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## Case Report

# Knowledge and practices of needle stick injury prevention among nursing personnel in a tertiary care teaching hospital in South India

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## ABSTRACT

**Introduction:** A needle stick injury (NSI) is an accidental skin-penetrating stab wound from a hollow-bore needle containing another person's blood or body fluid, leading to transmission of blood borne infections such as hepatitis B virus, hepatitis C virus and human immunodeficiency virus. Nurses are the core care providers for patients in the hospital and thus have the highest rate of needle stick injury among all the health care workers. This is possibly be due to performance of invasive and non-invasive procedures to the patients besides injection administration more often than any other staff.

**Aim & Objectives:** a) To assess the knowledge of Needle stick injuries (NSI) among nursing staffs, b) To determine the practices of Needle stick injury prevention (NSI) among nursing staffs of a tertiary care teaching hospital.

**Materials and Methods:** A cross sectional study was conducted by using a structured questionnaire having close ended and multiple choice questions, 10 in knowledge parameters and 15 in practice parameters respectively, designed from previously published literature. Informed verbal consent was taken prior to distribution of the self reporting Questionnaire and 100 nursing staffs were included. Minitab software version 19 was used for data analysis.

**Duration of study:** 1st Jan 2020 to 31st March, 2020 (3 months).

**Results:** Response rate was 80%, Incidence of NSI was 45%, Only 24% of the nurses were aware of the definition of NSI, about 90% of them were aware of the infections transmitted, 85% of them are unaware of 'no-recapping' technique of disposal, 90% of them were aware of standard precautions, Overall knowledge is adequate among 65% nurses. Only 35% nurses reported their NSI after incident, 24% knew post exposure prophylaxis, 98% of the reported NSI incidents NSI were due to recapping of needles.

**Conclusion:** NSIs were highly prevalent among nurses. Injection practices needs improvement. Procedures associated with higher risks of NSIs such as recapping of needles, non-wearing of gloves, improper disposal of sharps and others should be strongly discouraged.

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## 1. Introduction

A needle stick injury (NSI) is an accidental skin penetrating stab wound from a hollow bore needle containing another person's blood or body fluid, leading to transmission of blood borne infections such as hepatitis B virus, hepatitis C virus and human immunodeficiency virus.<sup>1</sup>

Nurses are the core care providers for patients in the hospital and thus have the highest rate of needle stick injury

among all the health care workers.<sup>2</sup>

### 1.1. Why Nurses?

This is possibly be due to performance of invasive and non-invasive procedures to the patients besides injection administration more often than any other staff.<sup>3</sup>

Nurses working on hospitals with lower staffing rates and high levels of emotional stress and exhaustion related to their jobs had significantly higher likelihoods of needle stick injuries.<sup>4</sup>

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It is estimated that the risk of contracting hepatitis B infection due to a needle prick injury is 100 times higher than that of contracting HIV.<sup>3</sup> Most people at risk for occupational exposures are in developing countries where there is paucity of standard reporting protocol.<sup>5</sup>

## 2. Aim & Objectives

1. To assess the knowledge of Needle stick injuries (NSI) among nursing staffs.
2. To determine the practices of Needle stick injuries (NSI) prevention among nursing staffs and also to find out the prevalence and risk factors associated with NSI in our institute.

## 3. Methodology

### 3.1. Study design

A cross sectional study was conducted by using a structured questionnaire derived from previously published literature from India, having close ended and multiple choice questions.

10 Questions in knowledge parameters and 15 questions in practice parameters were included

Informed verbal consent was taken prior to distribution of the self reporting Questionnaire and 100 nursing staffs were included.

### 3.2. Duration of study

1<sup>st</sup> January 2020 to 31<sup>st</sup> March, 2020 (3 months)

### 3.3. Place of study

Tertiary care teaching institute in south India.

### 3.4. Data analysis

Minitab software version 19 was used for data analysis

## 4. Results

1. Response rate was 80%
2. Mean Age of the participants was 29.5±5 years
3. Majority of them were female i e 97%
4. Incidence of NSI was 45%
5. Only 24% of the nurses were aware of definition of NSI
6. About 90% of them were aware of the infections transmitted
7. 85% of them were unaware of 'no-recapping' technique of disposal of needles
8. 90% of them were aware of standard precautions,
9. Overall knowledge was adequate among 65% nurses (>8 questions correct for knowledge parameters)
10. Only 35% nurses reported their NSI to the concerned physician after the incident

11. 24% of them knew post exposure prophylaxis
12. 98% of reported NSI were due to recapping of needles
13. It was observed that educational qualification was significantly associated with recent NSI. GNM nurses had high chances of NSI injury compared to M.Sc. Nursing staff and it was found to be statistically significant.
14. Disposable syringe needle (64.1%) was the most common device leading to NSI among the nurses.
15. During rush (47% was the circumstance due to which NSI was frequent in occurrence
16. 85% of the nurses recapped with both hands
17. 90% of the nursing staffs reported fully vaccinated status against Hepatitis-B
18. Only 56% of the nursing staffs were aware of post exposure prophylaxis after NSI
19. Only 24% of them were aware of the blood tests required after an NSI from a known HBsAg positive patient.

## 5. Discussion

In the present study, only 24% of the nurses were aware of definition of NSI i.e., they did not differentiate between harmful and harmless needle prick whereas 25.4% of the participants had adequate knowledge reported by Saravanan et al from Manipur, 2018.<sup>4</sup> But in one study conducted by Zia M et al,2017, 77.1% of the participants had good knowledge.<sup>6</sup>

45% experienced needle stick injury in the past 6 months in this study. Similar findings were seen among nurses in other studies.

But in a study conducted by Ahmed AS in Egypt, there was a high prevalence of needle stick injuries among nurses of 55.93%.<sup>7</sup>

In this study 35% of nurses reported NSI to their physician. Similar finding was noted by Kruger WH et al.<sup>8</sup> But, in Gujarat a study by Shale R et al, the response rate was low (8.3%).<sup>9</sup>

## 6. Conclusion

Recapping of needles (98%) was one of the main procedures that caused NSIs as compared to securing IV line (21%).

Although 90% of the nursing staff were aware of standard precautions but in practice 98% of the needle stick injuries occurred due to recapping.

85% Nurses recapped with both hands hands.

90% of the nursing staffs reported fully vaccinated status against Hepatitis-B.

Younger staff had better knowledge than older staffs but practice wise NSIs were more reported by younger staff.

## 7. Recommendations

Training of all the nursing staff both new and existing ones, towards Needle stick injury prevention.

Strict adherence to absolute "no-recapping" technique after using needles.

Scooping method with one hand to be promoted while recapping.

Mandatory testing of Anti HBS titre levels to all new staffs even if they say, they are fully vaccinated against Hepatitis-B at the time of joining.

## 8. Conflicts of interest

All contributing authors declare no conflicts of interest.

## 9. Source of Funding

None.

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