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# Assessment of Knowledge about Needle Stick Injury and Post Exposure Prophylaxis in Second Mbbs Students &Interns at Tertiary Care Hospital

Ramya Murthy CN[1]*, Safiabanu.S [1], SharonSonia.S [2], Vijayabhaskar Reddy[3]

*Post graduate 1 , Professor 2 , Professor and Head, Department Of Pharmacology3. Kurnool Medical College, Kurnool, Dr NTR University Of Health Sciences, Dr NTR University Of Health Sciences, Vijayawada, Andhra Pradesh -518002 ,India*
**Corresponding Author: Ramya Murthy CN* *

***Abstract:*** *Occupational exposure is the exposure to blood borne infections that occurs while performing the duty during professional work. Needle stick injury (NSI) is the trauma caused by sharps like needles used for blood collection, intravenous cannulas, and different sharps used by health care professionals. NSI(58%) is the common source of exposure to blood and products, followed by exposure to non-intact skin 22.7%, contamination of mucous membrane 11.2% and cuts (8%). Among the Health care professionals, interns and undergraduate medical students are at great risk of occupational exposure. Hence this study is taken up to assess the knowledge of NSI and PEP in interns and undergraduate medical students in a medical college and tertiary care hospital.*

***Methods:*** *A cross-sectional observational questionnaire-based study was carried out among 100 undergraduate Medical students which include 50 from II MBBS -- Fifth Semester and 50 Interns. The participation was voluntary and written consent was taken before enrolment. The objectives of the study were explained and validated questionnaire was administered to the students and collected in a single visit.*

***Result:*** *In our study, out of 100 students, 50 students from MBBS and 50 interns .out of which interns are much aware of following Universal precautions while handling sharps for about 98% when compared to MBBS students (90%). Interns of 72% didn't agree for not reporting post needle stick injuries, whereas 60% among MBBS students accepted the same. Interns of 30% felt that post-exposure prophylaxis should be done within 2hours, whereas MBBS students of only 10% felt the same. 46% of the Interns felt that NSIs have to be reported to Infection Control Committee, compared to only 20% of II MBBS students*

***Conclusion:*** *Medical students are highly vulnerable to NSI, and there is a need to provide adequate preventive measures, frequent training for needle stick injury and post-exposure prophylaxis to all healthcare workers.*

***Keywords:*** *Needles tick injuries, Post-exposure prophylaxis, waste sharps.*

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## I. Introduction

Occupational exposure is the exposure to blood borne infections that occurs while performing the duty during professional work.1 Needle stick injury (NSI) are the traumas caused by sharps like needles used for blood collection, intravenous cannulas, and different sharps used by health care workers (HCWs).

NSI is an accidental skin penetration of stab wound with a hollow-bore needle or any sharp that is contaminated by blood or bodily fluid of another person.3 among the injuries NSI 58% is the common source exposure to blood and products, followed by exposure to non intact skin 22.7%, contamination of mucous membrane 11.2% and cuts (8%). Overall the transmission rates for Hepatitis C is 1 to 10% and Hepatitis B is 6 to 33% and the risk of seroconversion for Human Immunodeficiency Virus (HIV) is 0.31%.[1] Worldwide more than 90% of the NSI occur in countries that have limited resources and the authentic data on NSI in India are scarce. In India with negligible reporting of NSI, less use of Post exposure prophylaxis (PEP) and high prevalence of sharps injuries, this led to underestimating NSI incidence.[3,4] It has been observed that there are guidelines for HCW but still they take inadequate measures to prevent and treat blood borne infections following occupational exposure. The prevention of exposure, use of universal safety precautions are the most effective measure and timely PEP after needle stick exposure can be useful.[5,6] Among the HCW Interns and undergraduate medical students are at great risk of occupational exposure. 8 Thus there is need to assess the knowledge, and practice of NSI and PEP in interns and undergraduate medical students in a medical college and tertiary care hospital.

