



## KNOWLEDGE OF AWARENESS AND PRACTICE ON INJECTION SAFETY AMONG HEALTHCARE WORKERS IN YANAGOA, BEYELSA

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### ABSTRACT

Unsafe injection practices have inherent risk of spreading primary blood borne infection. The risk of acquiring HIV, HbsAg, and HCV infections are high among healthcare workers, therefore a need to assess and promote safe injection practice. In this study a cross-sectional descriptive study was conducted with 240 healthcare workers. A self-administered and researcher administered questionnaire was used for data collection to determine level of awareness and practice of injection safety on injection procedure. The result from this study indicates that knowledge about awareness of safe injection practice was good and all injection providers identified at least one infectious organism transmitted through use or re-use of unsterile syringes. It was also observed that there were poor disposal systems of used injection materials. It can be concluded that the knowledge about the awareness of injection safety was satisfactory, however there were some grey areas in the safe practice of injection safety among healthcare workers, which need to be addressed.

**KEYWORDS:** Awareness, Practice, Healthcare workers, Injections, Yanagoa, Injection safety.

### 1.0 INTRODUCTION

The use of injection is one of the key procedures used by healthcare workers for administration of parenteral drugs. However, unsafe injection practice and over-use of injections have an inherent risk of spreading blood borne viral pathogens such as Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HbsAg) and Hepatitis C Virus (HCV) and it is a common characteristic of health care systems in developing countries.<sup>[1,2]</sup>

Preference of injections to oral medications and wide spread misuse of injections in many developing countries has long been of great concern to health professionals and the World Health Organization, but so far little systemic research has been conducted into world-wide practice. Available information suggests that the use of injection in developing countries is common and often unnecessary.<sup>[3,4]</sup>

Worldwide, injections are provided by various personnel<sup>[5]</sup> with differing qualifications and training. These personnel may include nurses, medical doctors, laboratory scientists, and other healthcare workers are

trained for providing injections and by virtue of their training have legal authority to administer injections. Others are traditional healers; Ayurveda HCWs, pharmacist and medical dispensers are trained and qualified for other health care services but not for administration of injection. Quacks are illegal medical injection providers and provide injections for financial benefits only. They are mostly self-taught or have learned the procedure by working under another person.<sup>[5]</sup>

The Safe Injection Global Network (SIGN) explains a safe injection as, "the injection that does not cause harm to the recipient, will not expose the health worker to any risk and will not result in waste that is hazardous for the public".<sup>[6]</sup> Hence, the safety of injection recipients, injection providers and the public should be considered for safe practice.

A needle stick injury (NSI) is a frequently encountered occupational hazard which may harm the injection provider by transferring various viral infections, most

prominently, hepatitis B virus (HBV), hepatitis C virus (HCV), and Human Immunodeficiency virus (HIV).<sup>[6]</sup>

The worldwide burden of HBV, HCV and HIV infections due to NSI among healthcare workers were calculated to be approximately 66,000, 16,000 and 1,000 respectively per annum for the year 2000.<sup>[7]</sup>

Needlestick injury among injection providers can be circumvented by following these measures: anticipating sudden movements of patients during the injection procedure; avoiding recapping of used needles; and collecting contaminated sharps in puncture-proof and leak-proof safety boxes.<sup>[8]</sup> It is therefore important to increase the awareness of these occupational hazards and promote the means of avoiding NSI among healthcare worker. As a result, the purpose of this study was to determine the knowledge of awareness of injection safety and injection practices among healthcare workers in healthcare facilities in Yenagoa.

## 2.0 MATERIALS AND METHODS

**2.1 Study design:** The present study was conducted in Federal Medical Centre (FMC), Yenagoa, Bayelsa State, Nigeria from June 2018 to January 2019 was a descriptive, cross sectional study. It consisted of observation of health care facilities and injection events, and interview with all the injection providers (including supervisors) of the health care facility. The interview was done to complete the questionnaire and explore reasons for observed behaviors and practices. Injection practice, including disposal of used injection equipment at selected healthcare facility were also surveyed.

**2.2 Study Population:** The study population were made up of doctors which include interns, medical officers, registrar and consultants, nurses, medical laboratory scientists supervisors and hospital administrators, cleaners dental therapist, pharmacist, health attendants, and others.

**2.3 Study tools:** A semi-structured questionnaire was formulated and employed for data collection. The questionnaire could be divided into two parts: 1) Part one collected the demographic data of respondents including age, post, gender and years of experience. 2) Part two collected data pertaining to use of injection, use and availability of needle destroyer and safety box, disposal technique for used injection equipment, incidence of NSI, guidelines about post-exposure prophylaxis (PEP), Hepatitis B vaccination, and availability of disposable syringes.

**2.4 Study procedure:** The selected health care facility was visited during office working hours. The observation checklist was completed by observing the injection events and health care waste management practices in the facility.

