

Needle-stick/Sharps injuries among health care workers in a Tertiary hospital, Makurdi, Nigeria.

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ABSTRACT

Background: Accidental exposure to blood following needle-stick /sharp injury is a major public health threat. **Aim:** The aim of this study was to investigate the prevalence of needle-stick/sharp injuries (NSSIs) among healthcare workers (HCWs). **Materials and Methods:** This was a cross-sectional descriptive study that was carried out at the Benue State University Teaching hospital, Makurdi. Self-administered, structured and validated questionnaires were admitted to 215 subjects. Collated data were analyzed using Statistical Package for Social Sciences for Windows version 18.0 (SPSS, Inc., Chicago, Illinois). **Results:** A total of 215 HCWs participated in the study. These were aged 18-71 years with the mean age of 33.1 ± 8.3 . This comprised 90(41.9%) males and 125(58.1%) females. Cleaners were 49(22.8%), Nurses 102(47.4%), Laboratory Scientists 11(5.1%) and doctors 53 (24.7%). Twenty one (9.8%) had NSSI in the preceding 12 months and 99(46.0%) had it in their career. Out of these, highest prevalence 52(24.2%) was observed among nurses, and the majority of the injury 36(16.7%) occurred during injection procedures. Less than a third 32(14.9%) of the HCWs did not seek medical treatment after having NSSIs. **Conclusion:** The 12 months prevalence of Needle-stick/sharp injuries in this study was 9.8%. However, 46.0% had it in their career. The nurses were affected most, and it was mainly due to injections. Many of the affected HCWs did not report; and seek medical attention. Health institution managers should include prevention, reporting and treatment of NSSIs as part of the training program for their employees.

Keywords: Healthcare-workers, Injury, Needle-stick/sharp, Tertiary Hospital.

Introduction

Accidental exposure to blood following a needle-stick/sharps injuries is probably one of the most common occupational health accidents in medical care.[1] It has become a public health threat considering the fact that many healthcare workers are victims. For example, the first reported case of needle-stick transmitted HIV infection led to increased awareness and concern about the risks to health-care workers posed by needle-stick/sharp injuries (NSSIs). Today, it is clear that percutaneous injuries to health-care workers from needle sticks and other sharps carry significant risks of transmitting more than twenty blood borne pathogens such as Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Human Immunodeficiency Virus (HIV).[2] Knowledge of

needle-stick/sharps injuries (NSSIs) have increased considerably over the past two decades. Reports have indicated that it has placed an overwhelming burden on health care workers and managers of health institutions. In Delhi and rural India, high prevalence of NSSIs have been documented.[3][4] Even though efforts have been intensified by stake holders in infectious diseases to reduce the occurrence of NSSIs among healthcare workers, Africa has continued to record high figures. For instance, in a study conducted among healthcare workers in Felegen Hiwot Referral Hospital, Bahir Dar, Northwest Ethiopia; it was reported that 31% of the healthcare workers recruited for the study had needle-stick/sharps injuries.[5] A similar study in Kenya reported a lower figure.[6] In Nigeria, The Federal Ministry of Health and frontline researchers in occupation and environmental health have demonstrated intense commitment to the reduction of NSSIs among HCWs. Encouraging measures currently being advised by expert include immunization against hepatitis virus, elimination of unnecessary injections, implementation of the universal precautions, eliminating needle recapping and the disposal of sharps into sharp containers immediately

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after use. [7] It is still not very clear if the Nigerian HCWs are wholly committed to these measures, as experts have expressed pessimism because of the worrisome reports from Nigeria. For example, the Federal Ministry of Health, Abuja, reported the incidence of NSSIs among HCWs to be 45%.[8] In North Central, South-Western and South-Eastern regions of Nigeria, high figures of NSSIs have also been reported.[9][10][11]

The importance of researching more on NSSIs cannot be overemphasized. However, it is disturbing to discover that little or nothing is known about it among healthcare workers in Makurdi in particular and Benue State in general. As a result, investigating the prevalence of needle-stick/sharps injuries in this environment will form a platform for intervention programs as well as future research. The study set out to investigate the prevalence of needle-stick/sharps injures in a tertiary hospital in Makurdi, Benue State of Nigeria.

