

# A Study to Assess the Effectiveness of IV Refresher Course on Pediatric IV Cannulation Among Registered Nurses

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## ABSTRACT

Pediatric intravenous (IV) cannulation is an integral part of modern medicine and is practiced in every health care setting. Children have approximately half the number of usable veins than adults, but they have less accessible veins. Pediatric IV cannulation can be challenging. Nurses performing IV procedures in children should demonstrate skill and knowledge in performing IV applications. Simulation provides effective and efficient knowledge and skills regarding pediatric IV cannulation. So the investigator decided to conduct the study in Apollo DRDO Hospital Hyderabad with a purpose to assess the effectiveness of IV Refresher course on Pediatric IV cannulation among Registered nurses who is working in Pediatric units. A quantitative pre experimental one group pre-test and post test design was selected to assess the effectiveness of IV refresher course on pediatric IV cannulation among the registered nurses. For this study total 30 nurses were selected by using purposive sampling technique. The study was conducted in Apollo DRDO Hospital Hyderabad. Data was collected with the help of Demographic Variables, structured knowledge questionnaires and Modified Intravenous Cannulation Skills Check List, with the permission from Nursing Head and Ethical consideration from Apollo Hospital Jubilee hills. The Results showcased that the pre-test mean Knowledge score was +8.63 and Standard Deviation (SD)  $\pm 1.79$  whereas the post-test

mean Knowledge score of was  $\pm 11.9$  and Standard Deviation (SD)  $\pm 1.54$ . The calculated paired 't' value was (8.03) which is more than the table value (1.699) at 0.05 level of significance. On job hands on training which helps the Register nurses to develop necessary confidence and competencies in any given procedure. so Nursing staff can be able to practice procedure properly with the patient. The IV refresher course had enabled the nurses to develop skills in Intravenous cannulation for the pediatric patients.

**Keywords:** Simulation, Knowledge, practice, skills on Pediatric IV Cannulation, on-job training, IV refresher course

## INTRODUCTION

Intravenous cannula is a little plastic tube that has been requires frequent access to the blood stream. Intravenous cannula insertion needs a sterile technique as it enters in to the client's vein. Intravenous cannulation and its care are a therapeutic procedure in patient care<sup>1</sup>.

Pediatric patients are often hospitalized for infections, chronic illnesses, or for conditions which has undetermined causes. Hospitalization is often required when intravenous (IV) cannulation for the parenteral supply of fluids, blood and blood components, medication, or nutritional support is necessary. For ensuring medical

treatment, IV therapy is probably the most common invasive acute care procedure<sup>2</sup>.

It is estimated to 1.8 million peripheral IV catheterizations (PIVCs) are performed in pediatric patients annually. Skillful procedures are essential especially in pediatric patients, because the vascular structures are not adequately developed and the extremities are moved excessively during procedures. To prevent unnecessary repeated interventions, the procedure must be performed skilfully. A suitable peripheral veins are used for intravenous cannulation. It is an important to use the PIVCs properly for an extended dwell time without the complications, after successful placement of a catheter. Mean PIVC dwell time was 6 hours, mostly at 24 to 72 hours' intervals, in 1596 pediatric patients. The nurse must palpate and visualize the entire extremity where the cannulation is done for complications such as swelling, skin breakdown, phlebitis, or infiltration. Besides, regular IV care is effective in reducing complications' recommended that PIVCs should be monitored using the maintenance bundle prompt removal, inspect hourly, vein patency by the intermittent flush of 0.9% sodium chloride flush, clean hands, scrub the hub with 2% chlorhexidine gluconate and 70% alcohol swab. Concluded that phlebitis is the most common complication. In the literature, it was determined that cumulative risk for complication<sup>2</sup>.

It is important to train the nurses on intravenous cannulation for the pediatric patients, so the investigator has decided to do this study.

## **MATERIAL AND METHODS**

**Research approach:** Quantitative approach

**Research design:** Pre experimental one group pre-test and post test research design was adopted for the study.

**Sample:** Registered Nurses who are working in the Pediatric ward, PICU, Neonatal ICU and Emergency Department of the Apollo DRDO Tertiary care hospital, Hyderabad.

**Sampling technique:** purposive sampling technique.

**Sample size:** 30 Registered Nurses working in Pediatric ward PICU, Neonatal ICU and Emergency Department of the Apollo DRDO tertiary care hospital, Hyderabad.

**Sampling criteria:**

**Inclusion criteria:**

- ❖ The staff between the age group of 22 yrs to 28yrs
- ❖ Both male and female
- ❖ The staff who interested to participate of this study
- ❖ Those who are working in Neonatal ICU, pediatric ward, Pediatric ICU and Emergency department.

