

Level of Awareness and Adherence to Injection Safety Practices among Primary Healthcare Providers in Calabar, Cross River State, Nigeria

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ABSTRACT

Introduction: Problems associated with adherence to safe injection administration among healthcare providers are on the rise especially among primary health care workers. There is therefore the need to assess the level of awareness and adherence to the practice of injection safety among health workers in Primary health Centers in Calabar Municipality, Cross River State, Nigeria. The specific objectives were to determine the level of awareness and adherence to the indices of safe injection practices in the study area.

Material and methods: It was a cross sectional descriptive survey. A total of 398 health workers were sampled from a population of 245,681 health workers in the five Primary health centers in Calabar municipality using multistage sampling technique. All of the health workers including the cleaners and support staff were selected for the study. Data was collected using a four sectioned semi-structured questionnaire and the data was analyzed using Statistical package for social studies (SPSS) version 21.0. For awareness and practice of injection safety, the data was marked and scored and dichotomized for good and poor level of awareness and good and bad adherence to safety practices.

Result: The result revealed that a total of 89.9% of the health workers had good level of awareness of injection safety with the laboratory technicians having 100% knowledge. This was statistically significant $X^2=26.9$, $p=0.00$. A total of 59.5% of the health workers had good practice of injection safety with the laboratory technician having the least with 30%. $X^2 = 30$, $p = 0.00$. There was statistically significant association of level of awareness with level of adherence to practice of injection safety $\chi^2 = 30$; p -value = 0.00.

Conclusion: The level of awareness of injection safety practices among health workers was high but their adherence to the practice of care was not commensurate with the awareness. Therefore, other measures should be adopted to improve practice of safe injection administration among primary health care workers in the study area.

Keywords: Awareness, Adherence, Injection Safety Practices, Primary Healthcare Workers.

INTRODUCTION

Problems associated with the use of sharps are on the rise especially among primary healthcare providers. This is happening in a time when the ease of global spread of transmissible diseases is leverage by mass immigration across borders due to conflicts. Safe injection practices have become an unending topic of research especially at the grass roots where expertise and professional ethics are

basal. This is pertinent because injections are known to be the commonest procedures used in therapeutics worldwide even in cases where they are unnecessary.¹ Injection is the procedure through which a sharp device comprising a syringe and needle stick is used in the administration of injectable medicines through intradermal, intramuscular, intravenous, intrathecal and other sundry routes for therapeutic or recreational purposes. These devices are also commonly used in obtaining tissues, blood samples and other body fluids such as pleural fluid and ascitic fluid from patients for various laboratory investigations. In Nigeria, primary healthcare (PHC) facilities are the centers used for immunization and administration of family planning methods including injectable methods and also, being the first point of call for those seeking healthcare services especially at the rural level, primary healthcare facilities are closer to the masses and consequently witness a high frequency of injection practices and sample collection by primary healthcare providers. To administer an injection or obtain a blood sample, the skin must be bridged thereby forming a nidus of infection and an easy source of transmission of blood borne infections to both the patient and the healthcare provider. It is necessary therefore to exercise minimum injection safety standards of care as a means of prevention and protection against avoidable transmissible infections and injuries arising from frequent injection exposure. However, adherence to the practice of injection safety standards of care is different for different categories of healthcare providers depending on the level of training.² Most of the PHC workers are not trained in the area of administration of injectables or sample collection hence are inadequately equipped with the appropriate requirement for safe injection practices.³

