

THE KNOWLEDGE AND PRACTICE REGARDING CARE OF PERIPHERAL INTRAVENOUS (IV) ACCESS AMONG ICU NURSES

Durgesh Kumar Jaiswal¹, Rajesh Kumar Sharma^{2*}, Sonika Agarwal³, Harleen Kaur⁴, Sanchita Pugazhendhi⁵

¹Nurse Practitioner Resident & Educator, T.S. Misra University Medical College & Hospital, Amausi, Anora, Lucknow, Uttar Pradesh

^{2*}Professor, Himalayan College of Nursing, Swami Rama Himalayan University, Jolly Grant, Dehradun, Uttarakhand, India

³ Professor, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Jolly Grant, Dehradun, Uttarakhand, India

⁴Associate Professor, Himalayan College of Nursing, Swami Rama Himalayan University, Jolly Grant, Dehradun, Uttarakhand, India

⁵ Principal, Himalayan College of Nursing, Swami Rama Himalayan University, Jolly Grant, Dehradun, Uttarakhand, India

Abstract

Introduction: Peripheral intravenous cannulation insertion most important and challenging clinical skill performed by professional nurses or doctors. Successful intravenous cannulation depends on distending the peripheral veins and selection of an appropriate site and cannulation device. Nurses are key factors in performing the procedure should be proficiently trained because many complications may arise from peripheral intravenous cannulation. **Methodology:** A non-participatory observational research study to assess the Understanding and application regarding care of peripheral IV access among nurses of critical care units of Himalayan Hospital, Dehradun, Uttarakhand. Critical Care Units were selected by conveniently & 70 study participants were selected by Simple Random sample technique (Lottery method). **Result:** The Study findings shows that the Understanding level was adequate (60%), the application level was moderate 96%. There was only association between gender and application-level score of staff nurse working in ICU. **Conclusion:** The study was concluded that in the end, it is observed that the staff nurse had adequate Understanding regarding peripheral intravenous access, and moderate level of application regarding peripheral intravenous access. The study result concluded that there is a need to improve the awareness application regarding peripheral intravenous access among staff nurses.

Key words- Understanding, Application, Peripheral Intravenous.

INTRODUCTION

Insertion of intravenous access device like cannula, needs manual skills, professional competency, Understanding about the anatomy and physiology of the vascular system. Intravenous cannula's are small hollow device which are inserted into vein and used frequently for administration of different drugs, fluids, blood, nutrition, for sampling and other purposes.³ Peripheral venous cannulation is the most common method used for intravenous therapy. There are most recognized indications and contraindications for peripheral venous cannulation.⁴

It is one of the most common invasive procedures that nurses perform, and it carries a high risk incidence of peripheral vein extravasation of about 1% to 6.5%.⁵ With other complication like phlebitis 25.8% to 31.6%⁸ and thrombophlebitis from 3.7% - 67.24%.¹⁰ According to a systematic review the incidence of infection is 0.1–0.2/100 by catheters or 0.2–0.9/1,000 catheter days.⁵

Peripheral intravenous cannulation insertion most important and challenging clinical skill performed by professional nurses or doctors. Successful intravenous cannulation depends on Distending the peripheral veins and selection of an appropriate

site and cannulation device. cannulation Understanding will help the professional to decide the site, type, use and care for the patient who are receiving intravenous therapy.⁴

According to one study the phlebitis rates reported were as high as 80% with the rates in most hospitals ranging between 20% and 80%. Nurses are key factor in performing the procedure should be proficiently trained because many complications may arise from peripheral intravenous cannulation.⁵

Nurses play a vital role in insertion, maintenance and care of cannula. The various complications can be decreased by a nurse-led expert insertion team, standardized care and maintenance protocols, high insertion volumes, novel catheter material and continuous quality-improvement techniques that must be implemented and evaluated regularly.¹⁹

Nurses have high Understanding but their applications are not relevant as per their Understanding levels. Nurses who are good at planning and carrying out nursing care with Understanding, skill and confidence are better promoter for their specialty. Nurses are practicing within a dynamic and evolving health care environment and therefore they are required to develop their

Understanding, skill and attitude. This study will help to created new Understanding to scientific community.²¹

Use of proper techniques are beneficial in avoiding complications such as use of hand hygiene, aseptic technique, appropriate IV cannula insertion and size, administration of medication and changes on the insertion site. Role of documentation and identifications of the peripheral cannulation site changes.

MATERIALS AND METHODS

A non-participatory observational research study to assess the Understanding and application regarding care of peripheral IV access among nurses of critical care units of Himalayan Hospital, Dehradun, Uttarakhand. Critical Care Units were selected by conveniently & 70 study participants were selected by Simple Random sample technique (Lottery method).

