B vaccine.

Majority of the HCWs reported poor adherence to standard precautions, this findings was consistent with the reports in previous studies, were greater than eighty percent of the respondents had fair to good adherence to standard precautions [23,11,13]. However, the compliance rate is higher compared to what was report in other studies [23,24]. The poor practice of standard precautions in this study is not encouraging, because by virtue of this poor practice more health care workers may be prone to blood borne infections resulting from accidental exposure to BBFs. The variation of practice of standard precautions may be due to on the job training and accessibility of the HCWs to standard precaution tools, such as PPEs in the health care facilities.

Significant proportion (66.7%) of the PHC centres had disposable gloves, higher than figure reported in a North Central, Nigeria, where only 25% of the health care centres had disposable gloves [25]. Surprisingly, the high availability of disposable gloves did not translate to usage as less than fifty percent (47.4%) of the HCWs

reported using gloves always. Regarding use of gloves, the figure cited in this present study concur with the report given by another study in Nigeria but this is substantially lower compared to the reports in other studies [13,26,27]. Additionally, safety boxes were seen in greater than ninety percent of the health centres observed, this observations is consistent with the findings reported in Nigeria and other part of the world [16,25,28].

The aforementioned findings buttressed the facts enumerated in other studies where the barriers to injection safety practices were: inadequate supply of injection safety material like safety boxes [29-32].

This simply means that HCWs in the PHC are more likely to sustain sharp injuries due to poor use of safety boxes if there is no regular training on standard precautions. This practice is quiet appalling considering the central protecting role of infection control practices in health care settings [33,34].

## 5. CONCLUSION AND RECOMMENDATIONS

Training staffs on standard precautions and infection control principles needs to be implemented to provide the necessary knowledge on observance to standard precaution practices. Also, strict supportive supervision and orientation need to be implemented regularly.

It was noticed that the standard precautions' practices among the participants were low, as a larger proportion of the exposure occurred due to recapping of needles. In addition, hepatitis B vaccination coverage was low among the HCWs. Hence, improving medical curricula, conducting regular training on standard precautions are key to minimizing the accidental exposure to blood and body fluids.

## CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

- Institutional Approval: The study was reviewed and approved by the Department of Community Health, University of Benin, Benin City.
- Ethical Approval: Ethical Approval to conduct this research was obtained from Ethics and Research Committee of Irrua Specialist Teaching Hospital.

## ACKNOWLEDGEMENT

The authors would like to thank the staff of the Irrua Specialist Teaching Hospital, Lily Hospitals and University of Benin Teaching Hospital for immense contribution during the process of data collection and final publication of this article.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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## APPENDIX 1

**Assessment of Accidental Exposure to Blood and Body Fluids and Adherence to Standard Precautions among Primary Health Care Workers in Esan West LGA, Edo State**

**Section one: Socio-demographics of respondents**

**Respondents number:_____ Date:_____**

**Tick as appropriate**

1. Age at last birthday: [ ]
2. Marital status: 1. Single [ ] 2. Married [ ]3. Divorced [ ] 4. Separated 5. Widowed [ ]
3. Sex: Male [ ] Female [ ]
4. Level of education: None [ ] Primary [ ] Secondary [ ] Tertiary [ ]
5. Job category: Doctor [ ] Nurse [ ]CHEW[ ] Cleaners [ ] Porters [ ] others _____
6. Ward/unit: Medicine [ ] Surgery [ ] Paediatrics [ ] O&G [ ] GOPD [ ] Theatre [ ] others_____
7. Duration of employment (in months/years) _____

**Please Give Your Answer to Each of the Following Questions. Read All Options and Choose the Appropriate Answer**

**Section two: Prevalence of occupational exposure to BBF**

8. Have you ever being exposed to BBF (Needle stick injury or BBF splash)? Yes [ ] No [ ]
9. In the past 12 months have you been exposed to BBF? Via needle stick injury Yes [ ] No [ ] Mucocutaneous Yes [ ] No [s]
10. If yes to question 9 what kind of sharps Needle Yes [ ] No [ ] ampoule Yes [ ] No [ ] Sutures Yes [ ] No [ ] others_____
11. How many times have you been exposed to BBFs via mucocutaneous route? (e.g. Blood splashes)_____
12. How many times have you been exposed to BBFs via Percutaneous route? (e.g. Needle stick, scalple etc)_____

13. Mention the site of your exposure (e.g. Non-dominant index finger, on-dominant thumb, eye splash, forearms, legs etc?..... If more than one exposures, mention the site of other exposures?

a. Site of 2nd exposure …….....
b. Site of 3rd exposure ……
c. Site of 4th exposure……..
d. Site of 5th exposure ……
c. Site of 6th exposure……..
d. other exposures and sites……..