## II. Method

A cross-sectional observational questionnaire based study of 100 undergraduate medical students which includes 50 from Second year MBBS, and 50 Interns of medical college and tertiary hospital. Before beginning the study Institutional Ethics Committee permission was taken. Site for the study was department of Pharmacology and Therapeutics, in medical college and tertiary care hospital. The study was conducted for a period of. The participation was voluntary and written consent was taken prior to enrolment. The objectives of study were explained, and validated questionnaire was administered to the students and collected in a single visit after 30-40 minutes. Questionnaire of knowledge, and practice towards NSI and PEP was prepared based on studies of NSI and PEP. Validation of the questionnaire of NSI and PEP was done by four experts from department of Pharmacology and department of Community Medicine. The inclusion criteria were age >18 yrs of age, either gender and willing to sign written inform consent form. Those who were not willing to participate or did not return or returned incompletely filled forms were excluded from the study. The questionnaire was distributed to 100 students and Out of these 50 students from Second year MBBS and 50 Interns were included in the study. The privacy and the confidentiality of the data was maintained throughout the study. Data was entered in MS Excel 2010, responses were coded and analysed. Descriptive statistics was expressed in terms of actual numbers, mean±standard deviation, frequency and percentage P value.

## III. Results

The average age in this study was 21.91±2.03 (range 18- 24) years. The age in each year was statistically significant with the age group of other year .Questioner given to them was here.

| S.NO | QUESTION | YES / NO |
|---|---|---|
| 1. | Needle stick injuries are unavoidable for health care professionals? | |
| 2. | The universal precautions should be followed while handling the sharp objects to avoid needle stick injuries. | |
| 3. | Most injuries occur during disposal/recapping of used needles? | |
| 4 | Reporting after needle stick injuries is not necessary | |
| 5 | 5. Needle prick injuries can transmit infections like<br>a. HIV<br>b. Hepatitis C<br>c. Hepatitis B | |
| 6 | Black bag is used for disposal of sharps | |
| 7 | Passing instruments from hand to hand in the operation theatre are one of the causes for needle stick injury? | |
| 8 | Passing instruments from hand to hand in the operation theatre are one of the causes for needle stick injury? | |
| 9 | Do you dispose the needles directly into the dust bin? | |
| 10 | Do you dispose the needles by needle destroyer | |
| 11 | No need to wash the site and directly take the post exposure prophylaxis? | |

12. After needle prick injury post exposure prophylaxis should be done?
    a. within 2 hours
    b. within 6 hours
    c .within 72 hours
    d. any time
13. To whom do you report about Needle stick injuries?
    a. Friend
    b. Senior resident
    c. Head of the department.
    d. Infection Control Committee

| | Question | Second year MBBS Students (N=50) | | MBBS Interns (N=50) | |
|---|---|---|---|---|---|
| | | Yes | No | Yes | No |
| 1 | NSI are unavoidable for Health Care Professionals | 34 (68%) | 16 (32%) | **42 (84%)** | 8 (16%) |
| 2 | Universal precautions to be followed while handling needles | 47 (94%) | 3 (6%) | **49 (98%)** | 1 (2%) |
| 3 | Most injuries occur during disposal /recapping of | 29 (58%) | 21 (42%) | **45 ( 90%)** | 5 (10%) |

| | | | | | |
|---|---|---|---|---|---|
| | device | | | | |
| 4 | Reporting after NSI is not necessary | 14 (28%) | 36 (72%) | 8 (16%) | **42 (84%)** |

| S.NO | Question | Second year MBBS Students (N=50) | | MBBS Interns (N=50) | |
|---|---|---|---|---|---|
| | | Yes | No | Yes | No |
| 5 | Black bag is used for disposal of sharps | 45 (90%) | 5 (10%) | 26 (52%) | **24 (48%)** |
| 6 | Passing instruments in operation theatre are one of the causes of NSI | **32 (64%)** | 18 (36%) | 30 (60%) | 20 (40%) |
| 7 | NSI can transmit infections like HIV,hepatitis B,Hepatitis c | 35 (70%) | 15 (30%) | **44(88%)** | 6 (12%) |

