

Research Article

Prevalence and Pattern of Needle Stick Injuries among Health Workers, Windhoek

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- Universal precautions
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- Needle stick injuries

Abstract

Infection Control (IC) and Universal Precautions (UP) are very important components of patient care, intended to limit infection transmission in the health care setting. The study objective was to assess the prevalence and pattern of NSI among Health Care Workers (HCWs), in Windhoek hospitals. A cross-sectional study was done with 204 health care workers (HCWs) selected. Questionnaires and record review were used to collect data. Data was analyzed using the SPSS, version 21 and Microsoft excel. Twenty five percent of the HCWs rated the occurrence of NSIs as being common, and the circumstances in which NSIs occurred were when recapping needles/sharps (33%) or during emergencies (24%). Forty eight percent of the HCWs said nurses were more at risk of NSIs while 28% opined that doctors were more at risk. Among the HCWs, 90%, 47% and 21% of the doctors, nurses and cleaners, respectively had ever had NSIs; while the prevalence of NSIs among the respondents was 38%. This study showed that there is satisfactory knowledge among HCWs on UPs and IC. The attitude of HCWs toward UP and IC is a positive and practice of UP and IC is adequate, though this differs among the categories of health workers. Further studies are required to evaluate the effectiveness preventive methods in limiting the occurrence of NSIs and hospital acquired infections.

ABBREVIATIONS

IC: Infection Control; UP: Universal Precautions; NSI: Needle Stick Injury; HIV: Human Immunodeficiency Virus; HCW: Healthcare worker (HCW)

INTRODUCTION

In contemporary health care, along with the challenge of an ever-increasing burden of diseases, there is a heightening risk of health workers and patients contracting diseases inadvertently due to the myriad of activities surrounding patient care. Infection Control (IC) and Universal Precautions (UP) are therefore very important components of patient care. These practices are however often ignored and suffer numerous challenges in many health care centers all over the world, especially in the developing world. As a result of this, many health care workers have been victims of Needle Stick Injuries (NSIs), have been exposed to numerous contagious conditions and patients or their care givers, in the course of getting treatment for other conditions have acquired infections.

Though the prevalence of Human Immunodeficiency Virus (HIV) in Namibia stands at 15.97% (Central Intelligence Agency [1]), there are still numerous undiagnosed cases especially among

the newly infected, most of whom would make contact with health workers when they come seeking care. There is also a wide variety of other infections including tuberculosis, hepatitis, meningitis, etc, to which the health worker is the most convenient communicant due to contact with the patients, their tissues and body fluids. It is imperative therefore that every necessary action is taken to ensure the protection of health care workers, patients and other care givers.

According to [2], the healthcare workforce comprises of 35 million people worldwide, which represents 12% of the working population. Occupational health in this significant category of workers has long been neglected due to the misconception that the healthcare industry has minimal hazards, when in fact persons occupied in health care are exposed to numerous biological, chemical and physical hazards. Airborne and blood borne pathogens such as the agents that cause tuberculosis, severe acute respiratory syndrome (SARS), hepatitis, and HIV/AIDS are some of the biological hazards that exist in health care facilities.

Healthcare workers (HCW) experience about 2 million NSIs annually that result in blood borne infections like Hepatitis B and C or HIV. The World Health Organization [3] estimated that

injuries due to sharps resulted in 16,000 cases of hepatitis C virus infections, 66,000 hepatitis B virus infection cases and 1,000 HIV infections in health care workers worldwide in 2002 only. The commonest causes of NSIs are two-handed recapping of needles and unsafe collection and disposal of sharp wastes.

Accidental injection of blood-borne pathogens is the major consequence of NSIs, the most worrisome being HIV, Hepatitis B and C. The risk of infection after exposure to blood varies by blood-borne pathogen. The risk of transmission after exposure to HIV-infected blood is about 0.3%, whereas it is estimated to be up to 100 times greater for hepatitis B virus (30%) and could be as high as 10% for Hepatitis C virus [4].

This study will unearth health workers' knowledge, attitude and practice of universal precautions and infection control in health facilities and reasons for non-compliance with the expected standard practices, as well as identifying gaps in health facility based infection control.

Research objective

Evaluate the prevalence and pattern of NSI among healthcare workers in Windhoek.