A self-administered and Interviewer administered questionnaire were given to participants who are literate and illiterate respectively was used to collect data for this study with all the injection providers present at the time of the visit were conducted in FMC. This was carried out during working hours, particularly in the afternoon when there were likely to be fewer patients.

## 2.5 Ethical issues

Approval was obtained from the ethical committee of the College of Health Sciences, Niger Delta University. Permission to conduct the study was requested from the Management of Federal Medical Centre, Yenagoa where the study was conducted and was granted. An informed consent was also obtained on individual basis from the participants before administration of the questionnaires.

**2.5 Data analysis:** Data was analyzed using IBM Statistical Package for Social Sciences (SPSS) version 20 for Windows. A *P* value < 0.05 was considered to be statistically significant. Interview responses were analyzed and common responses highlighted. The questionnaire findings were triangulated with the findings of observational study.

## 3.0 RESULTS

### 3.1 Demographic Profile of Participants

A total of two hundred and forty healthcare workers participated in this study with a mean age of 31 years. Table 1a, 1b, 1c, 1d and 1e shows the socio-demographic data of the participants. 51% (122) are 20-29 years, 36% (87) are 30-39 years, 11% (27) are 40-49 years, 2% (4) are 50-59 years while none was 60 years and above. 69% of the participants are female and 40% were males. 24.1% are Doctors, 47.9% are nurses, 2.5% were laboratory Scientist, 4.6% were pharmacists while 20.8% were health attendants 18% of the participants are of senior cadre, 18% intermediate cadre and 63% are in the junior cadre. 33% have work experience less than 1 year, 40% have worked for 1-5 years, 33% have worked for 6-10 years and 13% have worked for 11 years and above.

**Table. 1a: Socio- Demographic Data of Participants (Age).**

Variable	Frequency	Percent (%)
20-29	122	51
30-39	87	36
40-49	27	11
50-59	4	2
60 and above	0	0
Total	240	100

**Table. 1b: Socio- Demographic Data of Participants (Sex).**

Variable	Frequency (f)	Percent (%)
Male	97	40
Female	143	69
Total	240	100

**Table 1c: Socio- Demographic Data of Participants (Profession).**

Variable	Frequency	Percent (%)
Doctors	58	24.1
Nurses	115	47.9
Laboratory Scientists	6	2.5
Pharmacists	11	4.6
Health attendants	50	20.8

**Table 1d: Socio- Demographic Data of Participants (work experience).**

Variable (years)	Frequency (f)	Percent (%)
< 1	78	32.5
1-5	96	40.0
6-10	31	12.9
11 and above	30	12.5

**Table 1e: Socio- Demographic Data of Participants (cadre).**

Variable	Frequency (f)	Percent (%)
Senior	43	18
Intermediate	43	18
Junior	154	64

### 3.2 Observation of injection practice

During the study period, a total one hundred and thirty two injections were administered by the injection providers of in health care facilities. The providers were aware of the observation which may have led them to modify their practices or responses. To minimize the Hawthorn effect, the checklist used for the observation was not shown to the providers.

### 3.3 Knowledge of safe injection practice

All the injection providers that were studied were aware that the use of unsterile syringe or reuse of single use disposable syringes could lead to the transmission of diseases and 98.8% have knowledge of safe injection practice (Table 2). They were asked to mention infections can be transmitted by such practice, most of them mentioned at least two correct infections that can be transmitted. The number (percentage) of injection providers naming one, two, three, and four correct diseases transmitted by unsafe injection practice are 34 (14.2%), 145 (60.4%), 45 (18.7%), and 9 (3.8%), respectively (Table 3). Almost all (236 out of 240) injection providers named HIV/AIDS as one of the common diseases transmitted by unsafe injection practice (Table 4).

**Table 2: Knowledge of safe injection practice**

Knowledge of safe injection	Frequency	Percentage (%)
Yes	237	98.8
No	3	1.2

**Table 3: Infections that may be transmitted through unsafe injection practice**

Number of Infections mentioned	Frequency	Percentage (%)
one	34	14.2
Two	145	60.4
Three	45	18.7
Four	9	3.8
No response	7	2.9

**Table 4: Infections that may be transmitted through unsafe injection practice.**

Infections	Frequency	Percentage (%)
HIV/ AIDS	236	98.3
Hepatitis/ Jaundice	130	54.2
Hepatitis B	67	27.9
Syphilis	14	6.9
Tuberculosis	10	4.2
Hepatitis C	7	2.9

### 3.4 Waste disposal techniques

Table 5 shows different waste disposal techniques used for disposal of injection materials. Many admitted that used injections are disposed using local techniques (80.3%) such as burning in open place, burning in pit and burying while 11.7% believed that modern techniques such as incineration and hospital disposal system were used in disposing used injection.