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World Health Organization (WHO) defined injection safety as administration of injection using appropriate equipment which does no harm to the recipient nor expose provider to any avoidable risk and does not also generate waste that is dangerous to the health of other people.³ Some of these injection safety practices include availability of appropriate injection devices, proper disposal of sharps after use, the observance of the “nine rights” of injection safety.⁴ Failure in the observance of basic standard precautions of care has been blamed for the persistence of preventable transmissible infections, as some studies have shown that injection safety precautions are often not respected thereby exposing both patients and healthcare providers to the risk of injuries and blood borne infections.⁵ A study in Benin city, Nigeria, showed that 23% of nurses recap needles after use while 32.8% “sometimes” recap used needles and about 85.2% of those indulged in this practice have suffered accidental needle stick injuries buttressing the importance of the need for injection safety practices at all times.⁶ Some other studies have demonstrated unhealthy pre-injection, intra-injection and post-injection practices that also put the healthcare providers, the patients and other members of the larger community at risk of consequences of poor injection safety practices.^{3,7,8} Some of the reasons proffered as possible factors militating against the adherence to safe injection practice recommendations include the widespread overuse of injections, even when unnecessary, as first line of treatment in developing countries, lack of display of injection safety guidelines in hospitals, work pressure, and overwhelming social and economic pressures.⁹⁻¹¹ The burden of diseases arising from accidental injection needle-stick injuries as documented by WHO in 2016 among healthcare workers showed that 3 million accidental needle-stick injuries lead to 37% of new hepatitis B virus (HBV) infection, 39% of new hepatitis C virus (HCV) infection and 5.5% of new human immunodeficiency virus (HIV) infection among healthcare providers. These could have been avoided if strict injection safety precautionary measures were adhered to as a routine. The specific objectives were to determine the level of awareness and adherence to the indices of safe injection practices in the study area.

MATERIAL AND METHODS

The study was a cross sectional descriptive survey done in primary healthcare centers within Calabar municipality in Cross River State, Nigeria. Approval for the study was sought and obtained from ethics committee and National primary healthcare development agency of Calabar municipality. Cross Sectional Descriptive study design was used. A multistage sampling technique was used to select five health centers in the study area and 398 out of the total population of 245, 681 primary healthcare workers were used as the sample size based on the Yaro Yamanes formula. A semi-structured self-administered questionnaire was employed to collect primary data from the participants who freely consented and were given enough time to complete and return the questionnaires on the spot. The instrument

for data collection was a four sectioned semi-structured questionnaire which was first validated by both face and content validation. Reliability was tested using the test-retest method which was done by administering the questionnaires to 20 primary healthcare workers in Bayelsa State, a different facility outside the study facilities and a fortnight later similar questionnaires were administered again to same respondents.

STATISTICAL ANALYSIS

The result of the pretest was analyzed for reliability using Pearson product moment correlation. The study data was analyzed using statistical package for social sciences (SPSS) version 21.0 and presented in frequency tables. Hypothesis was tested using chi-square (χ^2) test.

RESULTS

The socio-demographic characteristics of primary health Care workers were presented in table 1. Three hundred and ninety eight questionnaires were distributed to 398 health workers and all the questionnaires were retrieved. Of the 398 primary healthcare workers used in the study, 150 (37.7%) were males while 248 (62.3%) were females. 30.2% were within the age group of 30-34 years while 15.1% were above 50 years. 67.8% were married and 79.9% were Christians. The proportion of healthcare workers' level of awareness of injection safety practices in PHC in Calabar municipality was presented in table 2a. On the item of “have you heard of injection safety practices or attended a workshop on injection

Characteristics	Frequency	Percentage
Gender		
Male	150	37.7
Female	248	62.3
Age group		
25-29	48	12.7
30-34	120	30.2
35-39	70	17.6
40-44	80	20.1
45-49	20	5.0
>50	60	15.1
Marital Status		
Married	270	67.8
Single	78	19.6
Separated	40	10.1
Widowed	10	2.5
Religion		
Christian	318	79.9
Islam	20	5.0
Traditional	20	5.0
Others	40	10.1
Designation		
Midwives/Nurses	90	22.6
CHEW	158	39.7
JCHEW	40	10.1
Pharmacist assistance	60	15.1
Med lab technician	10	2.5
Others	40	10.1

Tables-1: Socio demographic characteristics of health workers in Calabar Municipality