Materials and Methods

The study area of this study is Makurdi. Makurdi, the state capital of Benue State is located in North Central, Nigeria. It lies between latitude 7.73° and 8.32° . It has a population of about 300,377 people (NPC 2006).[12] It was conducted in Benue State University Teaching Hospital, which is a 300-bed hospital located in Makurdi. It was commissioned in March 2012 and commenced clinical activities in May 2012. The hospital has 15 clinical departments with over three hundred healthcare workers. It currently serves a population of over four million people in the North Central Region of Nigeria.

The present study was a cross-sectional study designed to investigate the prevalence of needle-stick/sharps injuries among healthcare workers in Benue State University Teaching Hospital, Makurdi, Nigeria. The study was carried out between January and March 2014. The healthcare workers were recruited on work days using a well-structured self-administered questionnaire after a signed consent had been obtained from them. The instrument (questionnaire) was validated through a pretest conducted on 10 healthcare workers. A total of 245 questionnaires were administered through simple random sampling technique. Out of this number, 215 were completely filled, 11 were incompletely filled and 17 were no response. The non-response and incompletely filled questionnaires were excluded from the study.

The inclusion criteria for the participants include being a healthcare worker at Benue State University Teaching hospital and consenting to participate in the study.

Approval for the study was obtained from the Research and Ethical Committee of Benue State University Teaching Hospital, Makurdi.

Collated data were analyzed using Statistical Package for Social Sciences for Windows version 18.0 (SPSS, Inc., Chicago, Illinois).

Results

A total of 215 healthcare workers were recruited for the study. These were aged 18-71years with the mean age of 33.1 ± 8.3 . The majority of the participants were within the age group 30-34years. Few of the participants were aged 60 years and above. **Table 1:** Shows the age distribution of the healthcare workers.

The socio-demographic profile of participants showed that the majority of the participants were females 125(58.1%), while the males were 90(41.9%). The married participants were the majority 134(62.3%), while others (widowed, separated, divorced) accounted for only 4 (1.9%). Almost all the participants 212(98.6%) were Christians, while Muslims were 2(0.9%). On the educational attainment of participants, those without formal education were the least 2(0.9%), while those with tertiary education were the majority 171(79.5%), primary education accounted for 4(1.9%), and those that attended secondary schools 38(17.7%).

Table 2: Shows the socio-demographic distribution of healthcare workers.

The group of healthcare workers that participated most in the study were the Nurses 102(47.4%), while the Laboratory Scientist were the least 11(5.1%). The doctors were 53(24.7%) and the cleaners accounted for 49(22.8%). **Figure 1:** Shows the distribution of job category of healthcare workers.

Twenty one (9.8%) of the healthcare workers reported NSSI in the past 12 months, while the majority 194(90.2%) did not report NSSIs. **Figure 2:** Shows the distribution of healthcare workers that had NSSIs in the past 12 months..

Ninety nine (46.0%) of the HCWs indicated that they have had NSSI in their career, while 116(54.0%) reported otherwise. **Figure 3:** Shows the distribution of HCWs that reported NSSI in their career.

More than half 52(24.2%) of the healthcare workers that had NSSI were nurses, while the laboratory scientists accounted for only 2(0.9%). Doctors that had NSSIs accounted for 31(14.4%) while the cleaners accounted for 14(6.5%).

The majority of the HCWs 36 (16.7%) had NSSIs during injections, while the least number 19(8.8%) had it during waste disposal, 20(9.3%) had it during venipuncture and 24(24.2%) had it during surgical procedures. More than half 56(56.6%) of the affected HCW had NSSI while wearing Personal Protective

Equipment (PPE), while the rest 43(11.2%) had it without the use of PPE. Furthermore, less than a third 32(14.9%) of the HCWs did not seek any form of medical treatment after having NSSI. The rest 67(31.1%) had varied levels of treatment. Close to two-third 60(27.9%) of the affected HCWs did not report the NSSI to the appropriate hospital authority, while

the 39(18.1%) did. Among those that did not report the NSSIs, 6(2.8%) did not report because of stigma, 20(9.3%) felt that the patients were of low risk for infection and so did not report the incident, while 34(15.8%) were indifference. **Table 3:** Shows the distribution of causes, prevention, treatment and reporting of NSSI among HCWs

Table 1: Age distribution of healthcare workers

Age group (years)	Frequency (n)	Percent (%)
<25	16	7.4
25-29	67	31.2
30-34	56	26.0
36-39	33	15.3
40-44	21	9.8
45-49	14	6.5
50-54	4	1.9
55-59	2	0.9
60 and above	2	0.9
Total	215	100

