



“FIRST PRICK SUCCESS” – EMPOWERING NURSES TO BE SUCCESSFUL IN THE FIRST PRICK FOR AN IV LINE/CANNULATION

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Abstract: One of the most common invasive medical procedures is peripheral intravenous cannulation, which has some risks and potential complications. This study aimed to empower the nurses on IV Cannulation to ensure that the patient experiences minimal discomfort during the procedure by accomplishing it successfully with a single needle prick. The sample size was 1125 nurses who were trained and were included in both pre and post-training practice checks. Nurses' knowledge, practice, and competency regarding these procedural skills were assessed. Considering the study findings, it was observed that the campaign aids in enhancing Nursing skills in IV Cannulation from 21% (pre-campaign) to 89% (post-campaign), reducing the number of patient complaints, and also enhanced patient satisfaction scores from 74.5% to 80.6%.

Index Terms - First Prick, IV Cannulation, Hands-on training, Campaign and Staff Nurses

I. INTRODUCTION

Intravenous (IV) cannulation is a fundamental procedure in healthcare, crucial for delivering medications, fluids, and blood products directly into the bloodstream. However, the success of IV cannulation is often marred by challenges such as patient discomfort, multiple attempts, and the risk of complications like infection and extravasation. These challenges not only affect patient satisfaction but also increase healthcare costs and workload for nurses. Successful peripheral intravenous cannulation depends on several factors, including patient anatomy, catheter size, and clinical expertise. On average, the first-time failure rate for gaining PIV access (PIVA) has been reported to be 12% to 26%.¹ Amidst these challenges, the concept of "First Prick Success campaign" has emerged as a pivotal goal in Indraprastha Apollo Hospital. First Prick Success refers to the ability of healthcare professionals, particularly nurses, to insert an IV catheter successfully on the first attempt. This achievement not only enhances patient comfort and satisfaction but also reduces the risk of complications and optimizes healthcare resources.