MATERIALS AND METHODS

Study design

A cross-sectional study design was used for the study. Quantitative data regarding the pattern of occurrence of Needle Stick Injuries and actions taken afterwards was collected from health workers collection.

Study subjects

The study enrolled 204 health workers including doctors, nurses, laboratory technologists, cleaners and auxiliary health workers, from three general hospitals. Informed consent was obtained from the subjects. The study was approved by the research review board of the Department of Health Sciences and permission was obtained from Ministry of Health and Social Services and the management of the hospitals.

Data collection

Interviewer-administered, non-coded, structured questionnaires with closed-ended questions were used. The questionnaires elicited information on socio-demographic characteristics of the respondents, the respondent's knowledge on NSIs and infection control, circumstances surrounding the occurrence of NSIs and nosocomial infections, measures in place to prevent NSIs and nosocomial infections, sterilization of equipment, guidelines on NSI and infection control. Needle stick injury records were also reviewed and summarized. Monthly records were obtained from only 2 of the hospitals.

Data management process

Data was summarized in percentages and presented in tables and charts. Continuous variables were summarized in means and standard deviations. Chi-square (X^2) test was used to demonstrate the significance of the pattern observed between HCW cadre and gender of participants. Statistical Package for Social Sciences (SPSS), version 22 and Microsoft excel were used for statistical analysis and presentation of data respectively.

Limitations

The number of HCWs willing to participate in the study was limited due to heavy workloads therefore the sample size is smaller than initially planned and may not be representative of the general population. Records reviewed are subject to human error, incomplete entries or under-reporting and therefore might not represent the actual pattern of NSIs. Only 2 of the hospitals kept monthly records of NSIs, and are therefore the only statistics represented.

RESULTS AND DISCUSSION

Two hundred and four health workers from 3 participating hospitals took part in the study with 74 (36.3%), 79 (38.7%) and 51 (25%) participants from Hospital 1, Hospital 2 and Hospital 3 respectively (Figure 1). Prevalence of NSI among the respondents was 38%. There is no statistically significant relationship between HSW profession and Occurrence of NSI as seen in (Table 1,2) ($X^2=45.54$, $p=0.000$). Further, the relationship between Gender and Number of NSI incidences in not statistically significant ($X^2=5.69$, $p=0.127$) as shown in (Table 3). Most reported that NSIs commonly occur during recapping of needles, as indicated by 16% of nurses (Figure 2). After the last NSI, action taken by the respondents included washing the injury under running water (74%), reporting the injury to the Infection Control Nurse (ICN) (60%), while about 50% allowed the injury to breed and 3% did not do anything after an NSI. About 9% took other actions which included getting tested for hepatitis and HIV and receiving Post Exposure Prophylaxis. Reasons for the action taken after a NSI among others were because HCWs were trained to do so (45%) and following hospital policy (37%).

CONCLUSION

Prevalence of NSI is high (38%) among these participants, indicating a high level of exposure to potentially infectious

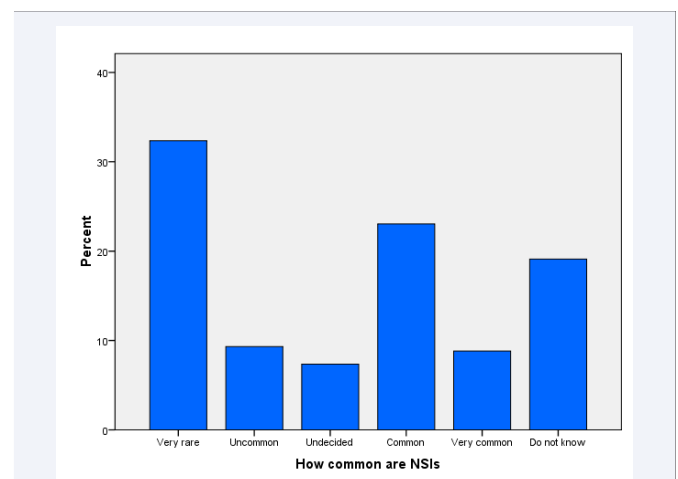


Figure 1 Participants' perception on frequency of occurrence of NSIs (N=204)

Abbreviations: NSI: Needle Stick Injury

(Very rare: Hardly occurs in a year; Uncommon: Once or twice a year; Undecided: Cannot agree if it occurs frequently or unfrequently; Common: Occurs at least once or twice a month; Very common: Occurs more than once or twice a month)

Table 1: General characteristics of participants (N=204).