A structured Understanding questionnaire was developed with the following components:

1. Baseline demographic data. 2. Structured Understanding questionnaires regarding Understanding and application regarding care of peripheral IV access among nurses and 3. Self-reporting After obtaining the permission from the Institutional Ethical Committee, Administrative permission was obtained from Principal, Himalayan College of Nursing & Chief Medical Superintendent of Himalayan Hospital and informed consent was obtained from all study subjects, data were collected by using the Structure Understanding Questionnaire and self-reporting application checklist.

RESULT:

Section 1 – Description of demographic characteristics of Staff Nurses on Care of Peripheral Intravenous Access.

Table 1: frequency and percentage distribution of socio-demographic characteristics of Staff Nurses. N = 50

S. No	Variables	F	%
1.	Age		
	<30	41	82
	≥30	9	18
2.	Gender		
	Male	21	42
	Female	29	58
3.	Professional education		
	G.N.M	12	24
	Post Basic	6	12
	B.sc Nursing	32	64
4.	Overall clinical experience		

	<5	36	72
	≥5	14	28
5.	Experience in ICU		
	<5	42	84
	≥5	8	16
6.	In service education on		
	Yes	33	66
	No	17	34

Table 1 illustrate that, majority (82%) of the participants were in the age less than 30 years, nearly more then half of participants (58%) were female, majority more than half of the participants(64%) had done B.Sc Nursing followed by GNM (24%). More than half of the participants(72%) had overall experience of less than 5 years, Majority of participants(84%) had ICU experience of less than 5 years, Maximum of participants (66%) had attend the In-service education Care of Intravenous Access.

Section: - 2 Understanding and application of staff nurses on Care of Peripheral Intravenous Access.

Table 2: frequency and percentage distribution of Understanding level of staff nurses on Care of Peripheral Intravenous Access. N = 50

ASPECT	CATEGORY	FREQUENCY	PERCENTAGE
Inadequate	≤10	0	
Moderate	11- 21	20	40
Adequate	≥22	30	60

Table 2 Reveals that, the Understanding level was adequate among majority (60%) of staff nurses on Care of peripheral Intravenous Access., 40% of staff nurses on Care of peripheral Intravenous Access were having moderate level of Understanding.

Table 3: frequency and percentage distribution of application level of staff nurses on Care of Peripheral Intravenous Access. N = 50

ASPECT	CATEGORY	FREQUENCY	PERCENTAGE
Low	≤4	0	
Moderate	5-10	48	96
High	≥11	2	4

Table 3 Reveals, that, the application level was moderate among all most 96%of staff nurses on Care of Intravenous Access.

Table 4: Statement wise frequency and percentage distribution of observational application checklist of nurses regarding Care of Peripheral Intravenous Access. N=50

S.no	Statement	Yes	%	No	%
1.	Assess cannulization site	50	100%	0	0
2.	Hand washing before procedure	2	4%	48	96%
3.	Done gloves in both hand	28	56%	22	44%
4.	Observed for any complication in cannula site	47	94%	3	6%
5.	Clean cannulization site with 2% chlorhexidinegluconate	46	92%	4	8%

6.	Flushed cannula with NS to check patency	33	66%	17	34%
7.	Applied dressing	50	100%	0	0
8.	Removed gloves from both hand after procedure	24	48%	26	52%
9.	Hand washing done after procedure	7	14%	43	86%
10.	Document date and time on dressing and file	46	92%	4	8%
11.	Changed dressing every 72 hour (if soiled, damp or loose)	47	94%	3	6%
12.	Flushed the cannula with NS 0.9% before medication	0	0	50	100%
13.	Flushed the cannula with NS 0.9% after medication	0	0	50	100%
14.	Aseptic precaution followed	10	20%	40	80%

Table 4 Revels that all nurses (100%) were assessing cannulization site, almost 96% of staff nurses were not doing hand washing before procedure, Nearly half of the nurses (56%) done gloving in a both hand, Almost all nurses (94%) observed for any complication on cannula site, Majority of nurses (92%) cleaned cannulization site with 2% chlorhexidinegluconate, majority of nurses (66%) flushed cannula with NS to check patency, All nurses (100%) applied dressing, Almost 48% of nurses removed gloves from both hands after the procedure, Only very few (14%) of nurses washed their hand after the procedure, Almost 92% of nurses documented date and time on dressing and file, Almost 94% of nurses were changing dressing every 72 hourly, None of staff nurse flushed the cannula with NS 0.97% before medication, None of staff nurse flushed the cannula with NS 0.97% after medication, only very few (20%) of nurses following aseptic technique.

Objective 3:- To find the association between Understanding and selected demographic variables.

There was no association between demographic variables and Understanding level score of staff nurse working in ICU. Hence, reveals that research hypothesis rejected for Understanding score.

Objective: - 4 To find the association between application level score and selected demographic variables.

Table 5: Association between application level score and selected demographic variables of staff nurses on Care of Peripheral Intravenous Access.