**Table 5: Waste disposal techniques**

Disposal types	Frequency	Percentage (%)
<b>Local techniques</b>		<b>80.3%</b>
Burning in open place	59	24.5
Burning in Pit	130	54.2
Burying	23	9.6
<b>Modern techniques</b>		<b>11.7%</b>
Incineration	10	4.2
Hospital waste disposal system	18	7.5
Total	240	100

### 3.5 Safe injection practice

As shown in table 6, of the 240 participants, 207 (86.3%) used hand gloves, as personal protective equipment. Meanwhile other PPIs were not used adequately. Used needles and syringes were found littered on the floors and tables of the injection rooms, wards and other waste disposal site of the hospital (outside the safety box). Cotton balls soaked in methylated spirit were used to sterilize the skin before injection. Most of the injection providers used their bare hands to open glass ampoule and also give injections. There were cases of where the glass pieces the hand of injection provider causing minor injury to the providers and the wounds were then cleaned with the soaked cotton ball from the same container. 100 (42%) injection providers avoided needle recapping after injection administration however 140 (58%) recapped

needles after use. Recapping was done with one hand in 40% participants who recapped. About 84 (60%) admitted to use two handed recapping method out of 140 participants.

#### 4.0 DISCUSSION

From this study, majority of the participants were ages 20- 29 years (50.8%) and out of the 240 participants were females (69.6%). majority of the participants were nurses (47.9%) and 24.2% were medical doctors. These findings were similar to study done in Netherlands.<sup>[9]</sup> Most participants had a working experience of 1-5 years with the least being 11 years (12.5%).

Awareness on injection safety is also an important aspect of the healthcare delivery system especially with the increasing prevalence of the infectious diseases in the population. Majority of healthcare workers (98.8%) have

knowledge of safe injection practice and were aware that safe injection is injection administered using appropriate equipment, does not harm the recipient, does not expose the provider to avoidable risk and does not generate waste that are harmful to others.

The study shows that Medical Doctors (89.6%) of the total participant had a very good awareness level followed by Nurses (53.9%) and health attendants (22%). It can be deduced that Doctors were better informed about injection safety and practices than other healthcare professional. In similar outcome was recorded in a study done by Janjua *et.al* and this discrepancy in aware of injection safety amongst healthcare workers could be attributed to the series of seminars, workshops and training organized routinely in this tertiary facilities by the physicians.<sup>[10]</sup>

**Table. 6: Safe injection practice.**

Variable	Frequency	Percentage (%)
<b>Use of glove</b>		86.3
Yes	207	13.7
No	33	
<b>Eye protection</b>		
Yes	100	41.7
No	140	58.3
<b>Use of face shield</b>		
Yes	40	16.7
No	200	83.3
<b>Use of boot</b>		
Yes	41	17.9
No	199	82.1
<b>Putting on gown/garment</b>		
Yes	28	11.7
No	212	88.3
<b>Recapping of needles</b>		
Yes	140	58
No	100	42
One hand recapping of needle	56	40
Two hand recapping of needle	84	60
<b>Use of needle remover</b>		
Yes	15	6.3
No	225	93.7
<b>Use of safety boxes</b>		
Yes	80	33.3
No	160	66.7

All injection providers were knowledgeable about at least one pathogen transmitted through use or re-use of unsterile syringes. A similar study from Pakistan

reported that 66.67%, 11.11% and 0% (Nil) of healthcare workers could name HIV, HBV and HCV, respectively, as infections transmitted through unsterile practice<sup>[11]</sup>

while in our study the proportions were greater (Table 2). Hence, it could be said that there is a higher awareness among healthcare workers regarding the risk of disease transmission by unsterile/reuse of syringe.

Although the quantity of biomedical waste generated in healthcare facilities is small, the hazards associated with them should not be disregarded.<sup>[12]</sup> Waste disposal practice in health care facilities in Beyelsa was not satisfactory. Local methods such as burning in open place, burning in a pit and burying of health care waste carries risk to staff, communities and the environment (13). Unfortunately, Local methods of disposal practice were evident in our study. Burning in pit was the most commonly practiced waste disposal technique in healthcare facilities. Even though the technique is safe, it is a temporary method.<sup>[13]</sup> Therefore, a suitable, sustainable and environment friendly disposal method is required.

### CONCLUSION

From this study the injection provider's knowledge about awareness safe injection practice was acceptable. The use of disposal single use syringes and awareness of infectious diseases transmitted by unsafe injection practices were some of the positive aspects of safe injection practice that were observed in the facilities. Some of the grey areas observed in this study were breaks in infection control practices, poor health care worker protection, training of injection providers on safe injection practice, and the absence of a proper waste management infrastructure. These grey areas need to be addressed in other to improve the awareness and practice of injection practice among healthcare workers.

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