**TABLE 1**

**Universal precautions to be followed while handling needles**

**FIGURE 1.1**

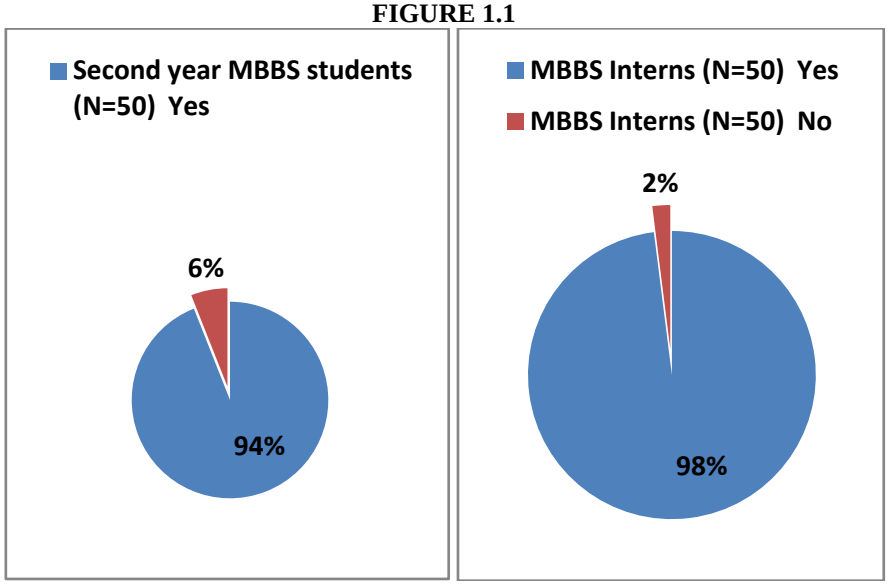
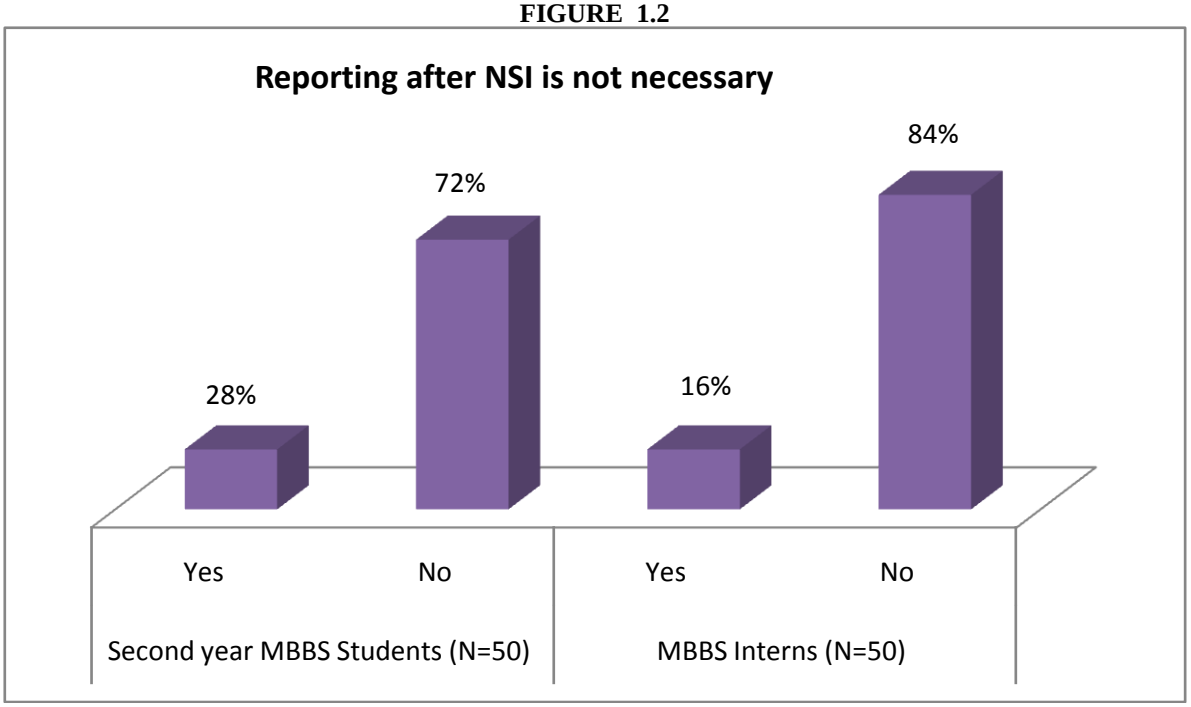


