

The effectiveness of demonstration on IV cannulation techniques on knowledge and practice among staff nurses.

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Abstract:

Intravenous cannulation becomes more widely used in today's healthcare environment nursing faculty requires more knowledge in relation to IV Cannula insertion and its care . The nurse needs to have competence in knowledge as well as practice of IV cannulation. Knowledge and practice regarding IVT among nurse's important key component to provide quality care to the patient with IVT and prevent complication related to IVT.

Materials and Methods: This descriptive study was conducted among 30 staff nurses in Apollo Specialty Hospital, Madurai. Convenience sampling techniques was used to select the required staff .The data was collected through Self structured questionnaires and competency check list to assess the nurses knowledge and observe the competency check list for assess nurses practical skills.

Results: The post test mean score of knowledge was 34.47 with SD 1.96. In pre test level of practice regarding IV cannulation among staff nurses were assessed majority 28 (90%) had good practice and 2(6%) had moderate practice regarding iv cannulation among staff nurses. In the post test practice 22(75%) had excellent practice and 8(26%) had good practice in IV cannulation among staff nurses. Pre test the mean 34.47 with SD 1.96.In post test mean 38.93 with SD0.474.

Conclusion: The findings of the present study concluded majority of the staff nurses had excellent knowledge and good practical skills regarding IV cannulation.

Key Word: IV cannulation, knowledge, practice, competency check list.

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I. Introduction

Peripheral venous devices were introduced more than 40 years. IV therapy is important in the modern medicine, millions of patients are receiving infusion therapy for life saving and for correcting the metabolic disorder. Peripheral IV cannulation is most widely used procedure in a hospital or community setting.

Fluid and electrolyte replacement through IVT is the important component for critical patient to maintain hemodynamic status. Thrombophlebitis is a common complication associated with IVT due to the infection and responsible reason for increased morbidity and mortality.Venous complication related to IVT should be prevented by health workers especially nurses to avoid the complication. The nurse needs to have competence in knowledge as well as practice of IV cannulation.. Knowledge and practice regarding IVT among nurse's important key component to provide quality care to the patient with IVT and prevent complication related to IVT.In today's world health care nurses must process up to date knowledge while practicing intravenous therapy for safe nursing practice as well as excellent quality of care. Nurses are responsible for provision of safe, patient centered and effective care to the patients. Intravenous cannulation becomes more widely used in today's healthcare environment nursing faculty requires more knowledge in relation to venous catheter insertion and its care Training programme is necessary to update their knowledge, skill and competence in intravenous cannulation. Approved polices, education, clinical skills, procedure based on current evidence can be implemented and evaluated for the change in practice. This will help to learn and improve knowledge and practice of staff nurses regarding IV cannulation techniques.

II. Material And Methods

This descriptive study was conducted among 30 staff nurses in Apollo Specialty Hospital, Madurai. Convenience sampling techniques was used to select the required staff .The data was collected through Self structured questionnaires and competency check list to assess the nurses knowledge and observe the competency check list for assess nurses practical skills.

Study Design: One group pretest post test design

Study Location: This was a tertiary care teaching hospital based study done in Apollo Specialty Hospital, Madurai. **Study Duration:** October 2021 – January 2022. **Sample size:** 30 staff Nurses. **Sample size calculation:**

Subjects & selection method: A study to assess the effectiveness of demonstration on knowledge and practice regarding IV cannulation techniques among staff nurses. The study will be conducted by Apollo Speciality hospital, Madurai. We will select 30 staff nurses. we have arranged an external trainer to take the IV cannulation demonstration class. The training involved a combination of different type of teaching methods like lecture cum demonstration.

The following topics will be covered in the training programme,

- ✓ IV cannulation
- ✓ Anatomical and physiological consideration
- ✓ Patient consideration in IV therapy
- ✓ Therapy consideration
- ✓ Initiation of therapy
- ✓ Dressings of IV site
- ✓ After care of catheter
- ✓ Managing complications of infusions therapy
- ✓ Hands on training on DUMMY ARM. - Practical exercise of IV cannulation insertion on a model of injectable training arm.

Knowledge related pre and post test containing 20 questions. Each caring 4 options each question have one mark and maximum score is 20.

Practice related pre and post training contain 20 questions. Each questions have one mark maximum score is 20. Scoring methods of pre and post practice related training programme such as,

- 0-Not Followed
- 1-Parially Compliance
- 2-Full Compliance

Section A – Description of the demographic variables.

