

Knowledge, Attitude and Practices about Peripheral Venous Catheter among Junior Residents and Nursing Staff: A Cross Sectional Study

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Abstract: Peripheral venous catheter (PVC) or intravenous (IV) cannulation is most frequently performed clinical skill by junior residents, nurses and interns. For the safety and comfort of the patients, successful first time insertion of IV cannula is utmost important. Intravenous access exposes patients to local and/or systemic infectious complication. Considering this, an understanding of the peripheral intravenous cannulation procedure is paramount. Knowledge, Attitude and Practices about peripheral venous catheter among junior residents and nursing staff. To study knowledge, attitude and practice of junior residents and nursing staff about PVC procedure. The present KAP study was conducted at tertiary care teaching of hospital of western Maharashtra. Junior residents and nursing staff who were working in the clinical department of hospital were included using simple random method. An anonymous pre determined, structured and pilot tested questionnaire was used for data collection. Knowledge regarding infiltration, extravasations, complication of intravascular cannulation procedure and aseptic non touch technique (ANTT) were found to be poor among both groups. Residents showed poor attitude for the questions like different gauge/size of IV cannulas, aseptic non touch techniques etc. On other hand nursing staff had poor attitude towards documentation. Both junior residents and nursing staff reported poor practice while performing PIVC procedure. Based on the findings, the present study concluded that junior residents and nursing workers are poorly prepared for one of the most common clinical skills they will perform.

Keywords: Intravenous cannula, junior residents, Nursing Staff, Knowledge, Attitude, Practice.

INTRODUCTION

Peripheral venous catheter (PVC) or intravenous (IV) cannulation is most frequently performed clinical skill by junior residents, nurses and interns [1]. Almost every patient who admitted in hospital receive necessary IV therapy like fluid, drugs, parental nutrition, contrast media or blood components through PVC during their stay [2]. For the safety and comfort of the patients, successful first time insertion of IV cannula is utmost important. Intravenous access exposes patients to local and/or systemic infectious complication [3]. To prevent this complication evidence based knowledge is essential. It is the duty of health care professional to follow standard operating procedure (SOP) like hand washing etc. before any clinical procedure; hand washing often underperformed in the health care facility even though is one of the easiest clinical task.

Considering this, the health professional's approach and understanding of the Peripheral venous catheter (PIVC) procedure is paramount. KAP studies

are useful for creating awareness in certain groups and can provide an 'educational diagnosis' of certain specific topics. There is a paucity of data on the knowledge, awareness, and practices (KAP) regarding PVC in Indian setting. With this background present cross sectional study was conducted at tertiary care medical teaching hospital to assess knowledge, awareness and practice about peripheral venous catheter (PVC) among junior residents and nursing staff.

Objectives

To study knowledge, attitude and practice of junior residents about PVC procedure to study knowledge, attitude and practice of Nursing staff about PVC procedure

MATERIALS AND METHODS

Institutional Ethical Committee's permission (IEC) was obtained before starting of the study. The present study was conducted at tertiary care teaching of hospital of western Maharashtra. All junior residents and nursing staff who were working in the clinical

department of hospital since six months and more were included as study population. Those who not willing to give informed consent and those who were absent or unavailable were excluded from the study. A pilot study was done for validation, practicality and applicability of KAP [4] questionnaire. It was carried out using predesigned questionnaire among 10 residents and nursing staff. According to answers obtained and difficulties faced during pilot study, rectification was done and questionnaire modified accordingly.

List containing data regarding total number and name of residents and nursing staffs was obtained from medical college's students sections and Medical Superintendents (MS) office respectively. Total 328 residents (122) and nursing staffs (206) were working in the institute during study period. Considering 50% correct knowledge among participants at 5% level of significance and using 10% absolute precision the required sample size was calculated using following formula;

$$n = Z^2_{(1-\alpha/2)}(1-P) / d^2$$

Where

n = sample size

Z =statistic for a level of confidence, for the level of confidence of 95%, Z value is 1.96 P = was considered as 50%

d = absolute precision (10%=0.1)

$$n = \{1.96 \times 1.96 \times 0.5\} / (0.1)^2$$

Total calculated sample size was 97, which were rounded of to 100. In each category i.e. junior resident and nursing, 50 participants were included using simple random method to achieved required sample size. New list was made in alphabetical order for each residents and nursing staff's category. Lottery system was used to recruit study participants. Study questionnaire consisted two parts. In part I, socio-demographic data was recorded and information of KAP was recorded in part II of the questionnaire.

