



Research Article

“BE SHARP, AVOID SHARPS” – A CAMPAIGN ON NEEDLE STICK INJURY TO SENSITIZE NURSES ON HANDLING SHARPS AND NEEDLES IN PATIENT CARE AREAS

<sup>1,\*</sup> Dr. Usha Banerjee and <sup>2</sup>Sundus Nishat

<sup>1</sup>Group Director Nursing, Apollo Hospitals Group, India

<sup>2</sup>Administrative Assistant, Indraprastha Apollo Hospital, New Delhi-76, India

Received 16<sup>th</sup> February 2024; Accepted 20<sup>th</sup> March 2024; Published online 19<sup>th</sup> April 2024

Abstract

Healthcare workers face a major occupational health and safety concern with needle-stick injuries (NSIs)<sup>1</sup>. They are associated with a 0.3–30% risk of transmission of Human Immunodeficiency virus, Hepatitis C virus, and Hepatitis B virus. They not only result in psychological suffering but also entail a huge financial burden<sup>2</sup>. A campaign on NSI was conducted in order to ensure safe sharp devices and use, enhance staff knowledge on handling sharps in patient care areas and reduce needle stick injuries in the hospital. A total of 1056 nurses were trained and were included in both pre and post-training. Considering the study findings, it was observed that the number of NSI incidents reduced from 53% (pre-campaign) to 47% (post campaign) and average score of staff knowledge on handling sharps also improved from 4.8 (pre-campaign) to 6.7 (post campaign).

**Keywords:** Needle Stick Injury, NSI incidents, campaigns, trainings and Staff Nurses.

INTRODUCTION

According to the CDC, 385,000 injuries with contaminated needles and other sharps devices occur annually among hospital-based healthcare personnel, which means 1,000 injuries a day. There are an estimated 30 NSIs/100 beds per year and in India, that means an estimated >270,000 injuries per year. According to the National Surveillance System for Healthcare Workers, USA, more than 70% of the blood and body fluid (BBF) exposures are experienced by Nurses and Physicians. Injuries caused by contaminated needles and other sharp objects are a significant worry due to the potential transmission of blood-borne viruses. Additionally, they impose financial burdens on both personnel and the healthcare system. Indraprastha Apollo Hospital is a tertiary care hospital having 718 beds with a complex setup covering various super specialties and preventing Needle Stick Injuries among 1300 Nurses is the biggest challenge. Drawing of blood, IV insertions, needle recapping, and other procedures using sharp medical instruments sometimes results in NSIs<sup>3</sup>. NSIs are critical occupational risks among healthcare workers, possibly leading to the transmission of infectious diseases, especially blood-borne viruses, such as HIV, hepatitis B, and hepatitis C.

Objectives of the campaign

- To Evolve a culture of safety and ensuring safe sharp devices and use.
- To reduce the number of incidents on Needle Stick Injury
- Knowledge assessment of Staff Nurses on handling sharps
- Sensitization of Staff Nurses on NSI prevention through multiple in house and external trainings/hands-on trainings
- Regular practice checks of staff on NSI prevention and management

NSI formula and its target

Target: 0.2 per 100 beds

Formula:  $\frac{\text{Number of Needle Stick Injuries in the hospital}}{\text{Total number of Beds}} \times 100$

Why have we selected NSI as a Quality Indicator?

1. Injuries from needles and other sharp devices are associated with the occupational transmission of pathogens such as HBV, HCV, and HIV.
2. The risks and costs associated with a blood exposure are serious and real. Costs include the direct costs associated with the initial and follow-up treatment of exposed healthcare personnel. Emotional costs related to anxiety and fear that result from worrying about the potential outcomes of an exposure are among the costs that are more difficult to measure. It may also result in lost time from work, the societal cost associated with an HIV or HCV seroconversion, and the economic burden of medical care.

MATERIALS AND METHODS

In view of the increased number of NSIs, a campaign – “Be sharp, avoid sharps” began in the hospital in the month of October 2023 in order to assess staff knowledge and practice on handling sharps and to sensitize the nurses on the safe handling of sharps in patient care areas. This hospital-based study was quantitative with one group having pre and post-research design. All wards and ICU nurses working in the hospital were trained during workstation sessions. The sample size was 1056 nurses who were trained and were included in both pre and post-training practice checks.