Section B - Assessment of knowledge and practice regarding IV cannulation techniques among staff nurses working in Apollo specialty hospital, Madurai.

Section C - Effectiveness of Demonstration on IV cannulation techniques, knowledge, practice of how to insert the IV cannula to the patient among staff nurses

Section D –Relationship between knowledge and practice regarding IV cannulation techniques among staff nurses.

Inclusion criteria:

1. Staff nurses who are registered with either diploma or degree in nursing
2. Nurses attending the morning and evening shift
3. Nurses working in Emergency and Critical care area and ward.

Exclusion criteria:

1. Nurse Aid

Procedure methodology

The study was done in 4 months from the month of October2021 – January 2022. Quantitative research approach one group pretest post test design was used for the study. The research variable was the knowledge and practice regarding IV Cannulation techniques among the 30 Registered Nurses at Apollo Hospitals Madurai.

The tool of data collection was Knowledge related pre and post test containing 20 questions. Each caring 4 options each question have one mark and maximum score is 20. Practice related pre and post training contain 20 questions. Each questions have one mark maximum score is 20. Scoring methods of pre and post practice related training programme such as 0-Not Followed , 1-Parially Compliance , 2-Full Compliance

Ethical commission permission and formal consents from each respondent were obtained to conduct the study. Based on the inclusion criteria, convenience sampling was used to obtain the sample. Using the prepare tool the study was conducted in Apollo Speciality Hospital, Madurai among staff nurses

Statistical analysis

The data will be analysed using descriptive and inferential statistics. Descriptive statistics like mean, mode, median, and percentage standard deviation will be used. Inferential statistics like ‘t’ test and Chi- square methods will be used It consists of 20 Knowledge related MCQs and 20competency check lists.

III. Result

The study intends to assess the effectiveness of demonstration on IV cannulation techniques on knowledge and practice among staff nurses. The knowledge related structured questionnaire and practice related competency check list was used to collect the data. The investigate used to descriptive and inferential statistic. Standard deviation used to test the difference between knowledge and practice related pre and post test.

Section I: Findings related to Pre test Knowledge score of staff regarding IV cannulation process:

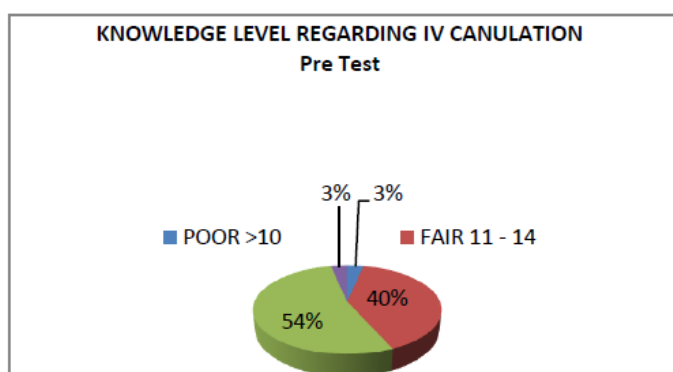
no=30

Variable	Range	Mean	median	Standard Deviation
Knowledge	10-20	14.3	14	2.54

The Knowledge score obtained by the staff Range From 10-20 out of the total score of 20 with a mean of 14.3and median 14.the standard deviation calculated was 2.54 which shows mild dispersion of knowledge score

Graph 1 : Chart and Graph shows the pre test assessment of staffs on knowledge regarding IV cannulation.
n=30

KNOWLEDGE LEVEL REGARDING IV CANULATION		
Pre Test		
SCALE	CRITERIA	PERCETAGE
POOR	>10	3.40%
FAIR	11 - 14	40%
GOOD	15 - 18	53.20%
EXCELLEN T	19 - 20	3.40%



The result depicted that of the pretest shows 3.4 % of excellent Knowledge, 53.2% with good knowledge, 40% of fair Knowledge and 3.4 % in poor Category.