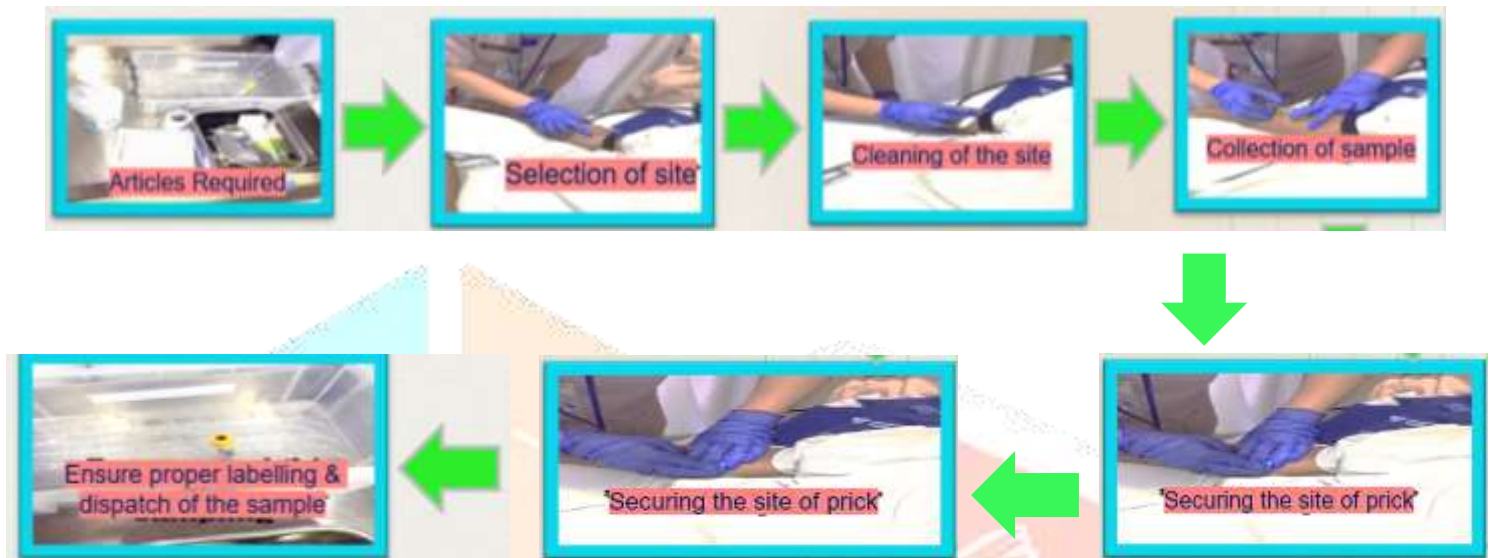
Aims and Objectives of the campaign

- Minimize patient discomfort - to ensure that the patient experiences minimal discomfort during the procedure by accomplishing it successfully with a single needle prick.
- Utilize time and resources efficiently - by avoiding the need for multiple attempts, which can lead to delays and increased costs.
- Increase skill and proficiency – to enhance the skills of the nurse by providing hands on training with simulation techniques.
- To have a uniform policy across the group- To escalate if not succeeded in 2 pricks (no more trials)

II. RESEARCH METHODOLOGY

First Prick Success campaign began in the hospital in the month of August 2023 in order to empower nurses in IV line/Cannulation. This hospital-based study was a quantitative with one group had pre and post-research design. This campaign was to empower the nurses to be successful in first prick for an IV line/Cannulation by assessing their skills and competency through pre and post-training. All wards and ICUs Nurses working in the hospital were trained in IV line/Cannulation. The sample size was 1125 nurses who were trained and were included in both pre and post training practice check.

Guidelines for IV line/Cannulation:



Articles required:

- Clave connector/IV extension
- IV Advanced kit
- Vein scanner (optional/ should be used for difficult cannulation)
- Prefilled syringe flush
- IV cannula
- Gloves
- Alcohol swabs
- Vacutainers

2. Selection of the site: venous site is most likely to last the full length of the prescribed therapy / stay considering veins in the hand, forearm, and upper arm. Antecubital area is avoided, which has a higher failure rate. For infants and toddlers, veins of the scalp are considered, and if not walking, the foot.

3. Cleaning of the site: Cleaning of the area with alcohol swab in a rotatory motion from inner to outer surface for 15 seconds

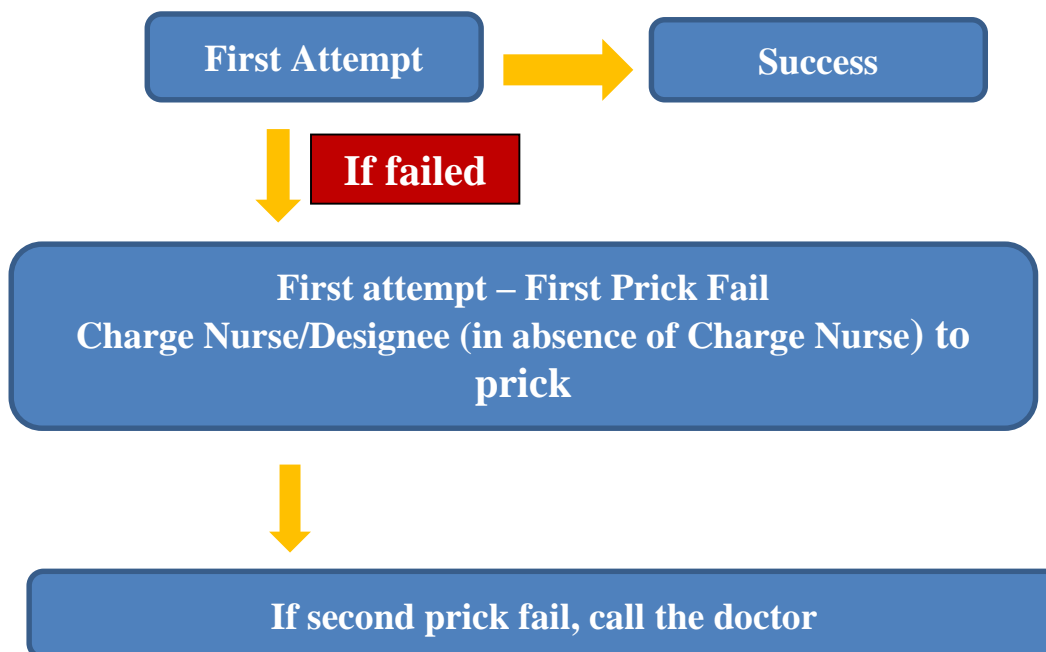
4. Collection of the sample: Collection of the sample in need by connecting a vacutainer holder in place and order of flow need to be followed. (Do not flush prior, if you are collecting sample)