**Section three: Circumstances for occupational exposure to BBF**

14. What were the Circumstances for the first exposure to BBF? Multiple answers are allowed here.

a. Recapping
b. Sudden movement of patient
c. Manipulation of needle
d. During discarding of needles
e. During clean up
f. Failure to use PEP
g. During surgery
h. Other specify_____

15. If more than one circumstances, mention other circumstance of exposures from the options given above?

a. Exposure two Circumstance for exposure…….
b. Exposure three Circumstance for exposure……..
c. Exposure four Circumstance for exposure……..
d. Exposure five Circumstance for exposure……..
e. Exposure six Circumstance for exposure……..
f. other exposures and and circumstances…….. ……..,……

**Section four: Knowledge / practice regarding exposure to BBF and adhrence to standard precaution**

16. Have you heard of blood borne infection? Yes [ ] No [ ]
17. If yes where did you first hear of blood borne infection? Hospital staff [ ] Media [ ] Training workshop [ ] other specify_____
18. Have you ever received training on standard precaution or infection control Yes [ ] No [ ]
19. What is the main route of occupational exposure to BBF? a. Needle sticks injury b. splash c. sutures. Others specify_____
20. Have you ever taken HBV vaccination as a HCW? Yes [ ] No [ ]
21. What infection are contacted when exposed to BBF?
22. What is standard precaution?
23. What are the components of standard precautions?
24. How often do you wash your hands? Always [ ] Sometimes [ ] Never [ ]
25. Do you wash your hands during the following activities at work?

a. Before any form of patient contact? Always ( ) Most times ( ) Never ( )
b. Before any patient procedure? Always ( ) Most times ( ) Never ( )
c. Before wearing gloves? Always ( ) Most times ( ) Never ( )
d. After handling patients' body fluid ( urine, vomits, blood, specimen & others)? Always ( ) Most times ( ) Never ( )
e. After touching objects in the ward?

26. How often do you use Gloves? Always [ ] Sometimes [ ] Never [ ]
27. How often do you use Face mask? Always [ ] Sometimes [ ] Never [ ]
28. How often do you use Googles? Always [ ] Sometimes [ ] Never [ ]
29. How often do you use Aprons? Always [ ] Sometimes [ ] Never [ ]
30. If the answer to any of the questions 11-14 is NO. Please specify why

a. Not available
b. No time to wear them
c. It inconvenience you
d. other specify……

31. If Number of NO is more than one in question 11-14, please specify other reasons for non use from the options in 15.

a. Non use of Gloves - Why……..
b. Non use of Fask mask - Why……
c. Non use of Apron - Why……
d. Non use Googles - Why……

32. What action did you take when exposed to BBF?

a. Report to supervisor
b. Wash hands with soap
c. Wash with iodine
d. Get tested for HIV
e. Get tested for HBV
f. Get tested for HCV
g. Seek post exposure prophylaxis
h. Squeeze to extract blood
i. Others_____

33. If more than one exposure, mention other action you took from the options above?

a. Exposure two - Action taken…….
b. Exposure three - Action taken…….
c. Exposure four - Action taken……..
d. Exposure five - Action taken……..
e. Exposure six - Action taken……..
f. Other Exposure - Action taken……..
……..……

34. Did you follow the status of the source patient? Yes [ ] No [ ]
35. If yes, what was the sero- status of the source patient?

a. HIV sero positive yes[ ] no [ ] don't know [ ]
b. HBV sero positive yes[ ] no [ ] don't know [ ]
c. HBV sero positive yes[ ] no [ ] don't know [ ]
d. others specify

## APPENDIX 2

**Observational Checklist for Availability of Standard Precaution Infrastructure /Injection Safety Practices**

The survey instrument will be completed by the interviewer and a senior HCWs on duty at the time of the survey to asserting the the availability standard precautions infrastructure. This questionnaire has questions on various practices regarding standard precaution

Date of assessment:

Name of PHC centres:

Position of person completing the checklist:

1. Is there availability of gloves in the PHC centre? Yes ( ) No ( )
2. Is there availability of face mask in the centre? Yes ( ) No ( )
3. Is there availability of gown in the centre? Yes ( ) No ( )
4. Is there availability of safety box in the centre? Yes ( ) No ( )
5. Were needle seen outside the safety box Yes ( ) No ( )
6. Is water regularly available? Always ( ) Intermittent ( ) Rarely ( ) Never ( )
7. Is running water available? Yes ( ) No ( )
8. Is water visibly clean? Yes ( ) No ( ) don't know ( )
9. What kind of taps is available? Hand-operated ( ) Elbow/wrist-operated ( ) Foot-operated Automatic ( )
10. Are disposable towels available at all sinks? Always ( ) Intermittent ( ) Rarely ( ) Never ( )
11. Is there availabilty of waste segregation bins (colour coded) Yes ( ) No ( ) don't know ( )



*Peer-review history:*
*The peer review history for this paper can be accessed here:*
*http://www.sdiarticle4.com/review-history/57639*