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## **A study to assess the effectiveness of video assisted teaching program on knowledge and practice regarding peripheral intravenous cannulation among B.Sc. Nursing 2<sup>nd</sup> year students at selected Nursing College in Jabalpur (M.P)**

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### **Abstract**

A Pre experimental evaluation research approach was undertaken in the present study “Study to Assess the Effectiveness of Video Assisted Teaching Program on Knowledge and Practice Regarding Peripheral Intravenous Cannulation among B.Sc. Nursing 2<sup>nd</sup> Year Students at Selected Nursing College in Jabalpur”. Finding of the study reveals in post- test 38.2% (21) B.Sc Nursing 2<sup>nd</sup> year students have good practice, 61.8% (34) B.Sc Nursing 2<sup>nd</sup> year students have average practice and none of the B.Sc Nursing 2<sup>nd</sup> year students had poor practice on peripheral intravenous cannulation.

**Keywords:** Knowledge, practice, score

### **Introduction**

Nurses who are able to plan and carry out nursing care with knowledge, skill and confidence are better ambassadors of their specialty. Nurses practice within a changing and evolving health care environment and therefore they are required to develop their knowledge, skill and attitude. Nurse’s practice is supported by knowledge that is continuously evolving and therefore must use the best available evidence to guide their practice. Nurses who are performing intravenous cannulation will be competent practitioners in the expanded area of practice and therefore will deliver a more responsive timely service that will improve the patient’s journey within the health services.

### **Need for the study**

*“Education is the deliberate and systematic influence exerted by the mature person upon the immature person through instruction, discipline and the harmonious development of all the power of the human being”*  
Redden and Ryan

Until the late 19<sup>th</sup> century, the major concern of health professionals was the “how” of disease (pathogenesis). Now, the increasing emphasis is on health and wellness (salutogenesis). Hospitals are health organizations for providing quality care to the society in which they exist. But they often act as a source for infection to patients admitted to them. In advanced countries it has been reported that hospitals infections is 2.5 %. It is much higher in the crowded hospitals of developing countries. Inserting, monitoring, and maintaining peripheral venous access is an integral component of nursing practice. The responsibility of the nurse starts from the time the patient is admitted to the hospital seeking health care. Any appropriate practitioner who has obtained or is obtaining the necessary knowledge and supervised practice to complete the skill of peripheral intravenous cannulation is said to be eligible for the procedure. Nurses have a pivotal role to play in reducing and preventing healthcare-associated infections (HCAIs), because of their links and interaction with families, patients and other healthcare professionals and provision of direct patient care. Intravenous cannulation is one of the basic procedures that the nurse must be able to do without assistance. The main responsibility of the nurse is the safety of the patient to whom he/she is giving care.

Depledge J, Gracie F (2006) published an article in British Journal of Community nursing regarding Providing IV therapy education to community nurses.

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The delivery of intravenous therapy (IVT) in the community has expanded considerably in the UK in the last 20 years. Although some primary care trusts are more actively engaged in providing intravenous services than others, whatever the degree of engagement, staff require knowledge and skills to practice safely. An education provider was commissioned by a group of trusts in West London to deliver education on the principles of IVT. Feedback suggested that this enabled nurses to challenge current intravenous practice in their areas and improve service delivery for the benefit of their patients. This article presents the basis of the curriculum delivered and experience of providing education in IVT to community nurses in West London.

Ung, Lerma, Cook, Sara, Edwards, Ben, et.al (2002) [25] conducted a study on the impact of nurses' education and experience and the characteristics of their patients on their performance of peripheral intravenous cannulation. A researcher-developed peripheral intravenous cannulation assessment tool was used to assess nurses' behaviour during cannulation. Results indicated that nurses' education and experience significantly predicted overall ratings of peripheral intravenous cannulation. Educational preparation at a postgraduate level was a significant positive predictor, and the years of experience in general nursing were a significant negative predictor of overall ratings of peripheral intravenous cannulation. The result from the study highlights the importance of applied education in providing and maintaining advanced clinical skills for specialty practice.

Anna Lundgren, Lis Karin Wahren (1999) [27] published an article in journal of clinical nursing regarding Effect of education on evidence-based care and handling of peripheral intravenous lines. Deficient routines in use, care, handling and documentation of peripheral intravenous vein cannulae (PIV) have previously been reported, and complications have been noted in 50–75% of the patients. The aim of the study was to examine whether specially trained nurses change their actions to decrease complications when using cannulae. The study included 36 nurses assigned to experimental and control groups. The experimental group followed an education programme explaining how to use and take care of a PIV. To evaluate the intervention document analysis, observations and patient interviews were performed in 99 patients with 172 PIVs in situ for less than 24 h. After the education programme, fewer complications, more carefully performed care and handling, and better documentation and information were found in the experimental group. Nurses in the control group followed current routines, which resulted in a greater degree of complications. Education in evidence-based care and handling gives nurses the opportunity to improve their ability to use theoretical knowledge in clinical problems.