5. Cannulation fixation if started an IV line: To fix the IV line, secure the cannula with a transparent dressing, label need to be done on the dressing with date and time and Clave connector need to be connected and needs to be fixed properly

6. Securing the site of prick: Once the sample is collected, apply pressure on the pricking site till the oozing is stopped

7. Ensure proper labelling and dispatch of the sample: Labelling should be done on the vacutainer before collecting the sample in front of the patient after confirming the identity with the patient. After collecting the sample, dispatch the sample immediately.

Process:



Toolkit: Teach, Train and Test (T3) toolkit was used for practice, implementation and evaluation.

Teach and Train

All staffs including Charge Nurses underwent Hands on training on IV cannulation process with simulation techniques.

Test

5 Success prick tests was conducted from different sites. If not successful, retraining will be conducted for the staff till certified to practice.

Assessment of Staff knowledge and competency was done as per the competency assessment scale as described in Table 1.

Table 1: Competency Assessment tool for First Prick Success

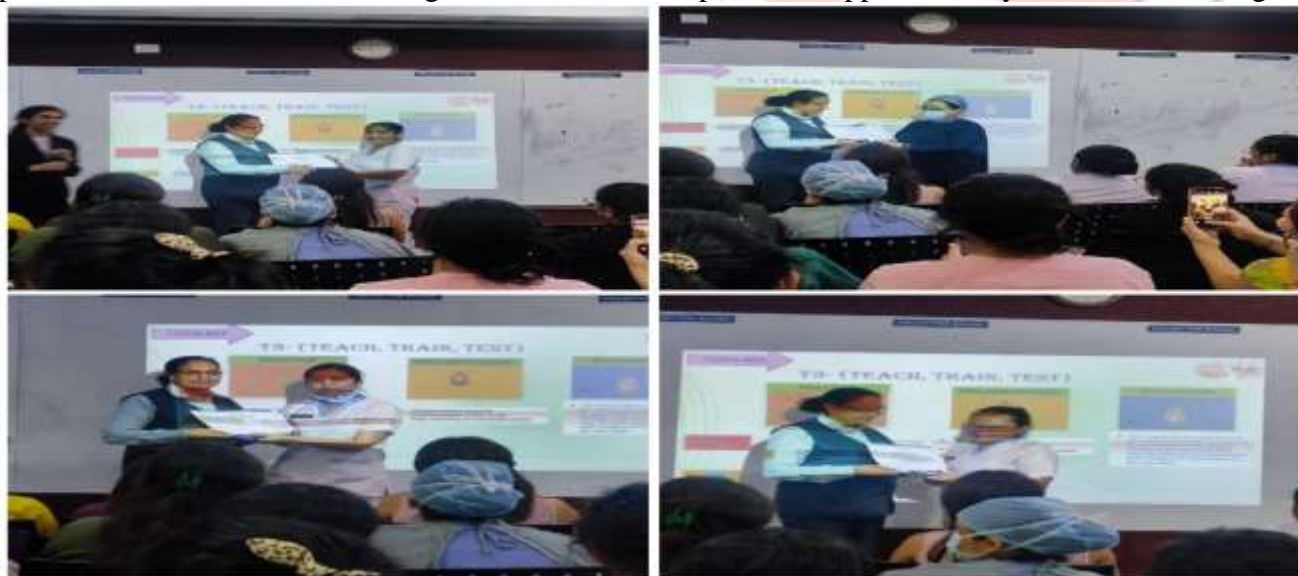
Competency Assessment Scale for 1st prick success toolkit						
Name of the RN:						
Clock No:						
Department:						
Dates of each cannulation till 5 cannulations:						
Patient details						
S.No	Steps	Cannulation 1	Cannulation 2	Cannulation 3	Cannulation 4	Cannulation 5
1	Checks for the prescription with a valid reason for cannulation					
2	Explains the procedure to the patient and obtain a verbal consent for the proceedings					
3	Collects the articles - Use the cannulation tray pre prepared in the unit					
4	Identifies the patient using two patient identifiers					
5	Obtains a Final OK from the patient after explaining the procedure					
6	Follows infection control practices Hand Hygiene Preparation of the site with alcohol swabs ANTT- Aseptic Non Touch					