Age group of respondents	Male	Female	Total
	Frequency (%)	Frequency (%)	Frequency (%)
20-29 years	25 (12%)	56 (28%)	81 (40%)
30-39 years	17 (8%)	42 (21%)	59 (29%)
40-49 years	5 (3%)	32 (16%)	37 (18%)
50 - 59 years	2 (1%)	19 (9%)	21 (10%)
60 years and above	-	5 (3%)	5 (3%)
Total	49 (24%)	154 (76%)	203 (100%)
Respondent's occupation			
Doctor	8 (4%)	12 (5%)	20 (10%)
Nurse	17 (8%)	79 (39%)	96 (46%)
Lab technologist	12 (6%)	9 (5%)	21 (11%)
Cleaners	5 (2%)	48 (24%)	53 (26%)
Others	8 (4%)	6 (3%)	14 (7%)
Total	49 (24%)	154 (76%)	204 (100%)
Number of years worked in the hospital			
>1 year	16 (7%)	40 (20%)	56 (27%)
1 - 5 years	25 (12%)	67 (33%)	92 (45%)
6 - 10 years	5 (3%)	11 (5%)	16 (8%)
< 10 years	3 (2%)	37 (18%)	40 (20%)
Total	49 (24%)	155 (76%)	204 (100%)

Table 2: Incidence of NSI by occupation (N=204).

Occupation		NSI		Total
		No	Yes	
Doctor	Count	2	18	20
	% within Occupation	10.0%	90.0%	100.0%
Nurse	Count	50	44	94
	% within Occupation	53.2%	46.8%	100.0%
Laboratory Technologist	Count	22	1	23
	% within Occupation	95.7%	4.3%	100.0%
Cleaners	Count	42	11	53
	% within Occupation	79.2%	20.8%	100.0%
Other	Count	11	3	14
	% within Occupation	78.6%	21.4%	100.0%
Total	Count	127	77	204
	% within Occupation	62.3%	37.7%	100.0%

Abbreviations: NSI: Needle Stick Injury.

body fluids. Occurrence is highest among nurses which can be explained by the nature of activities undertaken by this cadre of HCW especially during in-patient care such as administration of medication and intravenous fluids [5]. This also explains 16% of nurses reporting recapping needles as the circumstance in

which NSIs commonly occur (Figure 2), consistent with factors elaborated by WHO [3,6], found that 74% of doctors and 29% of nurses had a history of NSI. Of those who had NSIs 53% notified the infection control office within 24 hours of the incident. However, more nurses compared to doctors reported to the infection control office within 24 hours of the injury (73% and 38% respectively).

The findings of this study demonstrate a high need for training in IC and UP, as well as provision of materials and equipment to ensure compliance with IC and UP standards.

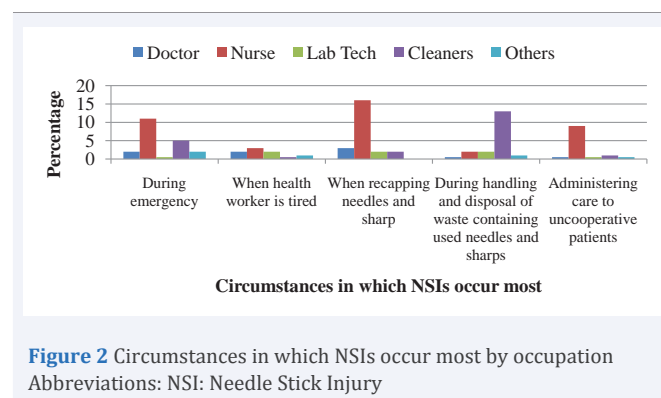
Knowledge and awareness of universal precautions among some health care professionals is very variable, as is access to training, though it is mostly assessed to be lower than would be expected and desired (Figure 3), as shown in a study which found only 27% of HCWs had been trained in IC [7]. Though health workers had reasonable knowledge on IC, only 16% of the study population got the maximum score for knowledge on IC. The attitude of health care workers towards universal precaution and infection control is equally very diverse in various settings and is demonstrated to be even more diverse among the gender and health worker categories. However, overall attitude to UP and IC needs to be improved. As would be expected with low levels of knowledge and poor attitudes, practice of UP and IC is also disturbingly low hence high level of exposure to blood and body fluids and NSIs.