STATISTICAL ANALYSIS

Questionnaires were checked for their completeness and data entry and coding was done in Microsoft excel. Descriptive and inferential analysis like mean, standard deviation, confidence interval and Chi-square test were used for the analysis

OBSERVATIONS AND RESULTS

In present knowledge, attitude and practice (KAP) study, 50 residents and 50 nursing staffs were included. The mean age of the residents and nursing staffs was 29.96 ± 3.73 (95% CI 28.99 -31.02) and 39.46 ± 5.87 (95% CI 37.79-41.13) respectively. (Table 01) Out of 50 junior residents 29 (58.00%) were males and 21 (42.00%) were females. In nursing category male and females participants were 17 (34.0%) and 33 (66.0%) respectively. (Graph 01) The knowledge of junior residents and nursing staff regarding components of intracanth found to be similar. In both groups 46% (23) participants had correctly identified all the components of intracanth. Regarding knowledge of appropriate vessels for cannulation, 52% (26) junior residents and 76%

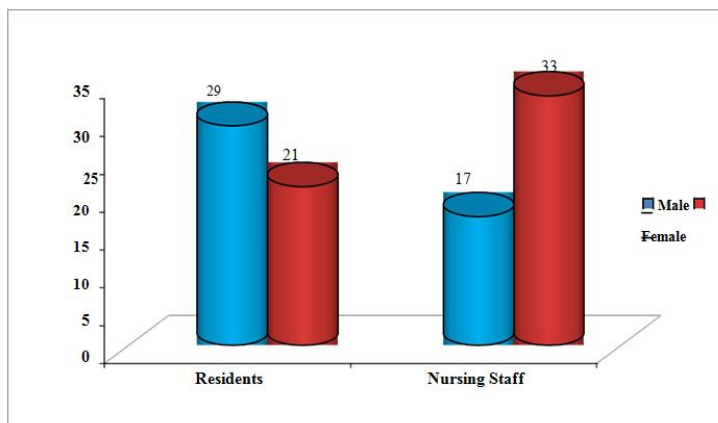
Nursing staff had correct knowledge. Forty four percent (22) junior residents and fifty two percent (26) nursing staffs had the correct knowledge of different sizes (gauge) of intracanth. Knowledge regarding infiltration, extravasations, complication of intravascular cannulation procedure and aseptic non touch technique (ANTT) were found to be poor among both categories (Table 02)

Regarding attitude, 44% junior residents and 34% nursing staffs responded that training on mannequin is essential to learn PIVC. Fifty four junior residents and 32% nursing staffs considered supervision/assistance is must during PICV procedure. Both groups responded that site selection is more important while performing PIVC than the selecting appropriate gauge size of intracanth. Attitude towards use of Aseptic Non Touch Technique (ANTT) found to be somewhat similar in both groups. Seventy four percent junior residents admitted that it is essential to document the procedure and complication associated PIVC, on other hand only 19% nursing staff considered to document procedure and complication (Table 03).

Hand washing before and after PIVC procedure was not practiced by 78% junior residents and 76% nursing staff. Wearing hand gloves before performing PIVC was also not followed by majority of them. Practice of Aseptic Non Touch Technique (ANTT) and documentation of procedure and complication associated with PIVC was also not followed by most of them (Table 04).

Table-01: Age wise distribution of the participants (n=100)

Sr. No.	Age groups	Health care staffs		Total (%)
		Residents	Nursing staff	
1.	≤ 25 years	07 (14.0%)	00 (0.00%)	07 (07.0%)
2.	26-30 years	18 (36.0%)	04 (08.0%)	22 (22.0%)
3.	31 to 35 years	21 (42.0%)	10 (20.0%)	31 (31.0%)
4.	36 to 40 years	04 (08.0%)	16 (32.0%)	20 (20.0%)
5.	≥ 41 years	00 (0.00%)	20 (40.0%)	20 (20.0%)
	Total	50 (100%)	50 (100%)	100 (100%)
	Mean ± SD	29.96 ± 3.73	39.46 ± 5.87	