	Technique (throughout the procedure)					
7	<p>Procedure</p> <p>Ensures patient is in comfortable position</p> <p>Checks the visibility and accessibility of the vein</p> <p>Ensures the site is free from hair and the site is comfortable for the patient</p> <p>Applies tourniquet properly</p> <p>Asks the patient to make a fist till the vein is palpable</p> <p>Cleans the site as per protocol</p> <p>Punctures the site and inserts cannula slowly</p> <p>Releases the tourniquet and after removing the needle advances the cannula carefully</p>					
8	<p>Wait and Watch:</p> <p>Watch for any swelling/Pain/Bleeding</p> <p>Collect the sample in need by connecting a vacutainer holder in place and order of flow need to be followed. (Do not flush prior, if you are collecting sample)</p> <p>Post Sample collection flush the line if starting the IV line</p>					
9	<p>Secure and Clear</p> <p>Secures the cannula with a transparent dressing</p> <p>Labels the dressing with date and time</p> <p>Connects Clave connectors and fixes properly.</p>					
10	<p>Documentation- Documents the procedure with date and time, size of the cannula and any other findings if applicable</p>					
Name of the Assessor:		Signature of the Assessor with Date:				



Fig 1: Glimpses of IV cannulation training provided by external/internal resource

At the end of the campaign, feedback has been taken from the patient about the experience and the most proficient nurses who have the highest successful first prick was appreciated by the Senior Nursing Leaders.



III. RESULTS

The campaign led to the following outcomes:

1. **Enhancement of Nursing skill and competency in IV Cannulation**

Pre and post-test evaluations were conducted for the staff who participated in the campaign and the results are described in Fig 2, 3 and 4.

The campaign helps the Nurses to become competent in first prick and enhance their skills and knowledge in IV Cannulation.