Campaign Activities

1. **Analysis of NSI data (Jan 2023 – Sept 2023):** A deep dive analysis was done for each incident and key points

\*Corresponding Author: Dr. Usha Banerjee

Group Director Nursing, Apollo Hospitals Group, India

were drawn for further actions, this included listing the following:

- a. The units with the highest number of incidents
- b. The devices associated with NSI
- c. The common sites of NSI

**a. The units with the highest number of incidents**

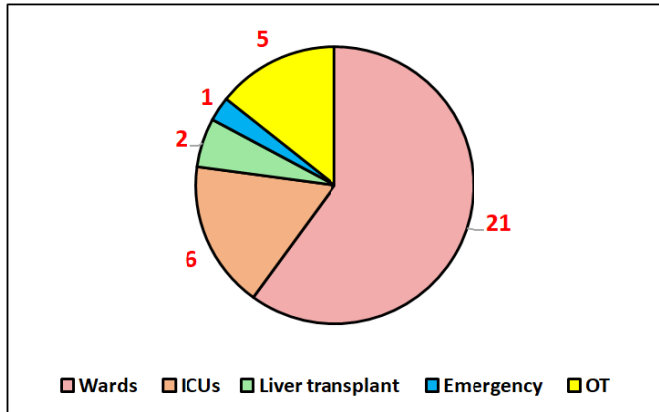


Figure 1. Units with the highest number of NSI

To understand the causative factors leading to NSI in these areas, Fishbone Analysis was done

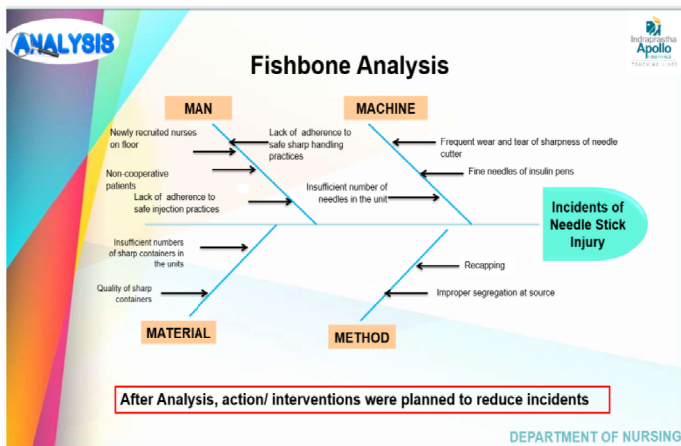


Figure 2. Fishbone Analysis

**b. Device associated with NSI**

- Different devices are used- Disposable syringes, insulin needles/pens, scalpel, suture needle, cannula, etc.
- It was observed that 5 cases were caused due to Insulin needles, as they are too fine to cut with needle cutter, so it has to be removed manually from the pen.
- To reduce NSI due to insulin needles, following steps were taken:
  - a) Reinforcement Training on insulin administration technique by charge nurse and training team.
  - b) Sensitization of staff during shift briefings and weekly central briefing on handling fine insulin needles.

**c. Common sites for NSI**

- It was noted that maximum cases of NSI were reported in Left Index finger, the reason for the same was recapping in situations where staff had to immediately attend to another

patient. However, recapping is against our policy and reinforcement training for the same was conducted.

- Another reason for pricks in left index finger was- manual removal of fine needles from insulin pen as they could not be cut using needle cutter. Staff was sensitized on careful handling of such needles.
- Staff was also educated on use of medication trolley (with needle cutter) whenever possible so as to allow cutting of needles at source and preventing injuries due to sharps.

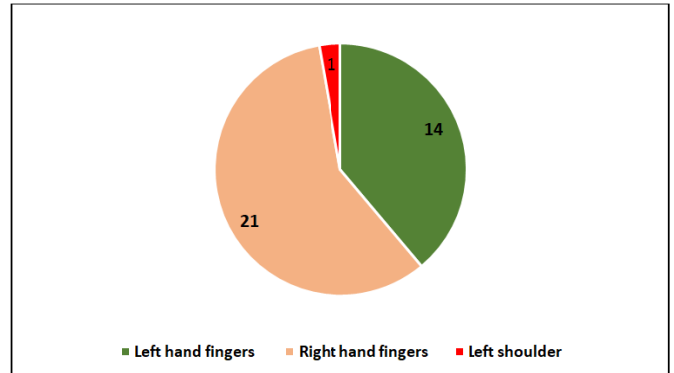


Figure 3. Common sites for NSI

**2. Knowledge Assessment of the Staff Nurses**

Staff knowledge was assessed based on a questionnaire survey pre and post training.