Table 2: Socio-demographic distribution of healthcare workers

Variables	Frequency (n)	Percent (%)
Sex		
Male	90	41.9
Female	125	98.1
Total	215	100
Marital Status		
Married	134	62.3
Single	77	35.8
Others	4	1.9
Total	215	100
Religion		
Christianity	212	98.6
Islam	2	0.9
Total	215	100
Education		
No formal	2	0.9
Primary	4	1.9
Secondary	38	17.7
Tertiary	171	79.5
Total	215	100

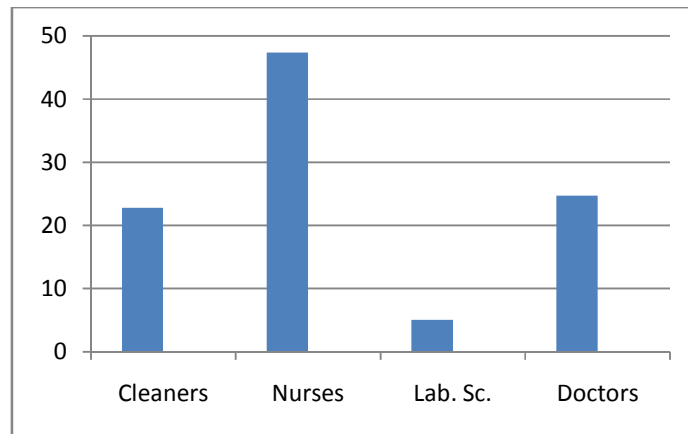


Figure 1: Distribution of job category of healthcare workers

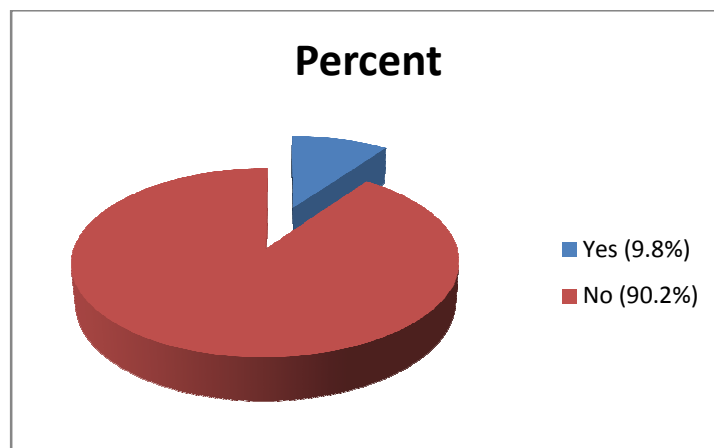


Figure 2: Shows distribution of healthcare workers that had NSSI in the last 12 months

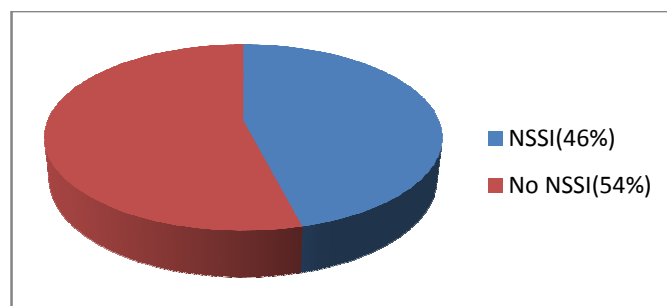


Figure 3: Shows the distribution of healthcare workers that had NSSI in their career

Table 3: Shows causes, prevention, treatment and reporting of NSSI among healthcare workers.

Variables	Frequency (n)	Percent (%)
Needle stick injury		
Yes	99	46.0
No	116	54.0
Total	215	100
How did the needle stick injury occur?		
Injections	36	16.7
Venepuncture	20	9.3
Waste disposal	19	8.8
Surgical procedure	24	11.2
Total	99	46.0
Was PPE in use during NSSI?		
Yes	56	26.0
No	43	20.0
Total	99	46.0
Treatment following NSSI		
Yes	32	14.9
No	67	31.1
Total	99	46.0
Was the NSSI reported?		
Yes	39	18.1
No	60	27.9
Total	99	46
Why NSSI not reported:		
Fear of stigma	43	20.0
Low risk patient	22	10.2
Indifference	34	15.8
Total	99	46

