



**NEEDLE STICK INJURIES AMONG NURSES IN A NIGERIAN TERTIARY HOSPITAL**

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**ABSTRACT**

Needlestick and other injuries from sharp objects place healthcare workers at risk of infection such as hepatitis B and C and the human immunodeficiency virus (HIV) infections. The objective of the study was to determine the burden of needle stick injury in a Nigerian Tertiary Hospital as part of the baseline data against which subsequent impact of current interventions in the hospital will be measured. A voluntary, self administered questionnaire was circulated to 150 Nurses across the various departments in the hospital. Information sought included their experience of needle stick injuries, circumstances, and reoccurrences. Of the 150 questionnaires administered, 129 (86%) nurses responded to the questionnaire. Of these, 80 (62.0%) respondents reported at least one needlestick injury, 48 (37.2%) reported no needles tick injury. Reasons given for needlestick injuries were: Recap of needles 40 (58.8%); non cooperative patients 8 (11.8%); accidental while withdrawing medications 12 (17.6%); improper management of used needle and improper injection techniques 8 (11.8%). A number of preventive measures such as the use of auto destruct (AD) syringes or safety engineered sharp devices, coupled with necessary education and training is discussed. The role of other preventive measures such as proper management of hospital waste, use of sharp boxes to segregate sharps is also highlighted.

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**INTRODUCTION**

Needlestick and other injuries from sharp objects place healthcare workers at risk of infections (Sandra *et al.*, 2006). Mismanagement of medical waste may pose adverse health effects to the healthcare provider, the patient and also to the community at large (MMIS, 2007). The safe disposal of used needles and syringes is a critical component of healthcare facilities if infection is to be prevented. Poor management of injection related waste exposes patients, healthcare workers, waste handlers, and the community to infections, toxic effects and injuries. Accidental needlestick injuries (NSIs) are a cause for concern. American health workers suffer 800,000 to 1 million NISs annually, excluding those that go unreported (ICN, 2000). There are more than 100,000 NSIs in UK hospitals each year. More than 20 blood borne diseases can be transmitted as a result of exposure to blood. Improper medical waste disposal extend the problem to cleaners, waste handlers, laundry workers, porters, scavengers and the general community (ICN, 2000). Needle sticks are categorized as sharps waste although produced in small quantities, they are

highly infectious (WHO, 2006). WHO has estimated that, in 2000, injection with contaminated syringes caused: 21 million hepatitis B virus (HBV) infections (32% of all new infections), 2 million hepatitis C virus (HCV) infections (40% of all new infections), 260000 HIV infections (5% of all new infections). A person who experiences one NSI from a needle used on an infected patient has risks of 30%, 1.8%, and 0.3% respectively to become infected with HBV, HCV, and HIV. (WHO, 2006). Global attention has remained focused on needle stick injury (NSI) prevention. The United States Centers for Disease Control and Prevention (CDC) teamed with the National Institute of Occupational Safety and Health (NIOSH) to issue a report in 2000 stating that sharps should be eliminated from use whenever possible. In situation where sharps were necessary, engineered safety precautions should be used (Sandra *et al.*, 2006). Preliminary observations show that health care waste management is sub-optimal at the University of Ilorin Teaching Hospital (Mokuolu, 2008). It was against the backdrop that effort was put in place to address the challenge of health care management. However this baseline survey needed to be conducted in order to determine the magnitude of the problem and provide a baseline for measuring the impact of the current efforts.

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## MATERIALS AND METHODS

### Study site

The University of Ilorin is located in the middle belt zone of Nigeria. It is situated in Kwara state, with a population of about 700,000 inhabitants. The hospital has two main wings, named the General wing and the Maternity wing. There are a total of 21 clinical departments with both outpatient and inpatient populations. The hospital, with a bed capacity of 500, has a total of about 500 nurses in employment. Considering the role of the nurses in the handling of sharps on the ward they were selected for this study.

### Sampling Technique

A multi-staged sampling technique was employed. This comprised of an initial identification of the wards that offer inpatient services. There are fourteen wards into which patients are admitted. In each ward the first available 10 nurses were given the questionnaire after obtaining their consent to participate in the study. An additional 10 nurses were selected from the outpatient clinic service points.