Training regarding safe handling of sharps as well as the availability of improved technologies such as devices designed with sharps injury protection, safety needles, needle disposal boxes, etc, has shown proven improvement in IC by lowering the risk for NSI among HCWs [8,9,5].

Table 3: Number of times respondent experienced NSIs (N=78).

How many times respondents had NSI	Respondent gender		Total (%)
	Male (%)	Female (%)	
Once	12 (15%)	34 (44%)	46 (59%)
Twice	5 (6%)	8 (10%)	13 (17%)
More	1 (1%)	8 (10%)	9 (12%)
Do not remember	-	10 (13%)	10 (13%)
Total	18 (23%)	60 (77%)	78 (100%)

Abbreviations: NSI: Needle Stick Injury



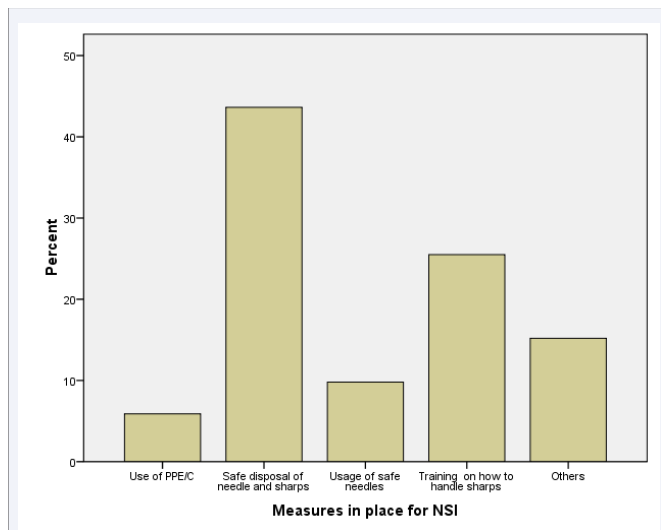


Figure 3 Measures in place to limit the occurrence of NSIs
Abbreviations: NSI: Needle Stick Injury

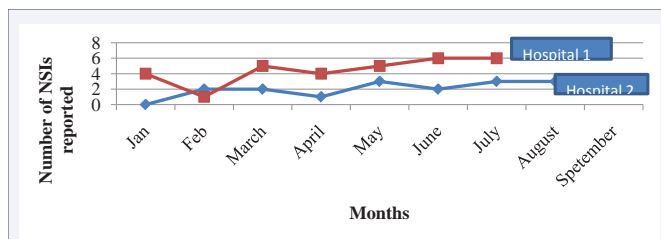


Figure 4 Number of NSIs reported at Hospital 1 and Hospital 2
Abbreviations: NSI: Needle Stick Injury

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REFERENCES

1. CIA. The World Fact book. 2014.
2. Wilburn SQ, Eijkemans G. Preventing needlestick injuries among healthcare workers: a WHO-ICN collaboration. *Int J Occup Env Heal.* 2004; 10: 451-456.
3. Vaz K, McGrowder D, Alexander-Lindo R, Gordon L, Brown P, Irving R. Knowledge, Awareness and Compliance with Universal Precautions among Health Care Workers at the University Hospital of the West Indies, Jamaica. *Int J Occup Environ Med.* 2010; 1: 171-181.
4. Robson LS, Stephenson CM, Schulte PA, Amick BC 3rd, Irvin EL, Eggerth DE, et al. A systematic review of the effectiveness of occupational health and safety training. *Scand J Work Environ Health.* 2012; 38: 193-208.
5. Evaluating safer needles. A Unison Guide: "Needle Safety At Work".
6. Zafar A, Aslam N, Nasir N, Meraj R, Mehraj V. Knowledge, attitudes and practices of health care workers regarding needle stick injuries at a tertiary care hospital in Pakistan. *J Pak Med Assoc.* 2008; 58: 57-60.
7. Paudyal P, Simkhada P, Bruce J. Infection control knowledge, attitude, and practice among Nepalese health care workers. *Am J Infect Control.* 2008; 36: 595-597.
8. Abdallah A. Infection control and prevention, Medical injection safety. Health Care Improvement Project. 2011.
9. Alam M. Knowledge, attitude and practice among healthcare workers on needle stick injuries. *Ann Saudi Med.* 2002; 22: 396-399.

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