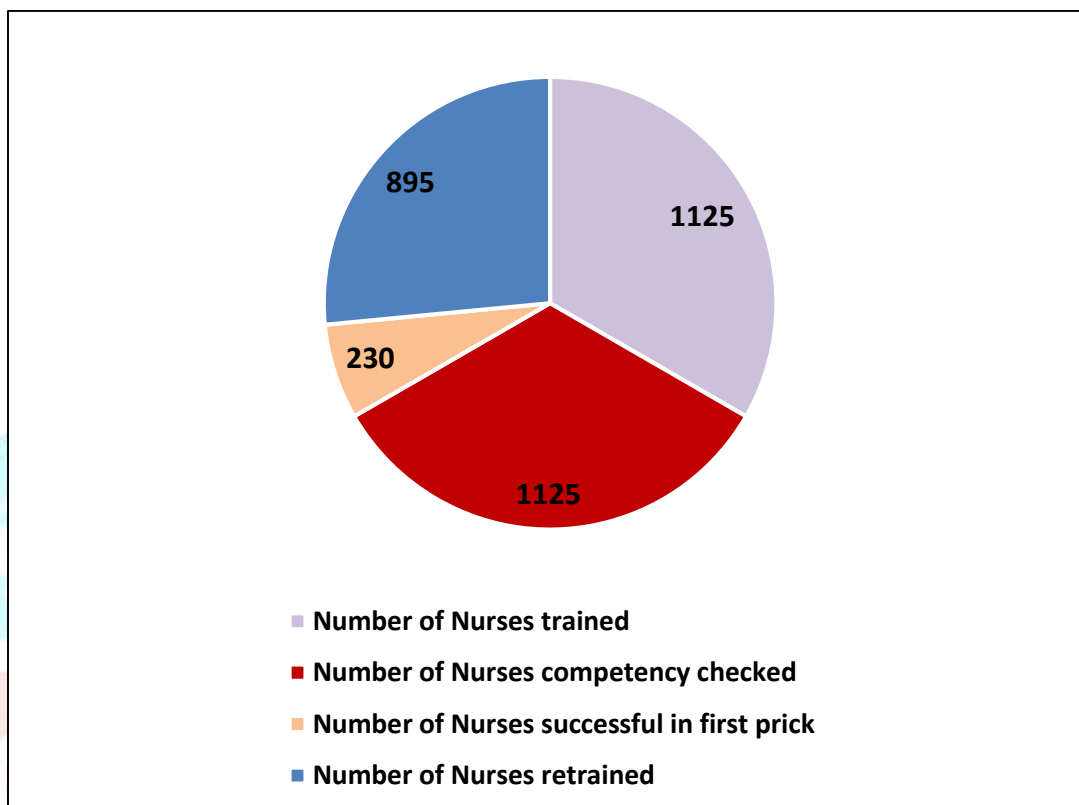


Figure 3: Pre-test evaluation

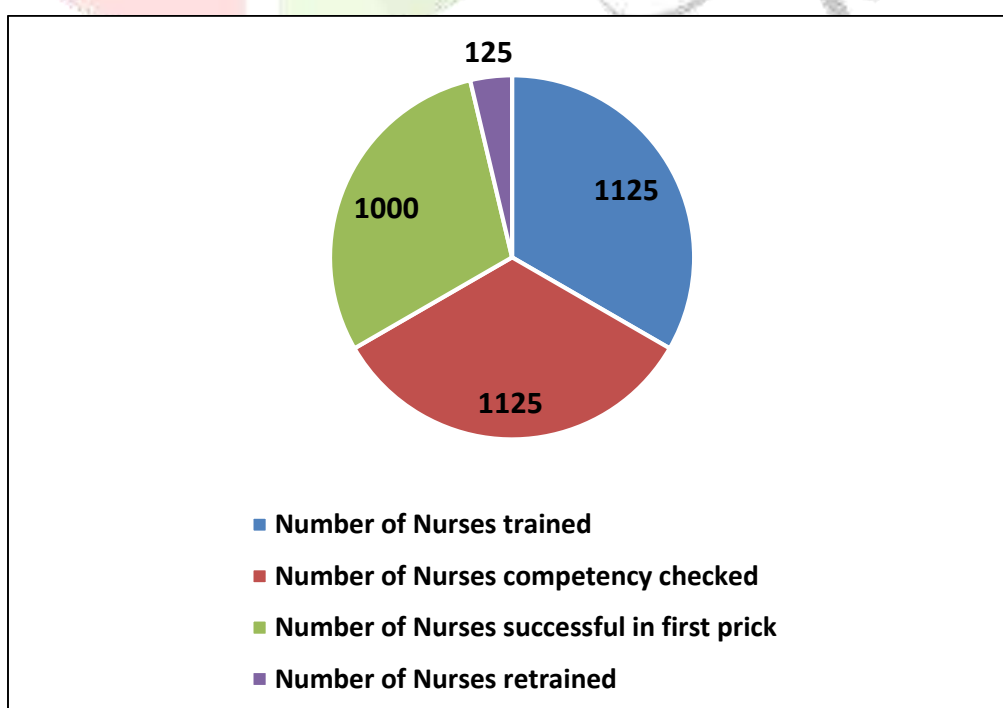


Figure 4: Post-test evaluation

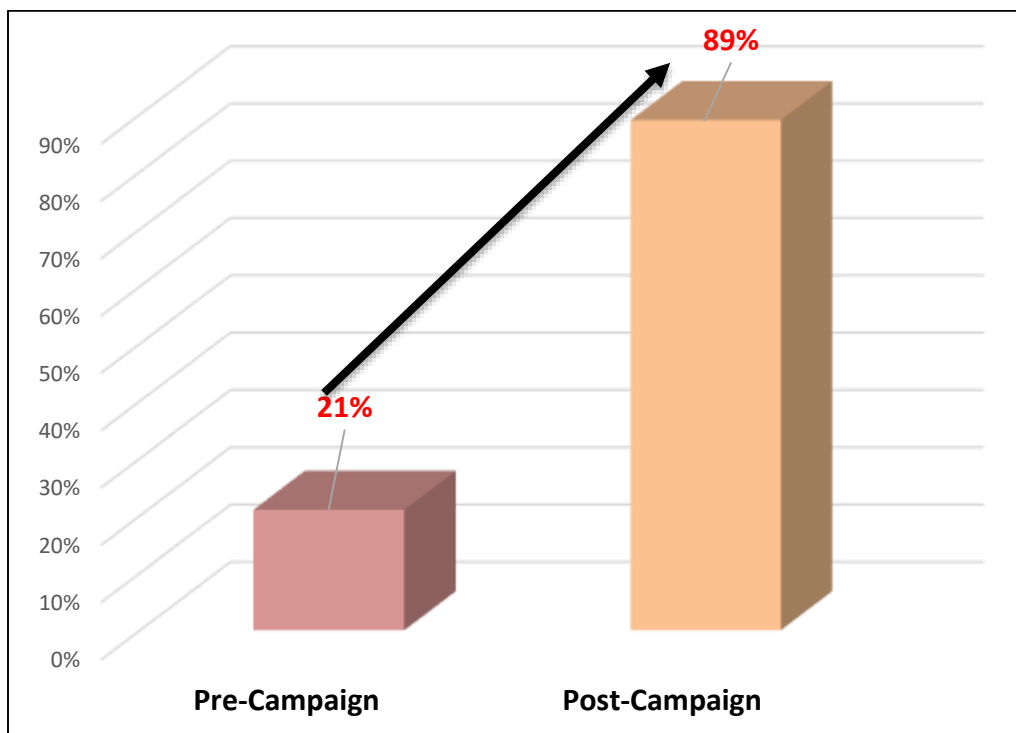


Fig 5: Practice score of the nurses Pre and Post training on First Prick

2. Reduction in the number of patient complaints based on IV Cannulation

The campaign had an effective impact on reducing the number of patient complaints based on a lack of nursing skills in IV Cannulation. Nurses were trained in performing IV Cannulation through hands-on training by external personnel.

