



## **The knowledge and practice regarding intravenous cannulation and its complications: A narrative review**

**Lalit Shree Sharma<sup>1</sup>, Ishak Mohammad<sup>2</sup>**

<sup>1</sup> M.Sc. Nursing 2<sup>nd</sup> year student, Teerthanker Mahaveer College of nursing, TMU, Moradabad, Uttar Pradesh, India

<sup>2</sup> Associate Professor, Teerthanker Mahaveer College of nursing, Moradabad, TMU, Uttar Pradesh, India

### **Abstract**

Intravenous cannulation is a common invasive procedure which is performed in hospital for providing drugs, nutrients and blood products these are associated with complications. The

**Objective** of the study was to find out the level of knowledge and practice on intravenous cannulation among staff nurses of selected Hospital. The study was descriptive type of cross-sectional study. The instruments used for the study were self-developed questionnaire and practice observational checklist.

**Methods:** A comprehensive systemic search of published literature and journal article from PubMed, EBESCO, to assess knowledge and practice regarding intravenous cannulation among staff nurses that are focusing from 2008 to 2017. Search strategy specific to each database was used.

**Results:** During search 9960 titles were retrieved and after screening 7 articles were selected based on the inclusion criteria.

**Conclusion:** Inservice education programme is effective in improving knowledge and practice regarding intravenous cannulation. Regular supervision also improves nurses.

**Keywords:** intravenous therapy, complications, knowledge, practice, nurses

### **1. Introduction**

Intravenous cannulation is important in modern medicine peripheral venous devices were introduced more than 40 years of age. Intravenous cannulation is a key procedure in almost all departments of healthcare. Many complications like phlebitis, thrombophlebitis, catheter embolism, bleeding, nerve tendon, needle stick injury arise due to intravenous cannulation. In today's medical care nosocomial infection are associated with devices are of more concern. In US hospitals 30% bacteremia are associated with intravenous catheters.

Nurses are better ambassadors for their speciality if they plan and carry out nursing care with knowledge, skill and attitude.

Nurses working a challenging health care environment and they are required to develop knowledge, skill and attitude.

To receive nutrients and calories via parental route is called intravenous cannulation (Karadage et al 1999).

Nurses' responsibilities are fluid initiation, monitoring and termination as well as knowing and preventing complications caused by intravenous cannula (Ulusoy et al 1999)

Intravenous cannulation management is complex nursing activity. There is potential for serious complications. Management of intravenous cannula is more common problem faced by nurses. Knowledge advances with time but preventable complications still occur. After maintaining complications better patient outcomes are achieved.

In order to avoid complications several skills need to be mastered and attention paid to potential risk.

Academic programme provides basic education. Nurses must understand how to avoid complications. The key to prevent complications and adverse reaction is proper nursing

care and management.

Educational outreach promotes positive practice outcomes. Nurses must achieve acceptable level of knowledge. Interactive workshops are useful. Interactivity gives learning. It helps to gain formative feedback.

### **1.1 Need for assessment of knowledge and practice regarding intravenous cannulation.**

The incidences of local or blood stream infections are related to I/V Therapy. A considerable number of deaths occur due to blood stream infections like every 10<sup>th</sup> person is suffering from one type of hepatitis which is life threatening. This problem occurs due to the poor articles of intravenous cannulation or therapy.

### **1.2 Aims**

The aim of the narrative review is to find research evidences of effectiveness of nurses' knowledge and practice regarding intravenous cannulation and its complication among staff nurses.

### **1.3 Objectives**

- To systematically assess the knowledge regarding peripheral intravenous infusion among nurses.
- To assess knowledge on practice regarding peripheral intravenous infusion among nurses.

### **2.1 Methodology search strategy method**

An database search of articles published in various journals from 2007 to 2017 was conducted. Search was restricted only for English language. The database search done was GOOGLE, PubMed, EBESCO, article containing following key search terms retrieved.