Section II: Findings related to Post test Knowledge score of staff regarding IV cannulation process :

no=30

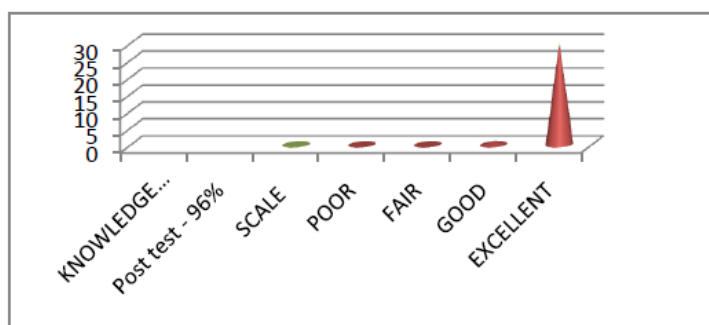
Variable	Range	Mean	median	Standard Deviation
Knowledge	17-20	19.2	19.5	0.929

The Knowledge score obtained by the staff Range From 17-20 out of the total score of 20 with a mean of 19.2and median 19.5.the standard deviation calculated was 0.929 which shows very mild dispersion of knowledge score .The findings clearly shows that there is a remarked change in knowledge of staffs regarding IV cannulation procedure after a structured teaching program conducted .

Graph 2: Chart and Graph shows the post test assessment of staffs on knowledge regarding IV cannulation

n=30

KNOWLEDGE LEVEL REGARDING IV CANULATION		
Post test		
SCALE	CRITERIA	PERCETAGE
POOR	>10	
FAIR	11 - 14	
GOOD	15 - 18	5.00%
EXCELLENT	19 - 20	95%



The result depicted that of the post test shows 95% of excellent Knowledge ,5% with good knowledge on knowledge regarding Iv Canulation .

Section III: Findings related to Pre test Knowledge score of staff regarding IV cannulation Procedure Practice:

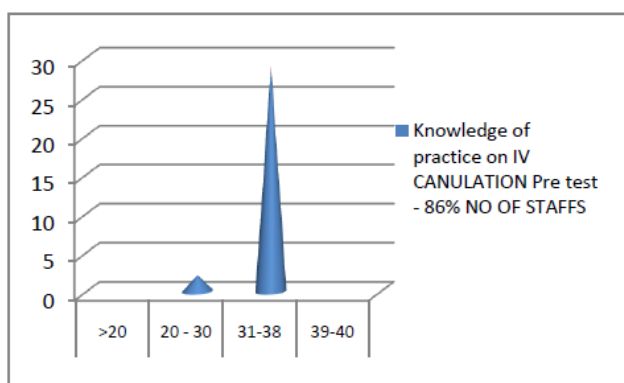
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Variable	Range	Mean	median	Standard Deviation
Knowledge	30-40	34.47	34.5	1.96

The Knowledge score obtained by the staff Range From 30-40 out of the total score of 40 with a mean of 34.47and median 34.5.the standard deviation calculated was 1.96 which shows mild dispersion of knowledge score.

Graph 3:Chart and Graph shows the pretest assessment of staffs knowledge regarding IV cannulation procedure

Knowledge of practice on IV CANULATION			
Pre test			
SCALE	CRITERIA	NO OF STAFFS	PERCETAGE
POOR	>20		
FAIR	20 - 30	2	6.66%
GOOD	31-38	28	93.33%
EXCELLENT	39-40		



The result depicted that of the pretest shows 93.33% with good knowledge ,6.66 % of fair Knowledge on IV cannulation procedure on patient .

Section IV: Findings related to Post test Knowledge score of staff regarding IV cannulation Procedure Practice:

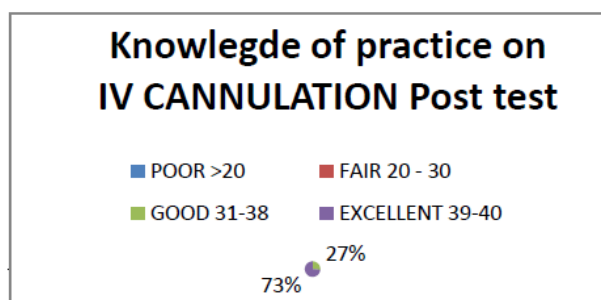
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Variable	Range	Mean	median	Standard Deviation
Knowledge	38-40	38.93	39	0.474

The Knowledge score obtained by the staff Range From 38-40 out of the total score of 40 with a mean of 38.93and median 39.the standard deviation calculated was 0.474 which shows very less dispersion of knowledge score when compared with pre test analysis.