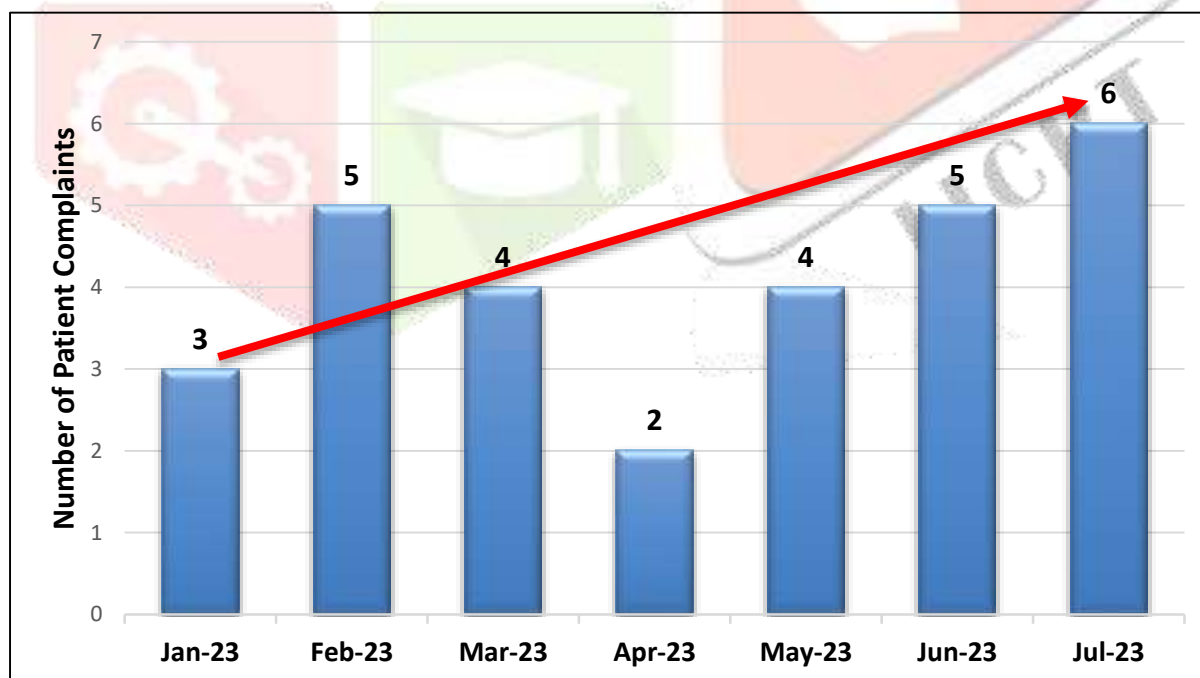


Fig 6: Analysis of Patient Complaints (Pre-campaign)

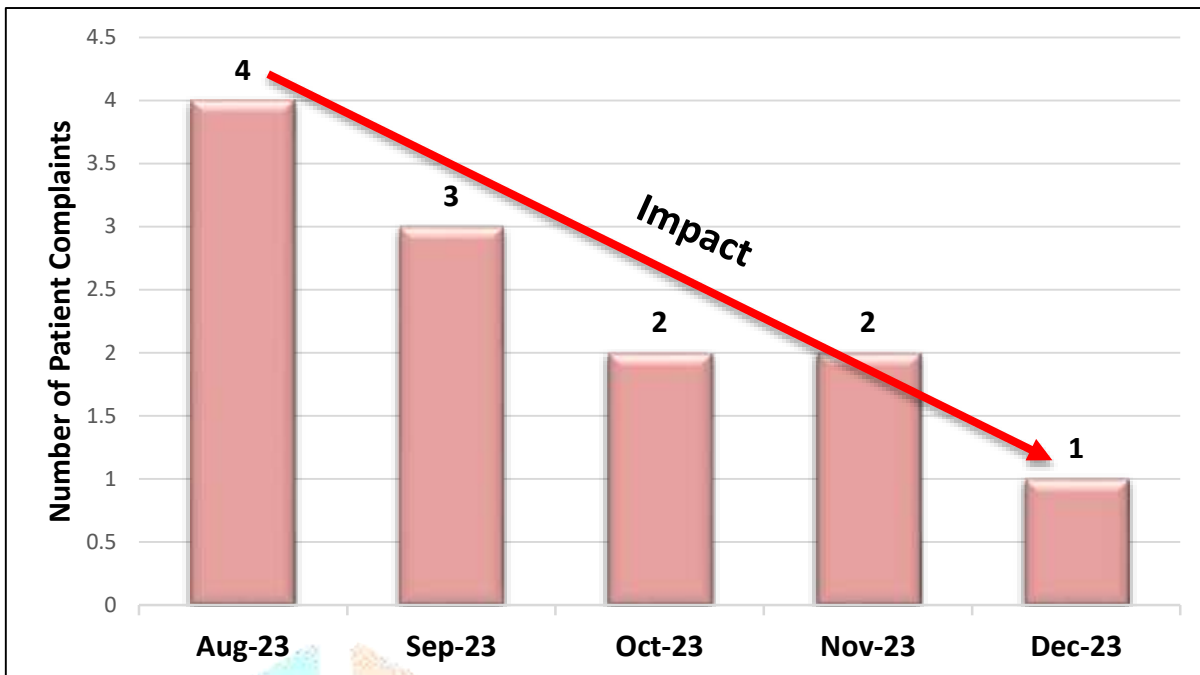


Fig 7: Analysis of Patient Complaints (Post-campaign)

3. Enhanced Patient Satisfaction

Our Patient satisfaction scores (Net Promoting Score) enhanced with improved IV Cannulation by skilled and certified nurses.