**Exclusion criteria:**

- ❖ Nurses who are on leave
- ❖ Nurses who are working in other than Neonatal ICU and pediatric ward.
- ❖ Nurses who are not willing to participate in the study.
- ❖ Nurses who are having less than 3month experience

**Tools:** Data was collected with the help of Demographic Variables, structured knowledge questionnaires and Modified Intravenous Cannulation Skills Check List.

**Setting of the study:** Pediatric ward, PICU, Neonatal ICU and Emergency Department of the Apollo DRDO Tertiary care hospital, Hyderabad.

**Ethical considerations:** Permission taken from nursing head prior to data collection and Ethical consideration taken from Apollo Hospitals Jubilee Hills Hyderabad. Consent was taken from the staff nurses before collecting the data

**Data Collection Process:**

Formal permission taken from the concerned authorities from Apollo DRDO hospital Hyderabad. The subject was assembled in the auditorium as per schedule. The purpose of the study was explained to them and consent was taken from the Registered Nurses.

Pre test was conducted of 30 respondents by using the knowledge questionnaire regarding pediatric IV cannulation. After the completion of pre test the respondents were

trained and the respondents was practiced in pediatric manikin. About pediatric IV cannulation and all the queries that the subject had were clarified. Post test for knowledge assessment and practice skills conducted on manikin after 1week of the training intervention. After post test

researcher thanked and appreciated all the respondents for their good work.

## RESULTS

Data was analyzed by using descriptive and inferential statistics.

The analysis of the data organized under the following sections.

### SECTION I: Frequency and percentage distribution of subjects according to the demographic variables.

Table 1: Frequency and percentage distribution of Registered Nurses in Pediatric units [n=30]

SL NO.	DEMOGRAPHIC VARIABLES	FREQUENCY	PERCENTAGE
<b>1 Age(In Years)</b>			
a)	22-23yrs	10	33.33%
b)	24-25yrs	13	43.33%
c)	26-27yrs	2	6.66%
d)	28yrs	5	13.33%
<b>2 EDUCATIONAL QUALIFICATION</b>			
a)	GNM Nursing	9	30%
b)	B Sc Nursing	21	70%
c)	M Sc Nursing	NIL	0%
<b>3 UNIT FREQUENCY %</b>			
a)	EMERGENCY	8	26.67%
b)	PEDIATRIC WARD	10	33.33%
c)	NEONATAL ICU	4	13.33%
d)	PICU	8	26.67%
<b>4 EXPERIENCE FREQUENCY %</b>			
a)	4 - 6MONTHS	1	3.33%
b)	6MONTHS-1 YR	10	33.33%
c)	1YR-5YRS	14	46.67%
d)	>5YRS	5	16.67%

Data presented in the above table revealed that, Majority of the study participants were in the age group of 22-25years. Most of the participants (70%) were Degree Graduate and (30%) were diploma graduate. Majority

of (73.33%) the Registered Nurses were working in Pediatric and Neo natal units and majority of them (80%) had 6 months to 5 years experience.

### Section II: Pre and Post test Knowledge scores of Staff Nurses regarding Pediatric IV Cannulation.

Table 2: Frequency and percentage Distribution of subjects by Pre and Post-test Knowledge scores.[n=30]

knowledge	Score Intervals	Pre-Test Knowledge Score		Post-Test Knowledge score	
		Frequency	Percentage%	Frequency	Percentage%
POOR	0-5	1	3.33%	NIL	0%
AVERAGE	6-10	27	90.00%	5	16.67%
GOOD	11-15	2	6.67%	25	83.33%
TOTAL		30	100%	30	100%

The above table shows that as per the assessment of pre-test, Registered nurses 3.33%(1) had poor knowledge, 90% (27) had Average skills, 6.67%(2) had good skills and in post test 83.33%(25) had adequate Skills and 16.67%(5) had Average Knowledge regarding Pediatric IV Cannulation.