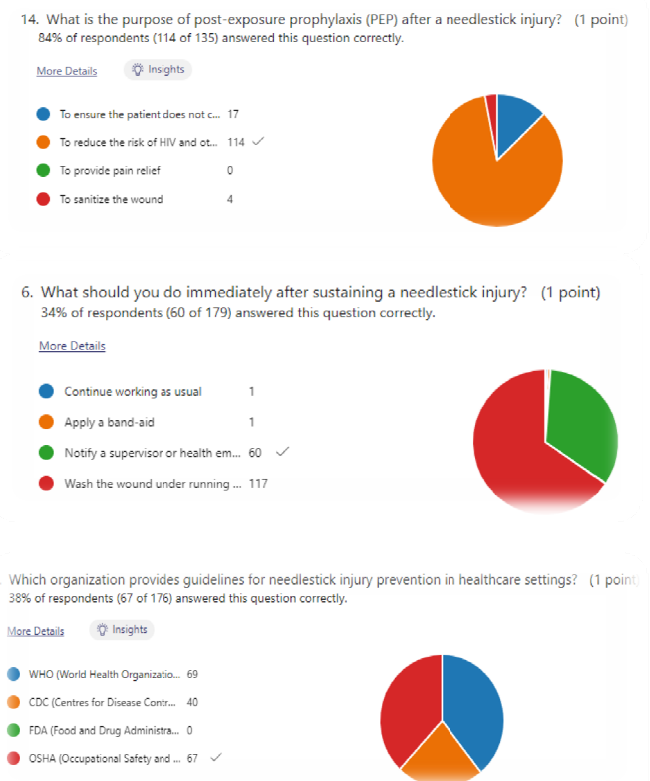


Figure 4. Questionnaire on Knowledge Assessment of Staff Nurses pre and post training

**3. Sensitization of staff on handling sharps through various in house and external trainings**

Various activities in cooperation with BD Company and initiatives scheduled throughout the campaign week. These

includes pre-and Post-Quiz, Hands-on training sessions by BD on IV Cannulation, awareness sessions by the Infection Control Team and quality nursing team, interactive discussions, and knowledge sharing on best practices that are aligned with global guidelines.



Figure 5. Glimpses of external training by BD



Figure 6. Glimpses of reinforcement session by Senior Nursing Leaders



Figure 7. Glimpses of reinforcement session by Infection Control Nurse

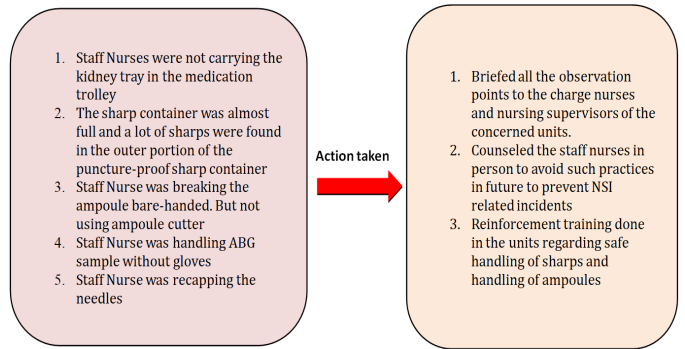
**4. External trainings by BD with simulation techniques**

Workstation trainings session with simulation techniques on IV cannulation and safe handling of sharps were conducted by covering all the nursing stations of the hospital.



Figure 8. Glimpses of external training by BD with simulation techniques

**5. Regular practice checks of Staff Nurses on NSI Prevention and Management**



**RESULTS**

The campaign led to the following outcomes:

**1. Reduction in the number of incidents on Needle Stick Injuries**

The campaign had an effective impact on reducing the number of incidents on NSI in patient care areas.