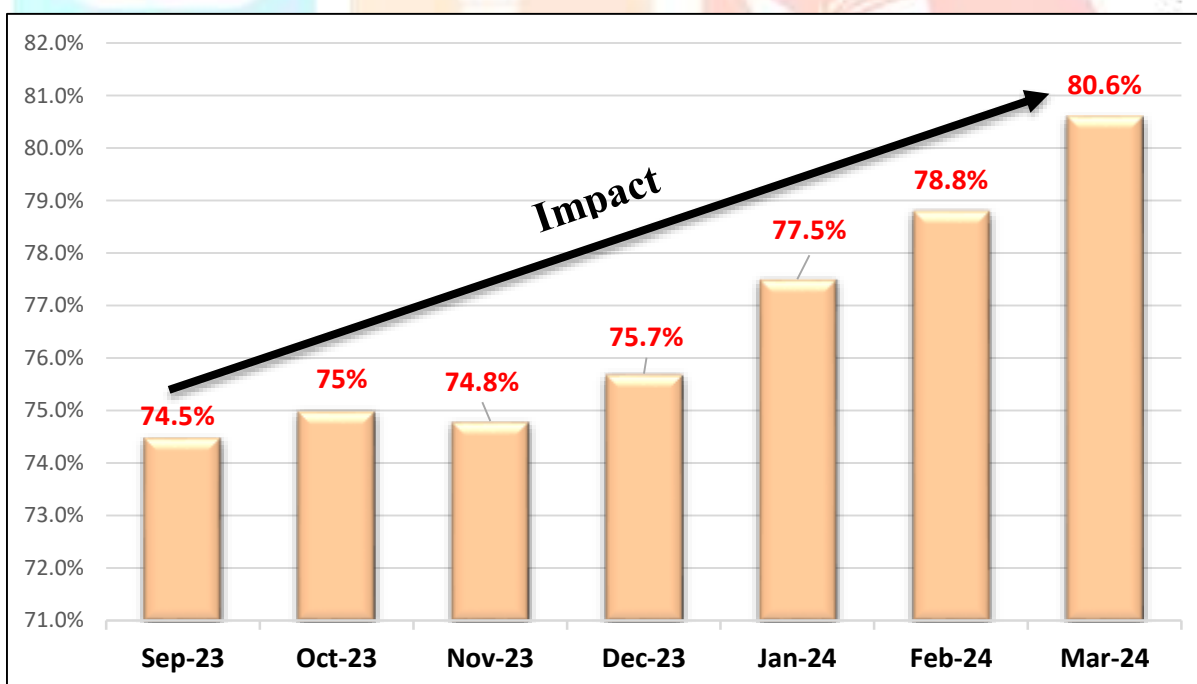


Fig 8: Enhanced Patient Satisfaction Score

IV. DISCUSSION

“First Prick Success” campaign has shown the importance of empowering nurses in IV Cannulation to enhance patient care and safety. Hands-on training with simulation technique is effective for overall improvement and enhancement of Knowledge and skills among nurses from all departments irrespective of patient exposure/years of experience²

Nurses play a vital role in educating patients about their treatment plans and ensuring their active participation in the care process. Empowered and certified nurses can provide comprehensive education on IV therapy, including proper care of the insertion site and signs of complications, empowering patients to take ownership of their health and recovery.

All the Nurses were evaluated based on competency assessment tool by assessing their skills and competency in IV Cannulation in which four nurses were found proficient in their first prick and had the highest successful score. These nurses got certification for performing IV cannulation from BD Company and were appreciated by senior nursing leaders during the central briefing.

V. CONCLUSION

The implementation of simulation-based training has significantly improved the knowledge, competency, and skills of nurses.

In conclusion, empowering nurses in IV cannulation is essential for promoting patient safety, optimizing healthcare delivery, and enhancing nursing practice. By investing in training, resources, and support for nurses, hospital can harness the full potential of nursing expertise in providing safe, effective, and patient-centered care.

VI. REFERENCES

1. <https://www.sciencedirect.com/science/article/abs/pii/S0735675719301834>
2. Educational intervention to improve intravenous cannulation skills in paediatric nurses using low-fidelity simulation: Indian experience - PMC (nih.gov)

VII. ETHICAL APPROVAL AND INFORMED CONSENT

Prior Permission was taken from the Group Director of Nursing and Nursing head of Indraprastha Apollo Hospital. Information was given to the patient about the research project and their consent was taken before data collection. Written consents were taken from all the participants' Nurses before data collection.

