

A Comparative Study: Incidence Of Needle Stick Injury In Healthcare Personnel.

Dr. Ranjit S. Ambad

*Associate Professor Dept. of Biochemistry Datta Meghe Medical College, Shalinitai
Meghe Hospital & Research Centre Wanadongri, Hingana, Nagpur-441110.*

Mr. Roshan Kumar Jha

*Tutor Dept. of Biochemistry Jawaharlal Nehru Medical College, AVBRH (Datta Meghe
Institute of Medical Sciences) Sawangi, Wardha-442001.*

Dr. Nandkishor Bankar

*Associate Professor Dept. of Microbiology Datta Meghe Medical College, Shalinitai
Meghe Hospital & Research Centre Wanadongri, Hingana, Nagpur-441110*

Dr. Abhishek Joshi

*Associate Professor Dept. of Community Medicine Jawaharlal Nehru Medical College,
AVBRH (Datta Meghe Institute of Medical Sciences) Sawangi, Wardha-442001.*

Address for Correspondence

Mr. Roshan Kumar Jha

Tutor Dept. of Biochemistry

*Jawaharlal Nehru Medical College, AVBRH (Datta Meghe Institute of Medical
Sciences) Sawangi, Wardha-442001.*

ABSTRACT

INTRODUCTION: *Needle stick injury is defined as a type of injury, caused during improper handling of hypodermic needles, blood collection needles, intravenous stiles, and needles that are used to connect parts of intravenous delivery systems. Indeed, NSIs are most preventable occupational hazards; it is also regarded as common hazards among health care individuals.*

AIM: *To find out the prevalence of needle stick injury among different categories of health care workers.*

MATERIAL AND METHOD: *A hospital based cross sectional study, was designed to observe the prevalence of needle stick injury among various health care workers of a tertiary level care hospital in Shalinitai Meghe Hospital and Research Centre in collaboration with Acharya Vinoba Bhave Rural Hospital Wardha. Study period was six months.*

RESULT AND OBSERVATION: *Majority of participants were aged between 25-45 years of age, which was around (n=130, 68.8%), followed by professional above age of >45 years of age (n=32, 16.9%). On the basis of work experience of healthcare personnel; it was observed that, more than 70% of the health care personnel (n=135) had an exposure to needle stick injuries.*

CONCLUSION: *Present study concludes that proportion of NSIs were high among HCWs, even though, having the knowledge about handling the needles and sharps. Training and management of needles and sharps must be introduced in effective way to minimize NSIs, for improving health and performance of healthcare individuals.*

KEYWORDS: *Needle stick, injury, intravenous delivery systems, intravenous stiles*

INTRODUCTION:

Needle stick injury is defined as a type of injury, caused during improper handling of hypodermic needles, blood collection needles, intravenous stiles, and needles that are used to connect parts of intravenous delivery systems. [1] Indeed, NSIs are most preventable occupational hazards; it is also regarded as common hazards among health care individuals. [2, 3] In developing world, the occupational exposures to NSIs are high, and approximately 75% of those are not reported.[4]Health care personnel are at increased risk of infection to blood borne pathogens,due to their occupational exposure to blood and body fluids.[5,6]

WHO estimated annual exposure of health care worker to blood borne pathogen was 2.6% for HCV, 5.9% for HBV and 0.5% for HIV globally.[7]NSIs risk for infection varies from 0.5%-5.9% in cases of HIV and HBV respectively.The risk of these infections is common in NSIs, thus safety and precautions are expected to be taken by all health care workers, for their safety. [8]

In India there are no national reporting systems for NSIs, knowing the fact; NSIs are capable to effect health directly as well as indirectly. Now-a-days in developing countries with limited health care workers; emotional distress and fatigue may also be responsible for increased NSIs.[9] Some of the precautions, to overcome and reduce the NSIs are immunization, adhering to universal precautions, eliminating use of un-necessary injection; personal protective tools must be employed properly for management of exposures. [10, 11]

The present study was employed to focus on, an important issue of NSIs and aimed to determine their occurrence in healthcare workers, working in tertiary care hospital for proper management.

AIM: To find out the prevalence of needle stick injury among different categories of health care workers.

OBJECTIVE: To assess prevalence, knowledge, attitude and practices associated with it.

MATERIAL AND METHOD:

The present study was carried out in Datta Meghe Medical College, Hingana, Nagpur in collaboration with Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences. A hospital based cross sectional study designed to observe the prevalence of needle stick injury among various health care workers of a tertiary level care hospital inShalinitai Meghe Hospital and Research Centre in collaboration withAcharya Vinoba Bhave Rural Hospital Wardha. Study period was six months.

STUDY PERIOD: Six months.

STUDY POPULATION: 189 Health care workers prone to NSIs.

INCLUSION:

Health care workers associated to patients care and treatment, SRs, JRs, interns, nursing staff, students, and lab technicians and professionals with work experience of ≥ 1 year were included in the study.

EXCLUSION: Personnel not involved in care and treatment, not involved in practice and unwilling participants were excluded.

SAMPLING: A purposive sampling was aimed to cover at least 40 professionals from each category, prone to NSIs.

COLLECTION OF DATA:

Questionnaire used was self-designed, pretested and semi structured. Every professional included were contacted in person and purpose of study was explained and consent were taken.