**FIGURE 1.2**



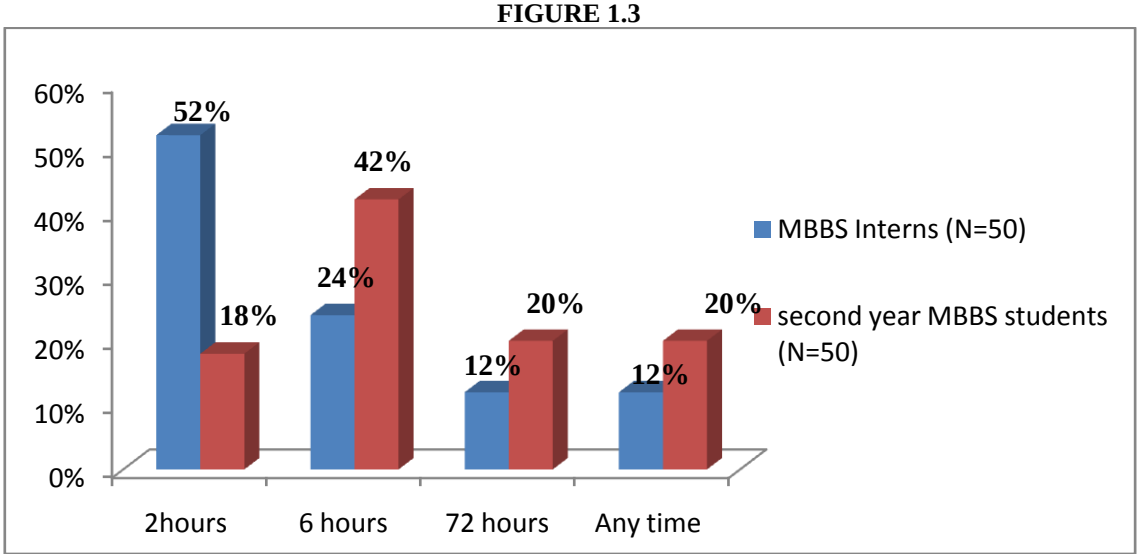

## Assesment of Practice among II nd year MBBS & Interns

**TABLE 2**

| S.NO | Question | Second year MBBS Students (N=50) | | MBBS Interns (N=50) | |
|---|---|---|---|---|---|
| | | Yes | No | Yes | No |
| 1 | Do you dispose needles directly into dustbin | 18 (36%) | 32 (64%) | 17 (34%) | **33 (66%)** |
| 2 | Do you dispose needles by needle destroyer | 38 (76%) | 12 (24%) | **44 (88%)** | 6 (12%) |
| 3 | No need to wash the site directly take the PEP | 22 (44%) | 28 (56%) | 9 (18%) | **41 (82%)** |

| s.no | Question | Second year MBBS Students (N=50) | MBBS Interns (N=50) |
|---|---|---|---|
| 4 | After NSI,PEP should be done within<br>2hours<br>6 hours<br>72 hours<br>Any time | <br>9 (18%)<br>21 (42%)<br>10 ( 20%)<br>10 (20%) | <br>**26 (52%)**<br>12 (24%)<br>6 (12%)<br>6 (12%) |
| 5 | After NSI, you will report to<br>friend,<br>Senior resident<br>Head of the department<br>Infection control comittee | <br>4 (8%)<br>10 (20%)<br>15(30%)<br>21 (42%) | <br>1(2%)<br>5(10%)<br>20 (40%)<br>**24 (48%)** |