### Statement of the problem

“A Study to Assess the Effectiveness of Video Assisted Teaching Programme on Knowledge and Practice Regarding Peripheral Intravenous Cannulation Among B.Sc. Nursing 2<sup>nd</sup> Year Students at Selected Nursing College in Jabalpur (M.P.)”

### Objectives of the study are to

- Assess the pre-test knowledge score regarding peripheral intravenous Cannulation among B.SC

nursing 2<sup>nd</sup> year students at selected college of nursing Jabalpur (M.P.)

- Assess the pre-test Practice score regarding peripheral intravenous Cannulation among B.SC nursing 2<sup>nd</sup> year students at selected college of nursing Jabalpur (M.P.)
- Administer the video assisted teaching Programme regarding peripheral intravenous cannulation to B.sc nursing 2<sup>nd</sup> year students at selected college of nursing Jabalpur (M.P.)
- Assess the post-test knowledge score regarding peripheral intravenous cannulation among of B.SC nursing 2<sup>nd</sup> year students at selected college of nursing Jabalpur (M.P.)
- Assess the post-test practice score regarding peripheral intravenous cannulation among of B.SC nursing 2<sup>nd</sup> year students at selected college of nursing Jabalpur (M.P.)
- Assess the effectiveness of video assisted teaching programme on peripheral intravenous cannulation by comparing pre-test and post-test knowledge and practice scores.

### Hypothesis of the study

- H1:** There will be significant difference between pre-test and post-test knowledge scores of the B.SC Nursing 2<sup>nd</sup> year students regarding peripheral Intravenous cannulation.
- H2:** There will be significant difference between pre-test and post-test practice scores of the B.SC Nursing 2<sup>nd</sup> year students regarding peripheral Intravenous cannulation.

### Research methodology

#### Research approach

The choice of research approach constitutes one of the major decisions, which must be made in conducting a research study. In view of the objectives of the present study quantitative research approach is considered to be suitable.

**Research design:** In the present study investigator has adopted a pre-experimental research design (one group Pre-Test Post- Test design) to assess the effectiveness of video assisted teaching program on peripheral intravenous cannulation among B.SC Nursing 2<sup>nd</sup> year students in selected nursing college at Jabalpur.

**Pre-Experimental research design:** Manipulation of independent variables, but limited control over extraneous variables, no randomization and control group.

**Setting:** The study is conducted in the Anushree College of nursing college at Jabalpur.

**Population:** The accessible population is B.SC Nursing 2<sup>nd</sup> year students of Anushree college of nursing at Jabalpur who fulfilled the inclusion criteria.

**Sample:** In this study the sample comprises B.SC Nursing 2<sup>nd</sup> year students of Anushree college of nursing at Jabalpur who fulfilled the inclusion criteria.

**Sample size:** In this study the sample size comprises of 55 B.SC Nursing 2<sup>nd</sup> year students of Anushree college of nursing at Jabalpur who fulfilled the inclusion criteria.

**Sampling Technique:** In the present study limited time & availability of subjects as per the sampling criteria, made the investigator to adopt the convenient sampling technique. Non-probability convenient sampling technique is used in this study. 55 samples were chosen by convenient sampling technique from Anushree College of nursing Jabalpur. Pre-test & post-test is conducted for the group by administering questionnaire for assessing knowledge and observational check list for assessing practice of student nurses regarding peripheral intravenous cannulation.

**Development of the tool**

**Tool-I:** A structured knowledge questionnaire to assess the knowledge of B.Sc. nursing 2<sup>nd</sup> year students regarding peripheral intravenous cannulation.

**Tool II:** Observational checklist to assess the practice of B.Sc. nursing 2<sup>nd</sup> year students regarding peripheral intravenous cannulation.

**Reliability of the tool**

Reliability of the tool is determined by Karl Pearson correlation coefficient split half technique. The reliability co-efficient formula was found to be r= 0.8 which indicate tool was reliable for the purpose of data collection for main study.

**Pilot study-**The purpose of pilot study is two folds: it helps to find the feasibility, improvement and modification in the research plan before the main study is attempted. Hence pilot study is carried out to test the methodology planned for the main study. The pilot study is conducted in Amarjyoti college of nursing Jabalpur from 20/8/15 to 27/8/15 data for pilot study were collected from 10 B.Sc. nursing 2<sup>nd</sup> year students by convenient sampling technique. The permission is obtained from the principal of college prior to the study. The purpose of the study is explained to the subjects. Pre-test for both knowledge and practice is taken on 20/08/2017 and after that video-assisted teaching is given on peripheral intravenous cannulation. On seventh day i.e.27/08/2017 post-test is taken for both knowledge and practice. A data analysis is done using descriptive and inferential statistics. The pilot study helped the investigator to visualize practical problems that could be encountered while conducting main study.

**Method of data collection**

**Pre-test**

Pre-test is conducted to assess the knowledge and practice of B.Sc nursing 2<sup>nd</sup> year students of Anushree College of nursing, Jabalpur through structured knowledge questionnaires and observational checklist.