Items	Level of awareness		Total
	Good	Poor	
1. Have you heard of injection safety before	388(97.5)	10(2.5)	398(100)
2. Safe injection practice is given using syringe and needle only	388(97.5)	10(2.5)	398(100)
3. Unsafe injection practice can transmit blood borne disease	398(100)	0(0)	398(100)
4. Use syringe and needle should not be recapped or bent before disposal	388(97.5)	10(2.5)	398(100)
5. Using clean protective barrier such as hand gloves when breaking glass ampoule prevents needle stick injuries	358(89.9)	40(10.1)	398(100)
6. Safe injections are administered to the right patient at the right time, through the right route and with the right dose	398(100)	0(0)	398(100)
Good level of awareness ≥ 3 and Poor level of awareness score < 3			
Table-2a: proportion of health workers and level of awareness on injection safety in PHC in Calabar Municipality			

Level of awareness	Frequency	Percentage
Good	358	89.9%
Poor	40	10.1%
Total	398	100%
Table-2b: Summary of level of awareness on injection safety practice among healthcare workers in Primary Health centers in Calabar Municipality		

Cadre	Level of awareness		X ²	P-Value
	Good	Poor		
Gender				
Female(n=248)	208(83.9%)	40(16.1)	26.9	0.00
Male(n=40)	150(100)	0(0)		
Cadre				
Nurses (=90)	69(76.7%)	21(23.3%)	44.6	0.00
Chew (n=158)	148(93.7%)	10(6.3%)		
JCHEW (n=40)	39(97.5%)	1(2.5%)		
Pharmacist assistant (n=60)	59(98.3%)	1(1.7%)		
Laboratory technicians (n=10)	10(100%)	0(0%)		
Others(n=40)	26(65%)	14(35%)		
Table-2c: Proportion of health workers with good and poor level of awareness on safe injection practice in PHC according to gender and Cadre				

Years of experience	Level of awareness		X ²	P-value
	Good	Poor		
1-5(n=178)	169(94.9)	9(5.1)	39.2	0.00
6-10(n=120)	91(75.8)	29(24.1)		
11-15(n=40)	38(95)	2(5)		
16-20(n=10)	10(100)	0(0)		
31-35(n=50)	50(100)	0(0)		
Table-2d: Shows level of awareness on safe injection and years of experience of health workers in PHC in Calabar Municipality				

Items	Good Practice	bad Practice	Total
1. Do you use syringe and needles from a sealed pack for each dose?	237(59.5)	161(40.5)	398(100)
2. Do you check the expiry date of the injection before administration?	368(92.5)	30(7.5)	398(100)
3. Do you look for NAFDAC registration on injection?	237(59.5)	161(40.5)	398(100)
4. Do you use clean protective barrier before administering injection?	237(59.5)	161(40.5)	398(100)
5. Do you recap or bend needles before disposal?	171(43)	227(57)	398(100)
6. The right method of disposal of used syringe and needle is necessary	388(97.5)	10(2.5)	398(100)
7. Disposing of used syringe and needle properly after use may help	388(97.5)	10(2.5)	398(100)
8. Prompt emptying of safety box once ¾ filled may prevent exposure	237(59.5)	161(40.5)	398(100)
9. Inadequate supply of injection safety material	378(95)	20(5)	398(100)
Level of practice: Good practice > 4.5 and bad practice < 4.5			
Table-3a: Proportion of health workers' level of practice of injection safety in PHC in Calabar Municipality			

Level of practice	Frequency	Percentage
Bad Practice	161	40.5
Good Practice	237	59.5
total	398	100

Table-3b: Summary of proportion of health worker's level of practice of injection safety in Primary healthcare centers in Calabar Municipality

Variables	Good Practice	Bad Practice	X ²	P-value
Cadre				
Nurses(n=90)	44(48%)	46(51.1%)	30	0.00
CHEW(n=158)	109(69%)	49 (31%)		
JCHEW(n=40)	22(55%)	18(45%)		
Pharmacist(n=60)	29(48.3)	31(51.7%)		
Laboratory scientist(n=10)	3(30%)	7(70%)		
Others(n=40)	20(50%)	20(50%)		
Location of PHC				
PHC Ikot Omin	14(35%)	26(65%)	15	0.005
PHC Ediba	64(71.1)	26(28.9%)		
PHC Akim	78(60%)	52(40%)		
PHC Diamond	46(59%)	32(41%)		
PHC IkotAnsa	35(58.3%)	25(41.7)		