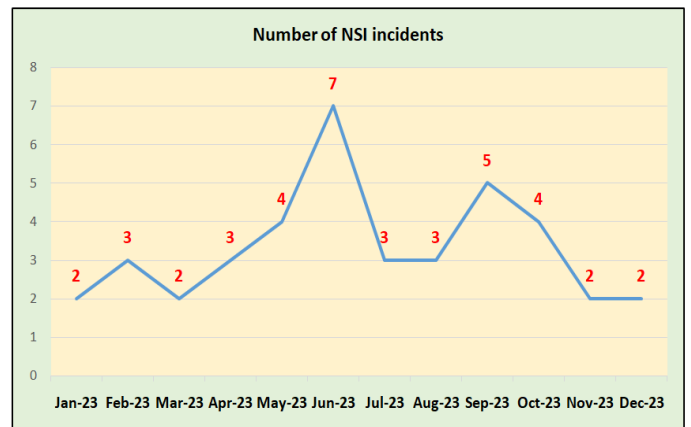


Figure 9. Analysis of NSI Incidents Post Campaign

**2. Enhancement in Staff Knowledge**

Pre and post-test evaluations were conducted for the staff who participated in the campaign and the result shows the enhancement in staff knowledge in handling sharps and needles.

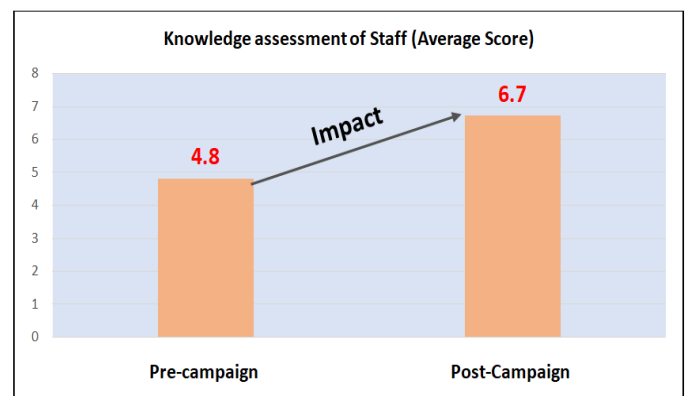


Figure 10. Average score of Staff's Knowledge Assessment

### 3. Comparison of NSI incident

NSI data for the month of Jan-Dec 2022 and Jan-Dec 2023 was compared and it shows a significant reduction with respect to NSI in the year 2023.

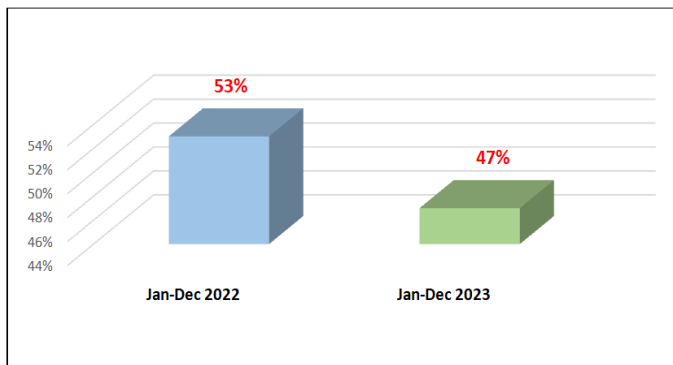


Figure 11. Comparison of NSI incident

### DISCUSSION

The impact of the campaign was visible in reducing the number of NSI incidents from 53% in Jan to Dec 2022 to 47% in Jan 2023 to Dec 2023.

The following actions were executed to sustain the reduction in a number of NSI incidents:

1. Daily briefing is being done in all three shifts on the prevention of NSI & No Recapping.
2. Regular practice check of staff is being done on handling sharps in patient care areas
3. On-the-job training of Nurses on handling sharps and needles in patient care areas

### Conclusion

Needle stick injuries are an issue of employee safety that needs immediate attention and incur huge costs. They can be prevented by implementing a robust process improvement toolkit in the healthcare processes<sup>4</sup>.

### REFERENCES

1. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1755-6686.2009.00093.x>
2. <https://pubmed.ncbi.nlm.nih.gov/32446644/>
3. <https://pubmed.ncbi.nlm.nih.gov/34581305/>
4. <https://www.sciencedirect.com/science/article/abs/pii/S2603647920300506>

\*\*\*\*\*