

Original Article

## ASSESSMENT OF NURSES KNOWLEDGE, PRACTICES AND CHALLENGES IN CARE AND MAINTENANCE OF INTRAVENOUS CANNULAS

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### Abstract

#### Background & Objective:

The peripheral venous catheter is the common and essential intravenous (IV) device, frequently used in medical practices. However, this practice carries inherent risks, leading to nosocomial infections, extended hospital stays & increased healthcare costs. Hence study was commenced with a objective to assess nurses knowledge, practices and challenges in care and maintenance of intravenous cannulas.

#### Material & Methods:

An observational cross sectional study was conducted at GVP Hospital, Visakhapatnam during July and August 2023 among 200 Nurses. A validated semi-structured self-administered questionnaire was administered to randomly selected nurses based on inclusion & exclusion criteria. It includes Knowledge on care and maintenance of peripheral intravenous catheter, measured through premises with a normal scale ("yes," "no," and "I don't know"). Nurse's practice was measured. Barriers found were analysed based on the similarity of answers. Data was entered in MS Excel and analysed by using SPSS software version 21.

**Results:** About 88% of study population had proper knowledge & 86% were followed practice for care & maintenance of intravenous cannulas. Barriers identified were incooperated patients (28%), given to strong medication made the vein easy block (22%), small vein prone to blockage and damage (51%).

**Conclusion:** In the present study most of the nurses were having good knowledge of caring & maintenance of peripheral iv cannulation but there were still some nurses who did not have proper knowledge & experience for using IV cannulation which could be a potential risk factor for patient safety.

**Keywords:** Challenges, IV cannula, Knowledge, Practices,

## **INTRODUCTION:**

• Peripheral intravenous cannulation (PIC) is a widely performed procedure involving the insertion of a temporary plastic tube into a vein through the patient's skin for IV infusion and medication administration. The peripheral venous catheter is the common and essential intravenous (IV) device, frequently used in medical practices.<sup>[1]</sup> However, this practice carries inherent risks, leading to nosocomial infections, extended hospital stays & increased healthcare costs. It is an integral part of professional nursing practice in all the healthcare institutions.<sup>[2]</sup> which is done for different purposes like IV infusion and medications.<sup>[3]</sup> With approximately 60% of inpatients undergoing PIC annually and contributing to hospital acquired infections, nurses play a crucial role in preventing complications. Nurses play a vital role in the prevention of catheter related blood stream infections.<sup>[4]</sup> Monitoring and assessing peripheral venous catheter (PVC) site are part of routine nursing care.

## **AIM & OBJECTIVE:**

• To assess nurses knowledge, practices and challenges in care and maintenance of intravenous cannulas.

## **Methodology:**

Study design: An observational cross sectional study

Study setting: Conducted at Anaesthesia department, GVP Hospital, Visakhapatnam.

Study period: July-August 2023

Study population:

### • **Inclusion criteria:**

- i. Nurses who were working in this institute at least for 6 months
- ii. both male and female.

### • **Exclusion criteria:**

- i. Refused

Sample size: 200

Calculated based on following formula. Based on previous study Ostei C et al.,<sup>[4]</sup> who found that 84.72% of nurses doing correct practices on iv cannulation

$$n = 4pq/l^2$$

$$= 4 * 84.72 * 15.28 / 5 * 5 = 5178.08 / 25$$

$$= 200$$

Where p is proportion of participants doing correct practises was 84.72%

$q=100-p$

$l$ =allowable error =5%

The minimum sample size required is 200.

Ethical considerations: Written informed consent was obtained from all patients in their own language before starting study.

Study tool: A validated semi-structured self-administered questionnaire was administered to randomly selected nurses based on inclusion & exclusion criteria. It includes Knowledge on care and maintenance of peripheral intravenous catheter, measured through premises with a normal scale ("yes," "no," and "I don't know"). Nurse's practice was measured. Barriers were recorded.

Statistical analysis: Data was entered in MS Excel and analysed by using SPSS software version 21. Categorical data was represented as percentages and chi-square test was be used to know statistical significance. P value <0.05 was considered as statistically significant.

## OBSERVATION & RESULTS:

**Tab 1: Gender distribution of study population**

GENDER	FREQUENCY	PERCENTAGE
MALE	20	10%
FEMALE	180	90%
TOTAL	200	100%

Out of 200 study participants, majority 180(90%) were female and remaining 20(10%) participants were male.

**Tab 2: Education of study population**

EDUCATION	FREQUENCY	PERCENTAGE
General nursing	144	72%
Bachelor in nursing	56	28%
Total	200	100%

Majority of the study population were done general nursing 144(72%) and about 56(28%) of the study participants were done bachelor in nursing.

**Tab 3 : Position of staff nurse**

Position	Frequency	Percentage
Staff nurse	160	80%
Senior staff nurse	40	20%
Total	200	100%

In this study about 160(80%) of the study participants were staff nurses and 40(20%) were senior staff nurses.