Table-3c: Shows level of adherence to injection safety practices among health workers according to cadre and location of PHC in Calabar Municipality

Years of experience	Good Practice	Bad Practice	X ²	P-Value
Gender				
Male	71(47.3%)	79(52.7)	14.9	0.00
Female	166(66.9%)	82(33.1%)		
Years of experience				
1-5 (n=178)	108(60.7)	70(39.3)	44.1	0.00
6-10 (n=120)	55(45.8)	65(54.2)		
11-15 (n=40)	18(45)	22(55)		
16-20 (n=10)	7(70.6)	3(40)		
31-35 (n=50)	49(98)	1(2)		

Table-3d: Shows level of safe injection practice among health workers according to Gender and years of experience

	Good Practice	Bad Practice	X ²	P-value
Good level of awareness (n=258)	197(55%)	161(45%)	30	0.00
Poor level of awareness (n=40)	7(16.9%)	33(82.5%)		

Table-4: Shows the level of adherence to safe injection practice (association of Level of knowledge and level of practice of injection safety) among health care workers in PHCs in Calabar Municipality

safety practices before?" 97.5% of the health workers had good level of awareness while 2.5% did not. On the item of "unsafe injection practices can transmit blood-borne diseases", all the health workers (100%) had good level of awareness while awareness on the item "used syringe and needle should not be recapped or bent before disposal" was 97.5% and that of the item "safe injections are administered to the right person at the right time through the right route and with the right dose" was 100%.

Table 2b showed the summary of the level of awareness on injection safety among primary healthcare workers in PHC. A total of 358 (89.9%) had good level of awareness of injection safety practices while 40 (10.1%) had poor level of awareness. The proportion of healthcare workers with good and poor level of awareness of injection safety practices in PHC according to gender and cadre was presented in table

2c. All the males i.e. 100% had good level of awareness and 83.9% of the females had good level of awareness. 76.7% of the nurses had good level of awareness, while the level of awareness of the laboratory technicians was 100% good. Pharmacy assistants and community health extension workers (CHEW) had 98.3% and 93.7% good level of awareness respectively. Other workers and junior community health extension workers (JCHEW) had 35% and 2.5% good level of awareness of injection safety respectively. This was statistically significant with $\chi^2 = 44.6$; p-value = .00. The years of working experience and level of awareness of injection safety practice was presented in table 2d. 94.9% of health workers with working experience between 1-5 years had good level of awareness while 5.1% had poor level of awareness and those with working experience of 16-20 years and 31-35 years all had 100% good level of awareness of

injection safety practices.

Proportion of health workers' level of adherence to practice of injection safety in PHC in Calabar Municipality was presented in table 3a. The proportion with good injection safety practice assessed with the item "do you used syringe and needles from a sealed pack for each dose of injection?" was 59.5% while 40.5% was for "bad practice". The response was the same for other items such as "do you look for NAFDAC registration on the injections before administration and do you use clean protective barrier such as hand gloves before administering injection?"

Summary of proportion of health workers level of adherence to injection safety practices in PHC was presented in table 3b. A total of 59.5% of the healthcare providers had good injection safety practices while 40.5% did not. The level of adherence to practice of injection safety according to location of PHC of health workers was presented in table 3c. The PHC located at Ikot Omin had 35% of workers with good practice and 65% with bad practice while that located at Ediba had 71.7% and 28.9% of workers with good and bad practices respectively. $\chi^2 = 15$ p-value = 0.00.