Needle stick injury was well defined as “any cut or prick by needles, while providing care or treatment to patients”.

Collected data were analysed using IBM SPSS version 11, the statistical tests applied included properties and X² tests for significance of associations.

RESULT AND OBSERVATION:

Table 1: Shows baseline characteristics of study participants.

AGE GROUPS	NUMBER	PERCENTAGE
<25	27	14.3
25-45	130	68.8

>45	32	16.9
SEX		
MALE	97	51.32
FEMALE	92	48.68
OCCUPATION		
DOCTORS	78	41.26
NURSES	70	37.04
SUPPORTING STAFF	41	21.7
EXPERIENCE OF WORK		
<5 YEARS	58	30.7
>5 YEARS	131	69.3

In above **table 1**: Baseline characteristics of the study participants were observed. HCWs enrolled in study were with in age group of 20-60. Majority of participants were aged between 25-45 years of age, which was around (n=130, 68.8%), followed by professional above age of >45 years of age (n=32, 16.9%). Distribution of male and female was (n=97, 51.32% and n=92, 48.68% respectively). Majority of the health care personnel (n=78, 41.26%) were doctors followed by nurses (n=70, 37.4%) and hospital supportive staffs (n=41, 21.7%). It was witnessed that majority of them (n=131, 69.3%) had a work experience of more than 5 years followed by those who had a work experience of less than 5 years (n=58, 30.7%). The work experience of the study participants ranged between 1 and 18 years (mean work experience of 8.78 ± 4.69 years).

Table 2: Responses of the various categories of the health care workers to different questions regarding their needle stick injury (n = 135 who had ever had a needle stick injury)

	DOCTOR	NURSE	SUPPORTING STAFF
WEARING GLOVES DURING NSI	71.8	77.6	78.2
REPORTED NSI TO SUPERIOR	23.1	36.1	21.5
TOOK PEP AFTER NSI	7.8	13.4	15.7

A large percentage (135 or 71.43%) of HCWs reported having had one or more NSIs in their career. This is depicted in Table 2

Table 3: Association of work experience with needle stick injury

WORK EXPERIENCE	EXPOSURE TO NEEDLES		TOTAL%	p VALUE
	NO%	YES%		
<5 years	22(37.9%)	36(62.1%)	58(100%)	p<0.5806
>5 years	32(24.4%)	99(75.6%)	131(100%)	

On the basis of work experience of healthcare personnel; it was observed that, more than 70% of the health care personnel (n=135) had an exposure to needle stick injuries. Those personnel with work experience of less than 5 years were (n=58) and those with more than 5 years of experience were (n=131). And the differences were (P value 0.5806).

DISCUSSION:

The present study was aimed to assess the fraction of needle stick injuries among health care personnel of tertiary care hospital and observed that, higher percentage of health care personnel were exposed to needle stick injuries in their work tenure (n=135, 71.43%). A study conducted in Nepal among HCWs of Gandaki medical college and teaching hospital [12] and study from rural hospital in North India [13] has shown similar results to the present study i.e. 70.8% and 73% respectively. Where, the study from New Delhi, India and Iran [9, 14] has revealed comparatively higher proportion of needle stick injuries in health care workers of tertiary care hospital i.e. 79.5% and 80.1% respectively when paralleled to the present study findings.

In study from Egypt,[15] (67.9%), from Nigeria [16](57.1%), Archana et al. study (68.3%) [17] and Afridi et al. (64%)[18]Hadpresentedslightly lower proportion of needle stick injuries in relation to the present study observation.

For precautions, wearing gloves is considered to be an essential line of defence but numerous of the HCWs had not been wearing them at the time of their injury, higher proportions among them were nurses. More than 75% of the injuries were confessed to be because of self-mistake, which was somewhat similar to Sharma et al[11] and *Askarian et study.[14]* An important finding was that a most of the injuries happened in nurses and hospital staff, while handling needles in the middle of use and its disposal, as observed in earlier studies too.[19] A probable explanation for the higher incidence of NSSIs in nurses and hospital staff during medical waste collection is that both of those personnel are involved in disposing needles/syringes, which repeatedly requires recapping of the needle. [20] The training programs vis-à-vis with dealing needles and sharps, precautions to be taken during practice and safety during discarding the needles should be conducted. Safety training programs must be focused on, the need to uphold utmost care and caution during and in-between handling needles.

At the time when needle stick injury was evaluated on the basis of work experiences; It was found that the majority of health care workers with five and more years 'work experience were subjected to needle stuck injuries than those with less than five years' work experience. The reason behind it is a belief, that more the experience: more the exposure which increases more the chances of NSIs. Present finding was supported by the study done at Egypt and Malaysia [15,21] and India [10]. Meanwhile study conducted in Pakistan [18] comprising health care workers of two tertiary care hospitals has presented the results similar to the present study. Those facts and belief may be correct to their knowledge, but still training, on proper handling and precaution to decrease the incidence is found to be necessary[22,23].

CONCLUSION:

Present study concludes that proportion of NSIs were high among HCWs, even though, having the knowledge about handling the needles and sharps. Training and management of needles and sharps must be introduced in effective way to minimize NSIs, for improving health and performance of healthcare individuals. With experience the NSIs is supposed to decrease in future, as experiences and skill gets improved with proper knowledge, training and experience.

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