**2.1.1 Type of study:** Descriptive cross sectional study.  
**2.1.2 Type of participants:** Nurses working in hospital were taken into consideration while planning the study.  
**2.1.3 Settings:** Hospital.  
**2.1.5 Outcome:** This narrative review outcome shown that for reduction in complications regarding intravenous cannulation regular supervision of practice should be conducted.

**3.1 Prisma Chart**

The systematic search was conducted by framing the terms individually and in combination with all the synonyms, also according to the data base. In addition to this, a manual PubMed search was undertaken using the key words and search synonyms from already found articles.

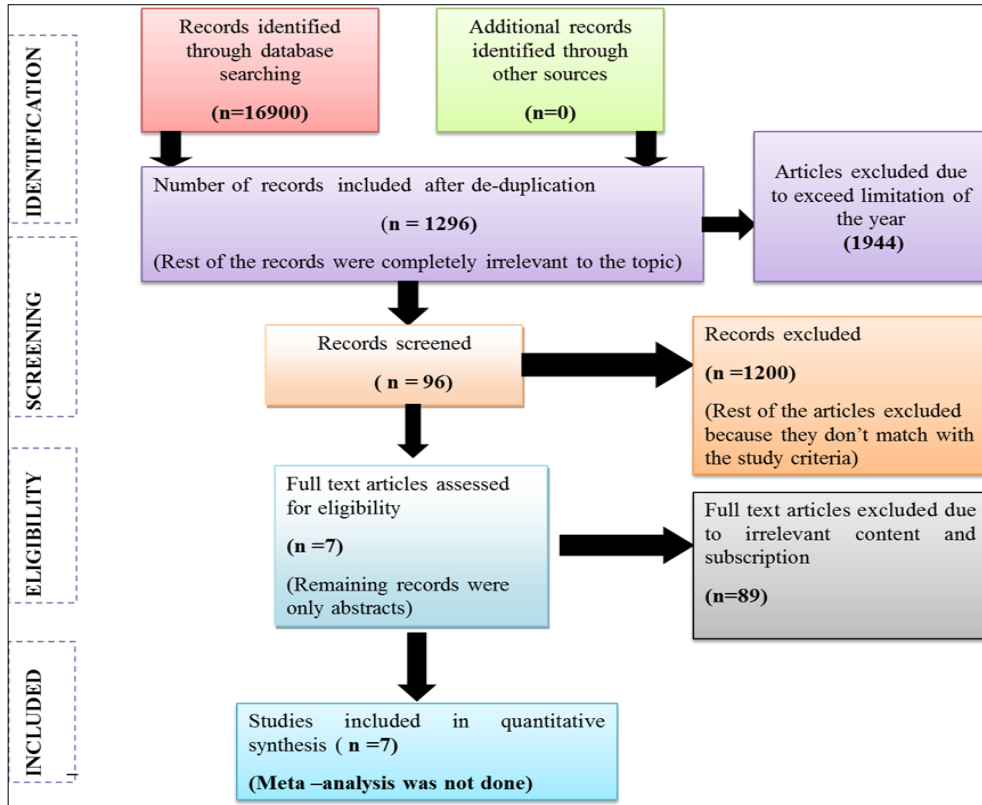


Fig 2: Prisma flow chart

An addition of 7 articles were found. Initial search retrieved 16900 articles over which 96 articles were selected manually. Duplicates were removed and reviewed. 1296 articles were excluded because of duplications in two

databases. 89 more studies were excluded due to unavailability of full text. Hence 7 articles were screened which includes quantitative study

Table 1: data extraction table

S.no. & Author	Source & title	Country	Variables	Instrument	Sample Sampling Technique	Design	Findings	Conclusion
Md Anwar Hossain ,Md Imamul Hasan 2016	Assessment Of knowledge and practice on intravenous cannulisation among staff Nurses of tertiary care hospital .	Dhaka city	Knowledge Practice	Questionnaire Observation checklist	Simple random Sampling technique, sample Size 290	Quantitative	One third of the samples had poor knowledge, 42% samples did not care about proper aseptic temchnique, 25% performed cannulazation well but did not know the complications.	The variability in practice and knowledge in this regard among nurses is an area of concern. Therefore, to reduce the morbidity related to such an indispensable element of nursing care,
Shougi A Makafi et all .	Peripheral intravenous catheter(PIVC) Related local complications among patients	Saudi Arabia	Peripheral intravenous catheter.	Self-developed tool	Purposive sampling	Descriptive type of research Quantitative Survey research	The findings .show that the rate of phlebitis ,infiltration ,extravasation and hematoma are 21,7,3.5,12%	The rate of phlebitis is 21% , infiltration 7%,extravasation 3.5%, and hematoma 12% .