Discussion

In the current study, the prevalence of needle-stick/sharp injuries (NSSIs) among healthcare workers (HCWs) during the preceding 12 months was 9.8%. This figure is comparable to 9.7% reported among HCWs in Swiss University Hospital.[13] It is however much lower than the figures reported from outside the shores of Africa. For instance, 23.3% was reported in Dominican Republic[14], 31.4% in Germany[15], 32.0% among European nurses[16] and 23.5% in Malaysia[17]. Reports from African countries have also shown higher figures. In Ethiopia, for example, 31.0% [5] was reported, 91.0% was reported among doctors in South Africa,¹⁸ 30% in Swaziland,[19] and 19% in Kenya.[7] On the shores of Nigeria, the figure from the present study is one of the lowest reported.

The Federal Ministry of Health, Abuja, reported 45%, [8], while a similar study in Ilorin, Lagos and Imo State reported 72.9% [9], 57.8% [10], and 23.5% [11] respectively. The low figure reported in the current study could be attributed to the fact that the study area is a new tertiary health facility. As a result, patient patronage may be low and the HCWs may take extra time to handle clinical activities. In addition, Benue State has one of the highest prevalence of HIV/AIDS in Nigeria. This prompted the State government to embark on aggressive public awareness on its prevention. The HCWs must have benefitted immensely from these interventions. Furthermore, the majority of the HCWs in this facility had worked in other health facilities before their present appointment.

They must have acquired some basic injection safety regulations in the process. In addition, the current management of Benue State University Teaching Hospital (BSUTH) is reputed for human resource capacity building. Regular training of the HCWs in BSUTH on injection safety may have also contributed to the low figure reported in this study.

Similarly, this study reported that 46.0% of the HCWs indicated to have had NSSIs at least once in their career. This is in tandem with previous studies.[3][9] The present study further shows that the category of workers that were most affected with the NSSIs were the nurses. This report is in agreement with the previous reports [11][13][14]. The reason adduced for this is that the staff nurses are often involved in medication administration. It is important to note that most of the patients referred to BSUTH often require injections, and the nurses are deeply involved in this procedure.

The current study revealed that less than a third of the Laboratory Scientist had NSSI. This finding corroborate with what was observed in clinical practice. The reason opined for this is that many doctors are now specializing in Laboratory Medicine and are gradually taking over the invasive procedures from the Laboratory Scientists.

Previous studies have attempted to identify the causes of NSSIs among HCWs. Injection procedures was found to be responsible for most NSSIs occurrences. [11][12]The current study has further confirmed these findings as more than a third of the affected HCWs had NSSIs during injection procedures. A standard and understandable program on injection safety was advised.

The risk of blood borne infection following NSSIs is in the public domain. However, it is disturbing to discover in this study that about two-third of the HCWs that had NSIs did not report the incident to the appropriate hospital authority. The reason advanced for this include fear of stigma, indifference and some felt that the patients were of low risk for HIV and hepatitis infections. Aggressive awareness among HCWs is advocated.

Many tertiary health facilities have a laid down procedure in the management of NSSIs. It is expected that HCWs who has NSSIs should utilize this platform for their care. Unfortunately, the current study has revealed that less than a third of the HCWs that had NSSIs sought for any form of medical attention. The reason for this is not clear because being a HCW confers on one the privilege to patronize healthcare services.

Limitations of the study

This is a hospital based study, therefore the true prevalence of the NSSIs may not be accurately achieved. Some of the HCWs declined consent to participate in the study, and those that consented to the study was unwilling to return the filled questionnaire.

Conclusion

The 12 months prevalence of Needle-stick/sharps injuries in this study was 9.8%. However, 46.0% had it in their career. The nurses were most affected, and it was mainly due to injections. Many of the affected HCWs did not report; and seek medical attention. Health institution managers should include prevention, reporting and treatment of NSSIs as part of the training program for their employees.

Acknowledgement

I wish to under-line the priceless effort of the unit heads in Benue State University Teaching Hospital in ensuring a successful data collection.

I want to also put on record the immeasurable commitment of all my colleagues in the Benue State University Teaching Hospital for their moral support. My heart-felt thanks go to the participants who willingly participated in this work.

The authors are totally responsible for the funding of this research work.

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Source of Support: Nil

Conflict of Interest: None