Table 3d showed the level of adherence to safe injection practice according to gender and years of experience of health workers in PHC. Males had 47.3% good practice while their females counterparts had 66.9% good injection safety practice with $\chi^2 = 14.9$; p-value = 0.00. Those between 1-5 years of working experience had 60.7% good practice while 31-35 had 98% good practice. To check if the high level of awareness recorded in the study translated to adherence to practice of injection safety among the health workers, the association of level of awareness and level of practice of injection safety among primary healthcare workers was assessed and presented in table 4. Fifty-five percent (55%) and forty five (45%) of those with good level of awareness had good and bad practice of injection safety respectively while only 16.9% of those with poor level of awareness had good practice of injection safety and 83.9% had bad practice with $\chi^2=30$; p-value=0.00

DISCUSSION

Findings from the study revealed that all the items used in assessing level of awareness of injection safety practices among primary healthcare providers had high proportion for good level of awareness. This led to the conclusion that the health workers have good awareness level of injection safety practices. However the lowest proportion for good level of awareness was recorded with the item "syringes and needles should not be recapped or bent before disposal" and was in tandem with a previous study which reported that about 55% of the healthcare workers recapped syringes and needles before disposal.⁶ In this study the level of awareness of injection safety practices among primary healthcare providers was 89.9%. This was quite high and agreed with the study carried out in a prison health facility in Kaduna, Nigeria on knowledge of injection safety practices among health workers which revealed very good knowledge on this subject.¹¹ However, it was contrary to the study done by Omorogbe et

al in Benin city which recorded poor knowledge on injection safety among health workers.⁶ Laboratory technicians that collect samples for laboratory tests in primary healthcare settings had high level of awareness than other healthcare workers, with nurses having the lowest awareness level. The poor level of awareness of nurses on injection safety also agrees with the study carried out in Benin where nurses were seen to have poor knowledge on injection safety practices.⁶ Findings from this also reveal that level of awareness had a direct relationship with years of working experience as years of experience increased the knowledge of the healthcare workers on injection safety. This also agreed with the study in Kaduna alluded to earlier, done among nurses, which concluded that level of knowledge on injection safety and years of experience of health workers were associated.¹¹ This association may be as a result of regular practicing which gives room for self-confidence and perfection.

In this study level of practice of injection safety was moderate as very few of the items had good practices with highest being 97.5% and the lowest being 43% which was recorded for the item "do you recap or bend used syringe and needles before disposal?" The total level of adherence to good practice of injection safety was about 55% which was low and agreed with the study of Enwere and Diwe which also revealed that the level of practice of injection safety among healthcare workers was poor.⁷ This could have resulted from the problem associated with injection safety practices in the study area which include inadequate supply of the injection safety materials. Findings from our study also showed that nurses had just 48% adherence to good practice of injection safety. This compares with the study that reported that nurses have bad practices of injection safety and recommended their regular continuous training on this.⁶ This study however was contrary to the study carried out in Nepal that concluded that nurses had good practice of injection safety because they were trained regularly and had sufficient supplies of materials which would have been the reason for the difference.¹⁰ Our study was able to establish the relationship between level of awareness and adherence to practice of injection safety. This was very clear in the case of Laboratory technicians who had good level of awareness on injection safety as well as good practice of injection safety. This compares with the study done by Onyemochu et al, who concluded that knowledge on injection practice was associated with good practice of injection safety¹¹ but disagreed with the study done by Adejumo and Dada, which concluded that knowledge does not translate to practice.¹ The association between level of awareness and level of practice shows that those with poor level of awareness had very bad practice of injection safety, and just 45% of those with good level of awareness adhered to good practice. This was statistically significant.

CONCLUSION

There was high level of awareness of injection safety practices among healthcare workers in the study and adherence to safe injection practices was moderate but was

not commensurate with the level of awareness. Therefore other measures should be taken in addition to knowledge to improve injection safety practice among health care workers.

Recommendations

Other measures such as training and re-training programs should be established and sustained for the staff. Prompt and adequate supply of injection safety materials and resources is required. The agencies or healthcare policy makers of the government should ensure availability of these materials and supervise their distribution to the primary healthcare facilities to enable the healthcare providers to carry out their work effectively.

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