	in KFCH. Jizan					design	respectively	
Ms Asha Aniyani 2016 H S.NO. & AUTHOR SSSSSHS	Descriptive study to assess the knowledge and practice of staff nurses regarding intravenous therapy and its complications in selected hospital S source & title Oursffghjjrt	New Delhi COUNTRY	Knowledge and practice VARIABLES	Questionnaire INSTRUMENT	Purposive sampling technique SAMPLING TECHNIQUE	Quantitative DESIGN	With regard to knowledge score, out of 30 sample subjects, 83% had average knowledge, 14% had above average knowledge, while only 3% had below average knowledge. With regard to practice scores, out of 30 sample subjects 90% had average practice, 3% had above average practice FINDINGS	The variability in practice and knowledge in this regard among nurses is an area of concern. Therefore, to reduce the morbidity related to such an indispensable element of nursing care, development of a uniform code of practice is essential. CONCLUSION
Insaf Altun November 2012	Management of intravenous cannulation: the Efficacy of an educational intervention on Nurses knowledge	Turky	Intravenous cannulation	Questionnaire	Convenience sampling	Quantitative	A statistically development was observed after the teaching. Mean 8.2 ,sd=8.1 on 18 itmes, before and after teaching respectively,p<0.001.	Lecture based workshop on administration of intravenous cannulation helps improve nurses knowledge , Theinformation gained in this study will be valuable baseline for further research.
Katiuska miliani at all S.No. & Author SSSSSHS	Peripheral venous catheter related adverse events :evaluation from a multicenter epidemiological study in france S Source & Title Oursffghjjrt	France Country	Peripheral venous catheter Variable	Questionnaire Instrument	Convenience sampling Sampling Technique	Quantitative Design	when compared with pre lecture scores but the mean pre lecture test score (8.2,SD 1.1)was low .this indicates that ceasing education after completion of A 4 year nursing training degree is not adequate. FINDINGS	Limitation of breaches in healthcare quality including post removal monitoring should be reinforced to prevent PVC related adverse Event in hospital setting. Conclusion
Ayse Kacarolu Vicdun 201	Evaluation of knowledge on intravenous fluid therapy of the nurses	Konya	Intravenous fluid threrapy	Questionnaire	survey	Quantitative	77.1% nurses diid not have enough information about electrolytes in body fluids. 57.9% of the nurses did not know the properties of solutions that they frequent used in treatment.	It was determined that nurses who had in-service training after graduation had higher average scores of knowledge .ss

**Summary**

The available literature refines to get seven quantitative. In this narrative review two study states that participants have adequate knowledge and practice. One study revealed that nurses lack knowledge associated with identification, assessment of intravenous catheters. One study revealed that nurses did not have adequate information. One study revealed development is observed after in service programme.

**Discussion**

**Nursing practice** nursing staff can use their knowledge regarding peripheral intravenous cannulation for therapeutic purpose and to prevent complication

**Nursing education** nursing staff should be educated about peripheral intravenous cannulation as it will be beneficial for patients in clinical settings and the peripheral intravenous cannulation associated complication can be prevented.

**Nursing research** it will help the nursing staff to expand the scope in practice.

**Nursing administration** nursing staff posted in various wards should be trained through in service education to possess the required knowledge about peripheral intravenous cannulation.

**Conclusions**

It is concluded that half of the nurses were not knowledgeable on every aspect of IV cannulation. In the

clinical area, nurses should be kept sufficient knowledge. The staff nurse need to involve in identify the care of patient with IV cannulisation and safe practices.

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