**FIGURE 1.3**



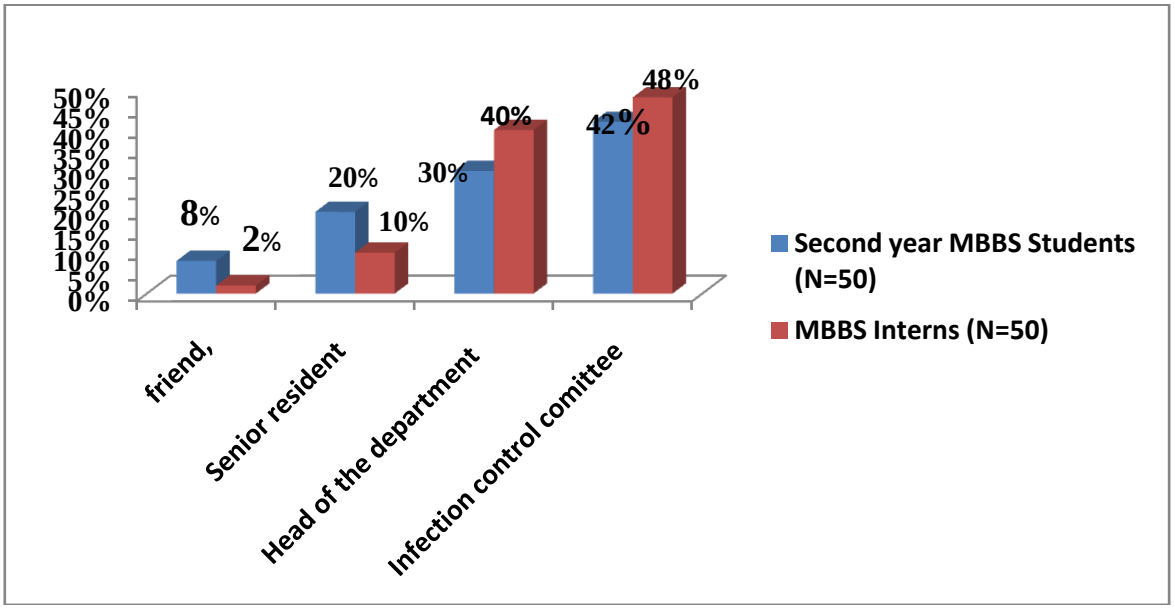




**FIGURE 1.4**

## IV. Discussion

All categories of HCW within the hospital should be informed about how to protect themselves against potential blood-borne infections (HBV, HCV, HIV) and other pathogens. In the incident of NSI, regarding the first person to be contacted, 30% of students in this study stated Head of the department, 8% did not know that NSI needs to be reported . In another study by Swe, 81% participants were of opinion that after an NSI, reporting the same is not useful.[7,8] Similarly results were seen in study by Siddique 29% students had experienced NSI but none reported.[9] Around 55% students did not report the NSI in studies conducted by Gandha and Saleem.[10,11] This observation on reporting of NSI from various studies therefore reveals that the HCWs including medical students were unaware of the fact that every NSI needs reporting.

Majority of students (88%) irrespective of their academic year in this study were well aware of the diseases transmitted by NSI. Regarding the correct information on the time duration within which the PEP is effective was answered correctly by students. This was encouraging finding compared to the findings of other studies such as Al-Dabbas which mentions 49% interns and Cerivini which mentions only 6 of 157 medical students, and Gandha that cited 33% post graduate students having the knowledge about PEP with respect to the time duration.[7,10,13]

When inquired about the practices for disposal of used needles, approximately 36% students replied that they disposed the used needle by throwing it in the dustbin and around 76% used needle destroyer for

discarding the used needle. Recapping has been mentioned as the major cause for NSI and second reason after blood collection as stated by Murlidhar, Ashat, Saleem. [2,11,12]

On enquiring about the universal precautions that has to be followed interns had much more knowledge compared to second Mbbs students .And 28% of second year students felts that reporting after NSI is not necessary, when compared to interns at 16%.

Our study on the knowledge, and practices of undergraduate students and interns with regards to NSI and PEP revealed that though the students had adequate knowledge on NSI but majority of them were unaware that it needs to be reported. These findings suggest the need for organizing a sensitizing sessions on the course of action to be taken following a NSI and also updating students about the PEP. Awareness regarding NSI and PEP can be further reiterated by displaying charts with the information related to steps to be followed in case of NSI and PEP.

All categories of HCW within the hospital should be informed about how to protect themselves against potential blood-borne infections and other pathogens. There is need of Hospital infection control committee that can conduct regular trainings for universal precaution and post-exposure prophylaxis implementation. Also, there should be provision of Insurance for HCW suffering from NSI.

## V. Conclusion

Knowledge towards NSI and PEP seems to be good but the practice towards reporting NSI is very poor in 2nd year Mbbs than interns. Comparatively interns are more aware of knowledge about NSI,& PEP than 2nd Mbbs students. The undergraduate curriculum should cover basic and more specific details about the need for reporting NSI, practice of PEP should not be limited but extend to the entire course of medical education.

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