### Standardizing the questionnaire

The questionnaire was initially standardized by a pilot test. Thereafter ambiguous questions were modified to ensure consistency in the pattern of response of the respondents.

### Subject enrollment

The pre-coded questionnaire was self administered by 150 volunteer nurses who agreed to participate in the study. They were returned to the authors after completion and checked for completeness. The forms with significantly incomplete data were excluded from the final analysis.

### Data Analysis

Data from the complete questionnaire were entered into the computer using excel spread sheet. They were thereafter cleaned for errors and simple descriptive parameters and proportions estimated.

## RESULTS

150 questionnaires were administered randomly among nurses in Medical wards, children wards, surgical wards, outpatient

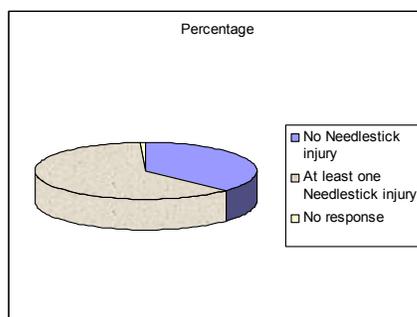


Fig. 1: Percentage of Nurses with needle stick injuries

department, and emergency ward. 129 Nurses responded to the questionnaire (86%). 48 of 129(37.2%) respondents reported no needlestick injury while 80(62.0%) respondents reported at least one needlestick injury. 1(0.8%) respondent gave no response. Needlestick injuries occurred among all the cadres of nursing staff in the hospital.

Table 1. Number of respondents from the different nursing cadre with NSI

Nursing Cadre	Number of Respondents	Number with at least 1 NSI	Minimum years in Service
Nursing Officer (NO1)	31	7 (22.6%)	3 years
Nursing Officer 1 (NO)	24	18(75.0%)	6 years
Senior Nursing Officer (SNO)	23	18(78.3%)	9 years
Principal Nursing Officer (PNO)	21	18(85.7%)	12 years
Asst.Chief Nursing Officer(ACNO)	22	16(72.7%)	15 years
Chief Nursing Officer (CNO)	7	3(42.9%)	18 years
Student Nurse	1	0(0%)	Temporary

Reasons given for needlestick injuries included recap of needles, non cooperating patient and improper management of used needles.

Table 2. Reasons for Needlestick injury

Reasons	Number	Percentage
Recap of needles	40	58.8
Non cooperating patient	8	11.8
While withdrawing medication	12	17.6
Improper waste management and technique	8	11.8
Total	68	100

## DISCUSSION

The extent of tissue damage to healthcare workers injured while using sharp medical equipment, or by improper disposal of such waste, is generally minor, but a more serious problem is possible transmission of pathogens that may cause adverse health problems. Mismanagement of sharp waste caused 1 injury per 29,000 man hours (Blenchharn *et al.*, 2008) while an incidence of 1.86 NSI/ health worker is reported in a Ugandan Teaching Hospital per year (Newson *et al.*, 2002). 55% of the Ugandan respondents has had at least 1 NSI at the workplace, 74% had sustained such an injury during their carrier in the UK. 22.3% of respondents in Dominican Republic reported at least one or more NSI while 62% was reported in this study. Unsafe recapping was the main reason for NSI in this study 40 (58.8%) while movement of patients during procedures was highest in the Ugandan report.

This study also shows that experience on the job is not a factor that reduces the risk of NSI because all cadres of the nursing staff, both junior and senior were affected. So one can deduce that attitudinal problems as well as use of wrong methods are major risk factors for NSI. Segregation means separating different types of waste at the point of generation and keeping them isolated from each other. By segregating waste, appropriate treatments, resource recovery and recycling

techniques can be applied to each separate waste stream. Safety boxes should be provided by the hospital management for segregation of sharps. Non recap of needles and immediate disposal into safety boxes as well of segregation of waste will go a long way in reducing the incidence of NSI in our hospitals. Use of incinerators as opposed to open dumping will also help in protecting the community at large from NSI and thereby ensure injection safety.

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