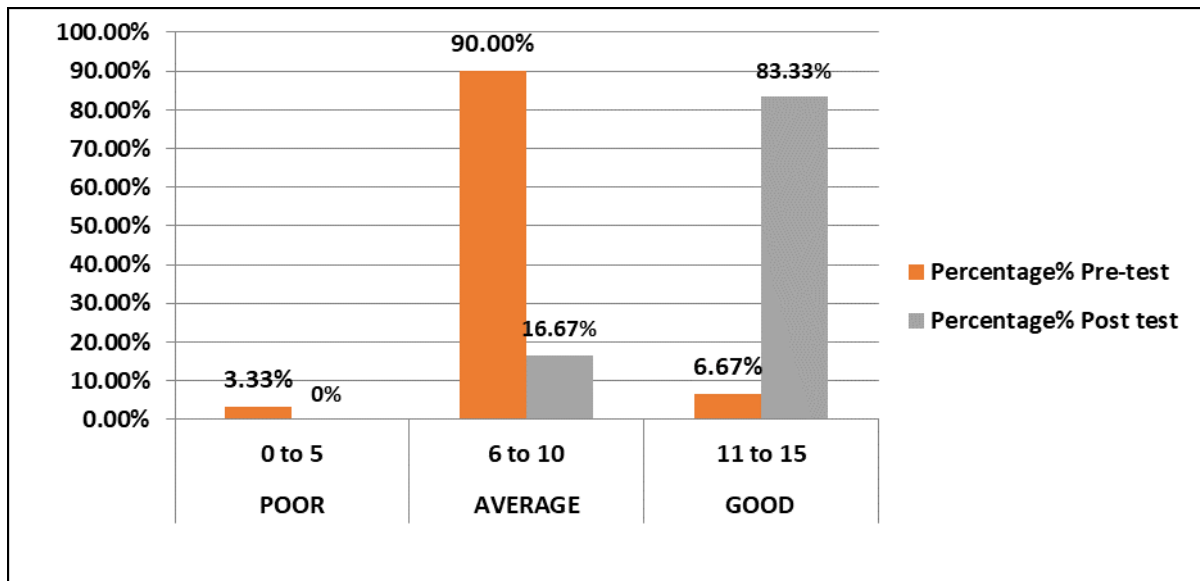


Figure1: Pre and Post test Knowledge score percentage regarding the pediatric IV cannulation

### Section III: Post-test Skills score of Staff nurses regarding Pediatric IV Cannulation.

Table 3: Frequency and percentage Distribution of the post training skill scores of the pediatric IV cannulation. [n=30]

Practice	Score Intervals	Post-Practice skills score	
		Frequency	Percentage%
POOR	0-5	NIL	0%
AVERAGE	6-10	6	20.00%
GOOD	11-15	24	80.00%
TOTAL		30	100%

Above table shows that in post test 80 % (24) had adequate Skills and 20 % (6) had average knowledge regarding Pediatric IV Cannulation.

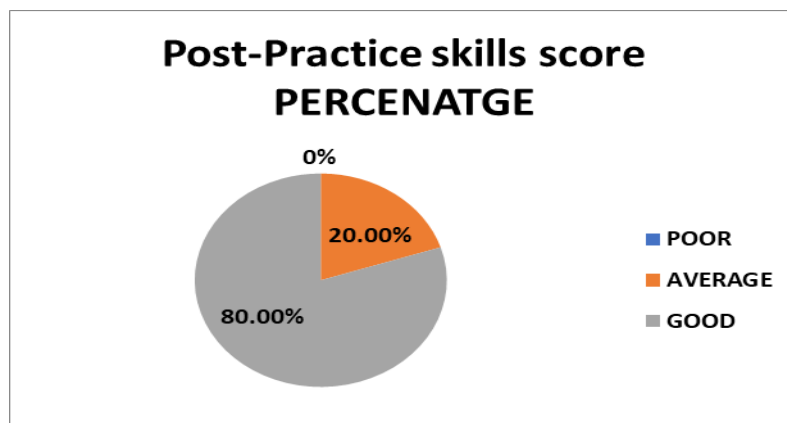


Figure 2: Post practice skill score percentage regarding the pediatric IV cannulation

### Section IV: Effectiveness of the IV refresher course in increasing the knowledge of the pediatric nurses.

Table 4: Competition of 't' test to assess the effectiveness of the IV refresher course.

Knowledge score	Mean	Standard Deviation	Mean difference	Standard Error of mean different	t' test
Pre test	8.63	1.79	3.27	±0.407	8.03
Post test	11.9	1.54			

The IV refresher course is found to be effective in increasing the knowledge of the pediatric IV cannulation, as the 't' test value (8.03) is more than the table 't' test value (1.699) at 0.05 level of significance.

## DISCUSSION

The results of the study clearly indicated that, after introduction of IV refresher course, all the Registered nurses had developed good knowledge and skills in the IV cannulation. The calculated 't' test value (8.03) is more than the table 't' test value at 0.05 level of significance. That shows the IV refresher course want to be effective increasing the knowledge and skills of the registered nurses regarding pediatric IV cannulation.

## CONCLUSION

Since Nursing is a practice discipline the findings of the study revealed that in-service education for nursing staffs should always be the plan with Simulation which helps the Register nurses to develop necessary confidence and competencies in any given procedure. So Nursing staffs can be able to practice procedure properly with that the patient may benefit with safe cannulation and also the risk and complications of could endanger the patient's life. So, in the clinical area, nurses must be knowledgeable and competent in every aspect of IV cannulation.

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**Conflict of Interest:** None

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**Ethical Approval:** Approved

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