N = 50

S.no	Demographic Data	At and Median <8	Below Above Median >8	Chi Square	Df	p- value	Significance
1.	Age <30 ≥30	17 6	24 3	-	1	0.270#	NS
2.	Gender Male Female	13 10	8 19	3.687	1	0.055*	NS
3.	Professional education G.N.M Post Basic B.sc Nursing	7 4 12	5 2 20	2.697	2	0.260*	NS
4.	Overall clinical experience <5 ≥5	15 8	21 6	0.972	1	0.324*	NS
5.	Experience in ICU <5 ≥5	19 4	23 4	-	1	1.000#	NS
6.	In service education on Yes No	13 10	20 7	1.75	1	0.239*	NS

Significance $p < 0.05$ level of significance

Fisher Test

* Karl Pearson Test

Table 5: Data presented in table 5 shows data there is no association between demographic variables and application level score of staff nurse working in ICU except gender. Hence, reveals that research hypothesis rejected for the application score.

Objective: - 5 To find out the correlation between Understanding score and application score of staff nurses on Care of Peripheral Intravenous Access.

Table 6: Correlation between Understanding score and application score of staff nurses on Care of Peripheral Intravenous Access.

	Mean	SD	r - value	P - value
Understanding	22.24	3.088	0.112	0.441
Application	7.80	1.565		

Table 6: Reveals the no correlation between the Understanding score and application score of staff nurses on Care of Intravenous Access.

DISCUSSION:

Understanding & Application level of nurses regarding Care of Peripheral Intravenous Access.

The study result of this research reveals that, the Understanding level was adequate among majority (60%) of staff nurses on Care of peripheral Intravenous Access., 40% of staff nurses on Care of peripheral Intravenous access were having moderate level of Understanding. Whereas application level was moderate among all most 96% of staff nurses on Care of Intravenous Access, These findings are supported by the finding of research study conducted by Hossain M.D whose study showed that about 53.8 % (n=156) had poor Understanding, 39.3% (n=114) had average Understanding and 5.9% (n=17) had Good Understanding, whereas only 1.0% (n=03) had excellent Understanding in IV cannulization.

Association between Understanding and selected socio demographic variables

This study results shows that there was no association between demographic variables and Understanding level score of staff nurse working in ICU. Hence, reveals that research hypothesis rejected for Understanding score. The finding of the study are supported by the study conducted by Saji V, to assess the Understanding of staff nurses regarding peripheral cannulation. The result showed that there was no significant difference seen in age, Professional Qualification, Clinical Experience, Sex.

Association between application and selected socio demographic variables

This research study results shows that there was no association between demographic variables and application level score of staff nurse working in ICU except gender. The study findings are supported by the study conducted Kaur S, Kaur N, Kaur R, Kaur R, Kaur R (2017) to assess the Understanding and application regarding venous access devices and its care among staff nurses. There was no association seen between the application score and demographic variable on care of venous access.

Frequency and percentage distribution of application checklist of nurses regarding Care of Peripheral Intravenous Access.

Results of this research study reveals that all nurses (100%) were assessing cannulization site, almost 96% of staff nurses were not doing hand washing before procedure, Nearly half of the nurses (56%) done gloving in a both hand, Almost all nurses (94%) observed for any complication on cannula site, Majority of nurses (92%) cleaned cannulization site with 2% chlorhexidine gluconate, majority of nurses (66%) flushed cannula with Normal Saline to check patency, All nurses (100%) applied dressing, Almost 48% of nurses removed gloves from both hands after the procedure, Only very few (14%) of nurses washed their hand after the procedure, Almost 92% of nurses documented date and time on dressing and file, Almost 94% of nurses were changing dressing every 72 hourly, None of staff nurse flushed the cannula with NS 0.97% before medication, None of staff nurse flushed the cannula with NS 0.97% after medication, only very few (20%) of nurses following aseptic technique.

The results were consistent with the descriptive cross-sectional study conducted by Md Anwar Hossain (2016). The study showed that 100% nurses took consent, 70% - 89% used non dominant hand for the cannula insertion, 40-69% patients applied maintained hand hygiene and apply a tourniquet firmly, used cleaning solution, used clean gloves, 100% staff nurses used no-touch technique to any part of the needle or cannula., 21% done documentation after the procedure.

Correlation between Understanding Score and Application Score of Staff Nurses On Care of Peripheral Intravenous Access.

Results of this study reveals the no correlation between the Understanding score and application score of staff nurses on Care of Intravenous Access. The study was consistent with exploratory research study conducted by Abraham L. M (2019) to assess the Understanding and application on peripheral IV care among staff nurse. The result showed weak positive correlation between Understanding and application on care of peripheral IV access care.

CONCLUSION: -

In the end, it is observed that the staff nurse had adequate Understanding regarding peripheral intravenous access, and moderate level of application regarding peripheral intravenous access. The study result concluded that there is a need to improve the awareness application regarding peripheral intravenous access among staff nurses.

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