Graph-01: Genderwise dsitribution of the participants

Table-02: Knowledge of the participants regarding Peripheral intravenous catheter (PIVC)

Sr. No.	Questions	Junior residents		Nursing staff	
		Present	Absent	Present	Absent
1.	Components of PIVC	23(46%)	27(54%)	23 (46%)	27 (54%)
2.	Appropriate vessels for venepuncture	26 (52%)	24 (48%)	38 (76%)	12(24%)
3.	Size/gauge of PIVC	22 (44%)	28(56%)	26 (52%)	24(48%)
4.	Knowledge on Infiltration	13 (26%)	37 (74%)	17 (34%)	33(66%)
5.	Knowledge on Extravasations	14 (27%)	36(72%)	11 (21%)	39 (78%)
6.	Knowledge on complication	19 (38%)	31(62%)	24 (48%)	26(52%)
7.	Knowledge on ANTT*	16 (32%)	34(68%)	14 (28%)	36(72%)

*ANTT: Aseptic Non Touch Technique

Table-03: Attitude of the participants regarding Peripheral intravenous catheter (PIVC)

Sr. No.	Questions	Junior residents	Nursing staff
		Responses (%)	
1.	Training on mannequin required	22 (44%) Essential	17 (34%) Essential
		28 (56%) Not Essential	33 (66%)Not Essential
2.	Supervision/assistance for PIVC procedure	27 (54%) Required	16 (32%) Required
		23 (46%) Not required	34 (68%) Not required
3.	Importance of site selection	33 (66%) Essential	37 (74%) Essential
		17 (34%) Not Essential	13 (26%) Not Essential
4.	Knowledge on size/gauge	25 (50%) Required	29 (58%) Required
		25 (50%) Not required	21 (42)Not required
5.	Aseptic Non touch technique (ANTT)	29 (58%) Required	33 (66%) Required
		21 (42%) Not required	17 (34%) Not required
6.	Documentation of procedure & complication	37 (74%) Essential	9 (19%) Essential
		13 (26%) Not Essential	41 (81%) Not Essential

Table-04: Practice of the participants regarding Peripheral intravenous catheter (PIVC)

Sr. No.	Questions	Junior residents	Nursing staff
		Responses (%)	
1.	Hand washing before & after procedure	11 (22%) Yes	12 (24%) Yes
		39 (78%) No	38 (76%)No
2.	Wearing gloves before procedure	28 (56%) Yes	27 (54%) Yes
		22 (44%) No	23 (46%)No
3.	Practicing ANTT*	09 (18%) Yes	11 (22%) Yes
		41 (82%) No	39 (78%) No
4.	Documentation of procedure & complication	20 (40%) Yes	11 (22%) Yes
		30 (60%)No	39 (78%) No

*ANTT: Aseptic Non Touch Technique

DISCUSSION

The present knowledge, attitude and practice (KAP) study was conducted among junior residents and nursing staffs of tertiary care teaching hospital of medical college. According age classification nursing staffs were more elder as compared to residents and also had more female proportion. In a study conducted by Carr JP et.al¹ fifty-eight percent of participants were female and 41.7% male. In both junior residents and nursing group knowledge regarding infiltration, extravasation, PIVC associated complication and Aseptic Non Touch Technique (ANTT) was found to be poor. Somewhat similar finding reported in a study conducted at university college hospital of Ireland [1].

Majority of junior residents showed poor attitude for the questions like training of PIVC on mannequin and importance of having correct knowledge regarding size of the intracanth. Apart from mannequin training, nursing staff showed poor attitude for the questions like supervision/assistance for PIVC and documentation of procedure and its complication.

In present study both junior residents and nursing staff reported poor practice while performing PIVC procedure. Many of the study participants neither washing their hands before and after the procedure nor wearing gloves while performing IV cannulation. Documentation of procedure or its complication and use of ANTT was practice poorly by most of them. Study conducted by Carr JP *et al.*[1] also reported poor practice of hand washing, documentation and Aseptic Non Touch Technique (ANTT)

CONCLUSION

This study shows that junior residents as well as nursing staff had poor knowledge, attitude and practice regarding peripheral venous catheter (PIVC). Orientation/induction program and continue medical education (CME) should be conducted at college level to improve knowledge, attitude and practice of health care workers.

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