**Tab 4: Work experience**

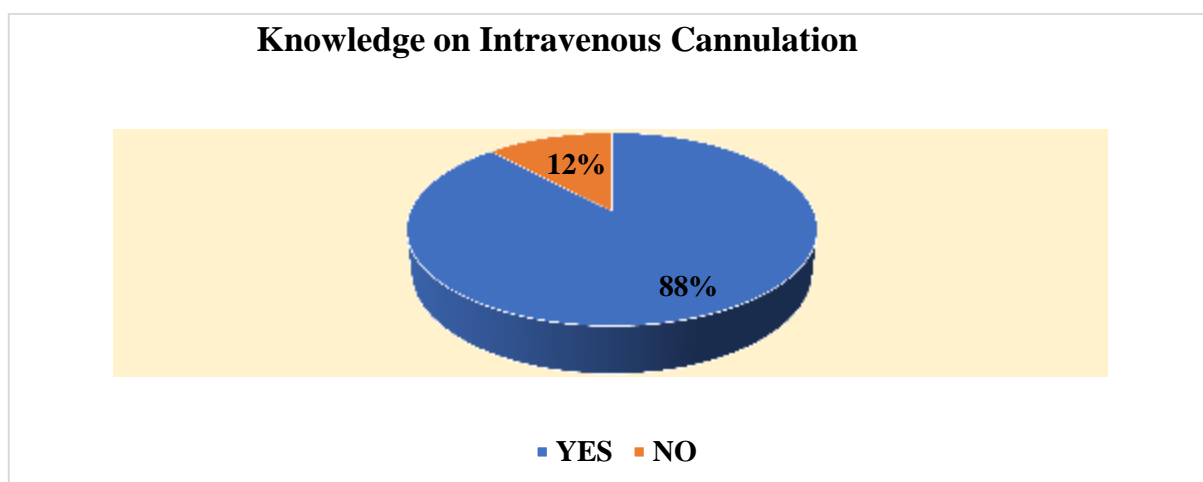
Work experience	FREQUENCY	PERCENTAGE
< 1 year	64	32%
1-2 years	46	23%
2-3 years	50	25%
> 3 years	40	20%
TOTAL	200	100%

In the present study about 64(32%) were having < 1 year experience, 46(23%) were having 1to2 years of work experience, 50(25%) were having 2 to 3 years work experience and 40(20%) were having > 3 years work experience.

**Tab 5 : Working department**

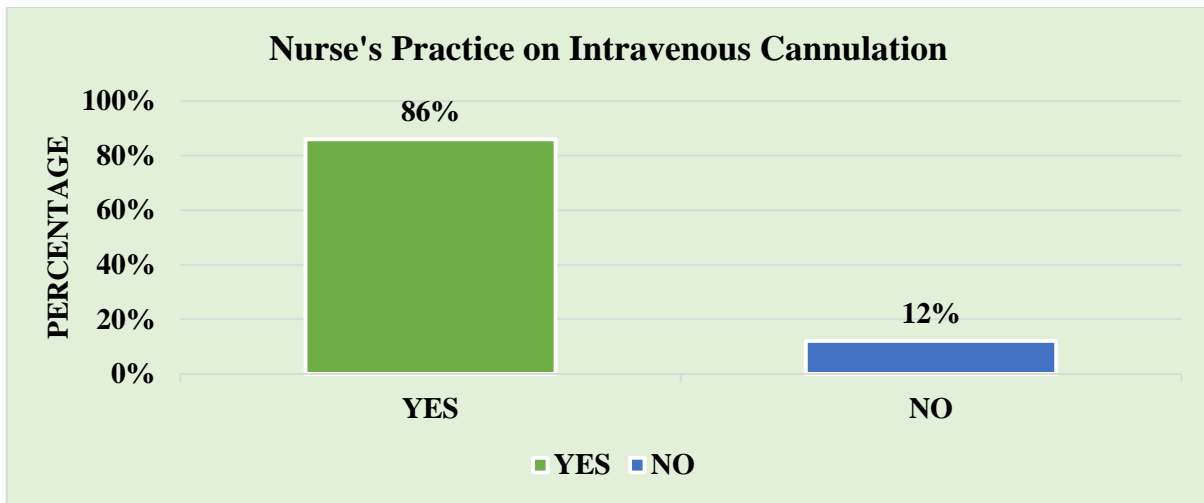
Working department	FREQUENCY	PERCENTAGE
Critical care unit	86	43%
General medical & surgical wards	62	31%
OBG wards	20	10%
Paediatric wards	18	9%
Dialysis units	14	7%
Total	200	100%

In the present study about 86(43%) of the study population working in critical care unit department, 62(31%) were working in General Medical & Surgical wards, 20(10%) were working in OBG wards, 18(9%) were working in paediatric wards and 14(7%) were working in Dialysis units.



**Figure 1: Distribution of study participants based on knowledge on intravenous cannulation.**

- About 88% of study population had proper knowledge for care & maintenance of intravenous cannulas.



**Figure 2: Distribution of study participants based on practice of nurses on intravenous cannulation.**

About 86% were followed practice for care & maintenance of intravenous cannulas.

**Table 6: Barriers**

Barriers	Frequency	Percentage
Uncooperated patients	44	22%
Too strong medication make the vein easy block	56	28%
Small vein prone to blockage and damage	100	50%
<b>Total</b>	<b>200</b>	<b>100%</b>

In the present study the common barriers identified were uncooperated patients (28%), given to strong medication made the vein easy block (22%), small vein prone to blockage and damage (51%).

## DISCUSSION:

In the present study About 88% of study population had proper knowledge for care & maintenance of intravenous cannulas. Similar findings were observed in a study done by Osti C et al.<sup>[4]</sup> who found that 82.47% of nurses had adequate knowledge on IV cannulation. In the present study About 86% were followed practice for care & maintenance of intravenous cannulas. Similar findings were observed in a study done by Osti C et al.,<sup>[4]</sup> who found that 84.72% were doing correct practices on IV cannulation.

## CONCLUSION:

- About 88% of study population had proper knowledge & 86% were followed practice for care & maintenance of intravenous cannulas.
- Barriers identified were incooperated patients (28%), given to strong medication made the vein easy block (22%), small vein prone to blockage and damage (51%).
- In the present study most of the nurses were having a good knowledge of caring & maintenance of peripheral iv cannulation but there were still some nurses who did not have proper knowledge & experience for using IV cannulation which could be a potential risk factor for patient safety.
  
- **Conflicts of interest:** No
  
- **Source of funding :** Nil

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