

# Safe injection practices among nursing students undergoing training in a tertiary care hospital of Lucknow.

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**Abstract-** Safe injection practice guidelines were given by CDC and WHO because of varied reasons like needle stick injuries, blood stream infections, increased patient mortality and prolonged hospital stay. Unsafe injection practices lead to infections like Hepatitis B, Hepatitis C, HIV /AIDS. India contributes 25% to 30% of the global injection load out of which 1.89 billion were unsafe. A total of around 60,000 to 1 lakh people sustains needle stick injuries per year worldwide, and many of them are still unreported. Improper handling of sharps and poor waste disposal are the main causes for needle stick injuries. Biomedical waste management guidelines are strictly implemented in all health care settings but safe injection practices are still not adhered to. **Objective-** The study aimed to assess the safe injection practices among nursing students undergoing training in a tertiary care hospital of Lucknow. **Methods-** The methodology used for the research was quantitative descriptive research design. The tool used for the research was a questionnaire for demographic data and an observational checklist. The checklist was prepared based on the Injection safety checklist, a subset of items in CDC Infection Prevention Checklist for Outpatient Settings: Minimum expectations for safe care. Event sampling and participant observation was utilized in this study. A total of 200 injections were observed in this study using participant observation. **Results-** In this study, majority of the injections were performed by II BSc Nursing students. Almost all the students performed hand hygiene before administration of injection. Only in 49% injections, the rubber septum was cleaned before inserting the needle. Another major observation was regarding the use of multi dose vials, where in 12% injections, the vial was carried to patient's bedside and was not discarded after entering the immediate patient treatment area.

**Key Words-** Safe injection practices.

## INTRODUCTION

Injections are the most commonly performed nursing procedure all around the world. About 16 billion injections are administered each year worldwide, and at least half of them were unsafe. India contributes 25% to 30% of the global injection load out of which 1.89 billion were unsafe. Reuse of syringes and nonadherence to Biomedical waste management guidelines has contributed significantly to the increase in blood borne infections like HIV, HCV and Hepatitis B. It has also resulted in blood stream infections, increased patient mortality and hospital expenditure. Safe injection guidelines were given by CDC and WHO to decrease unsafe injection practices, but it is still not adhered to. The study aimed to assess the safe injection practices among nursing students undergoing training in a tertiary care hospital of Lucknow.

## MATERIAL AND METHODS

A descriptive quantitative study was conducted among the students undergoing training at a selected tertiary care hospital of Lucknow. Event sampling of the procedure and participant observation was utilized in this study. A total of 200 injections were included in this study. The students were explained about the study and its purpose before-hand and their implied consent taken for participation in the study. The participants were assured of confidentiality of the data. Ethical committee clearance was taken from the Institutional review board. The tool used for the research was a questionnaire for demographic data and an observational checklist. The procedure was assessed by participant observation method using a checklist. The checklist was prepared based on the Injection safety checklist, a subset of items in CDC Infection Prevention Checklist for Outpatient Settings: Minimum expectations for safe care.

## RESULTS

### Section I: Description of demographic data

Table 1: Distribution based on year of training  
n=200

Year of training	Frequency (n)	Percentage (%)
IV BSc(N)	60	30
III BSc(N)	59	29.5
II BSc (N)	81	40.5

The study was undertaken among IV, III & II BSc (N) student nurses working in various clinical areas. A total of 200 injections

were included in the study, out of which majority (40.5%) were performed by II BSc (N) students. All the nursing students were vaccinated against Hep B. Maximum injections observed were intravenous, followed by intramuscular and subcutaneous injections

## Section II: Observation checklist

Table:2 Safe Injection Practice

n=200

S no	Hand hygiene steps	Frequency (n)	Percentage (%)
1	Proper hand hygiene, using alcohol-based hand rub or soap and water, is performed prior to preparing and administering medications.	195	97.5
2	Injections are prepared using aseptic technique in a clean area free from contamination or contact with blood, body fluids, or contaminated equipment	170	85
3	Needles and syringes are used for only one patient (this includes manufactured prefilled syringes and cartridge devices such as insulin pens).	200	100
4	The rubber septum on a medication vial is disinfected with alcohol prior to piercing	98	49
5	Medication vials are entered with a new needle and a new syringe, even when obtaining additional doses for the same patient	190	95
6	Single-dose or single-use medication vials, ampules, and bags or bottles of intravenous solution are used for only one patient	200	100
7	Medication administration tubing and connectors are used for only one patient	200	100
<b>Multidose injections</b>		<b>n= 90</b>	
8	Multi-dose vials are dated by healthcare when they are first opened and discarded within 28 days unless the manufacturer specifies a different (shorter or longer) date for that opened vial.	88	98
9	Multi-dose vials are dedicated to individual patients whenever possible.	90	100
10	Multi-dose vials to be used for more than one patient are kept in a centralized medication area and do not enter the immediate patient treatment area	80	88
11	If multi-dose vials enter the immediate patient treatment area, they should be dedicated for single-patient use and discarded immediately after use	80	88

Majority of the injections were administered following all the steps of safe injection practices. Only in 49% of injections, the students cleaned the rubber septum on the vial with alcohol before piercing. This requires urgent educational intervention so as to promote safe injection practices. While administering injections from multi dose vials, 88% injections did not enter the immediate patient treatment area like bed side/ patient's cubicle.

Table 3: Distribution of performance score

n=200

Results				
Year of study	High (>7)	Average (4-6)	Poor (1-3)	Row totals
IV BSc (N)	25	15	20	60
III BSc(N)	19	32	8	59
II BSc(N)	20	41	20	81
Column totals	64	88	48	200

The calculated chi-square statistic value is 15.1128 with a p-value of .004473 and the result is significant at  $p < .05$

Table 3 shows that among the demographic variables accounted, the level of knowledge was significantly associated with the year of training. The statistical findings of the present study proved that the calculated value of chi square is 1.8519 which is not statistically significant at a  $p$  value  $< 0.05$ . This may be attributed to the small sample size in the present study.

## DISCUSSION

Unsafe injections put both the health care workers and the patients at risk of multiple infections. In study of safe injection practices of nursing personnel in a tertiary care hospital of Kolkata, West Bengal conducted in Nov 2011 by Bobby Paul and group, revealed that during the last 6 months 6.3% nurses got accidental needle stick injury three or more times. 12.5% subjects washed hands before administration of injection, 60% maintained the correct procedure while administering injection, while sterile gloves were used by 3.7% of nurses only 57.5% needles were cut before disposal and 42.5% were recapped. In 41.2% cases the used syringes were disposed of correctly.

A total of 200 injections were observed from the various clinical areas. In this study, all the students practiced hand hygiene before injection administration. Only in 49% injections, the rubber septum was cleaned before inserting the needle. Another major observation was regarding the use of multi dose vials, where in 12% injections, the vial was carried to patient's bedside and was not discarded after entering the immediate patient treatment area. The study results reveal that the students should be reinforced

about the importance of safe injection practices using various teaching strategies like OSCE, simulation.

### CONCLUSION

Majority of the students obtained only average score on safe injection practices. Training of students on safe injection practices will play a significant role in decreasing blood borne infections and patient mortality rate. Safe injection practices need to be taught and reinforced on a daily basis along with ensuring availability of adequate resources to bring about a change in the practice.

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### CONFLICTS OF INTEREST

There are no conflicts of interest

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