Graph 4 : Chart and Graph shows the post test assessment of staffs on knowledge regarding IV cannulation procedure .

Knowledge of practice on IV CANULATION			
Post test			
SCALE	CRITERIA	NO OF STAFFS	PERCETAGE
POOR	>20		
FAIR	20 - 30		



The result depicted that of the post test 73.44 % with excellent knowledge, 26.66% with good knowledge on IV cannulation procedure on patient. IV cannulation is the Valuable step in nursing process.

FINDINGS RELATED TO KNOWLEDGE ON IV CANNULATION TECHNIQUES AMONG STAFF NURSES.

In pre test level of knowledge regarding iv cannulation techniques among staff nurses were assessed majority 19-20(3%) had excellent, and 15-18(60%) had good and 11-14(40%) had fair, less than (3%) had poor knowledge, in post test 19-20(95%) had excellent, and 15 -18(5%) had good knowledge on iv cannulation techniques. pre test the mean score of knowledge was 19.12 with SD 0.929. The post test mean score of knowledge was 34.47 with SD 1.96.

FINDINGS RELATED TO PRACTICE ON IV CANNULATION TECHNIQUES AMONG STAFF NURSES

In pre test level of practice regarding IV cannulation among staff nurses were assessed majority 28 (90%) had good practice and 2(6%) had moderate practice regarding iv cannulation among staff nurses. In the post test practice 22(75%) had excellent practice and 8(26%) had good practice in IV cannulation among staff nurses. Pre test the mean 34.47 with SD 1.96. In post test mean 38.93 with SD 0.474.

IV. Discussion

The study intends to assess the effectiveness of demonstration on IV cannulation techniques on knowledge and practice among staff nurses. The knowledge related structured questionnaire and practice related competency check list was used to collect the data. The investigate used to descriptive and inferential statistic. Standard deviation used to test the difference between knowledge and practice related pre and post test.

DESCRIPTION OF THE SAMPLE CHARACTERISTICS

A nurses age group of 23(70%) were in the age group of 21-23 years. 4(10%) were in the age group of 23-25 years. 3(5%) were in the age group of above 25 years of age. Regarding sex of the nurses majority 100% were female. The majority of the nurses completed in degree of nursing 24 (80%), 6(20%) were in diploma in nursing. The majority of the nurses were in critical care area 19(60%), 11(40%) nurses were in ward. The data showed Majority of the nurses were in 11(50%) less than 6 month experience, and 11 (50%) one year experience. Majority of the nurses were in 1 to 2 year 4(20%) and more than 2 year 4(20%).

FIRST OBJECTIVE

To assess the knowledge regarding IV cannulation techniques among staff nurses before demonstration

In pre test level of knowledge regarding iv cannulation techniques among staff nurses were assessed majority 19-20(3%) had excellent, and 15-18(60%) had good and 11-14(40%) had fair, less than (3%) had poor knowledge.

SECOND OBJECTIVES

To assess the practice of nurses on IV cannulation techniques before demonstration.

In pre test level of practice regarding IV cannulation among staff nurses were assessed majority 28 (90%) had good practice and 2(6%) had moderate practice regarding IV cannulation among staff nurses.

THIRD OBJECTIVE

To assess the knowledge regarding IV cannulation techniques among staff nurses after demonstration.

In post test 19-20(95%) had excellent, and 15 -18(5%) had good knowledge on iv cannulation techniques. pre test the mean score of knowledge was 19.12 with SD 0.929. The post test mean score of knowledge was 34.47 with SD 1.96.

FORTH OBJECTIVE

To assess the practice of nurses on IV cannulation techniques after demonstration.

In the post test practice 22(75%) had excellent practice and 8(26%) had good practice in IV cannulation among staff nurses. Pre test the mean 34.47 with SD 1.96. In post test mean 38.93 with SD 0.474.

V. Conclusion

The risk and complications of IV cannulation could endanger the patients life. So in the clinical area nurses must be knowledgeable and competent in every aspects of IV cannulation. The findings of the present study concluded majority of the staffs had excellent knowledge and majority of the staffs had good practical competent skills regarding IV cannulation. The knowledge related self structured questionnaire and practical related DUMMY ARM training significantly increase the staff nurses knowledge and practical skills. Therefore, further interventions and re-interventions are highly required so as to adhere to the standardized process and prevent the complications of IV cannulation in the future.

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