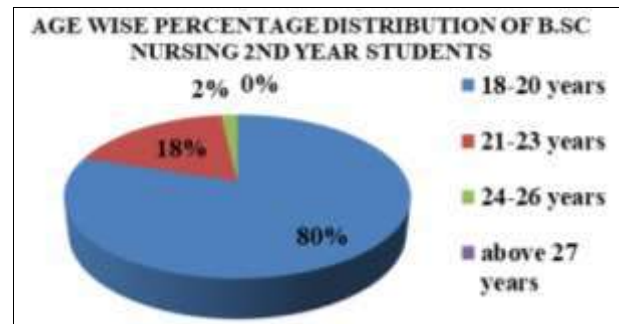
**Implementation of video-assisted teaching program**

1. Immediate after the pretest the researcher introduced the topic & video-assisted teaching is given to B.Sc nursing 2<sup>nd</sup> year students through power point presentation and at the end queries and concern regarding peripheral intravenous cannulation are discussed.
2. After the implementation of video-assisted teaching date of posttest is informed to the students.

**Table 1:** Frequency, percentage distribution of b.sc nursing 2<sup>nd</sup> year students age N=55

Age (In years)	Frequency	Percentage
18-20 years	44	80%
21-23 years	10	18.18%
24-26 years	1	1.81%
Above 27 years	0	0%

Table-01- Depicts that above table shows, that out of 55 B.Sc nursing 2<sup>nd</sup> year students in majority 44 (80%) are in the age group 18-20 year, 10(18.18%) are in the age group 21-23 year, 1(1.81%) is in the age group 24-26years, whereas none of the samples is above 27 years”.

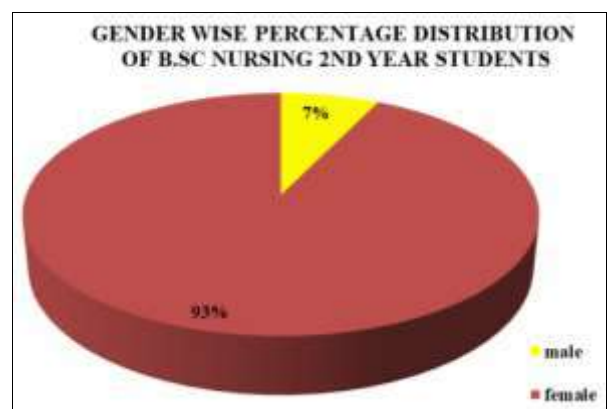


**Fig 1:** pie diagram showing age wise percentag distribution of b.sc nursing 2<sup>nd</sup> year students.

**Table 2:** Frequency, percentage distribution of b.sc nursing students according to gender N=55

Gender	Frequency	Percentage
Male	4	7.2%
Female	51	92.7%

Table 2: Shows that out of 55 B.Sc. nursing 2<sup>nd</sup> year students maximum number of students 51(92.7%) are female, and 4 (7.2%) are male.

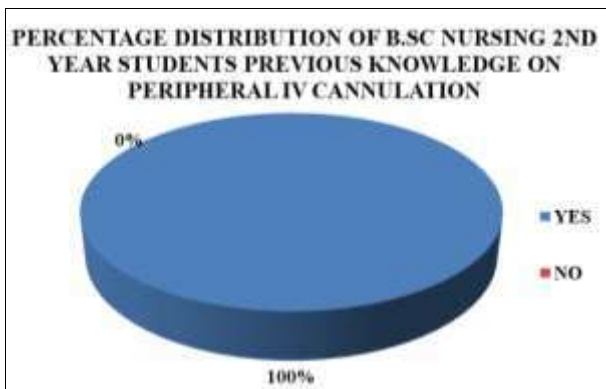


**Fig 2:** Pie diagram showing gender wise percentage distribution of b.sc nursing 2<sup>nd</sup> year students

**Table 3:** Frequency and percentage distribution of b.sc nursing students according to their previous knowledge on peripheral intravenous cannulation. N=55

Previous information on peripheral intravenous cannulation	Frequency	Percentage
Yes	55	100%
No	00	0%

Table 3 Shows that out of 55 B.Sc nursing 2<sup>nd</sup> year students all of them have previous knowledge regarding peripheral intravenous cannulation.

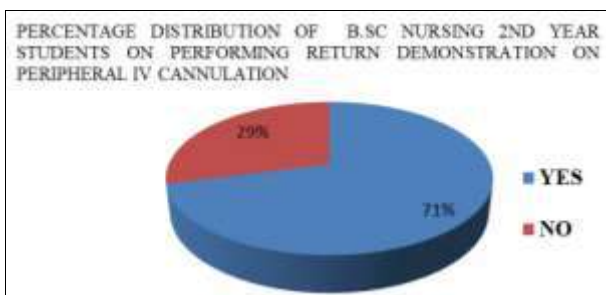


**Fig 3:** Pie diagram showing percentage distribution of b.sc nursing 2<sup>nd</sup> year students according to previous knowledge on peripheral intravenous cannulation.

**Table 4:** Frequency, percentage distribution of b.sc nursing students according to performing return demonstration on peripheral intravenous cannulation. N=55

Performed return demonstration on peripheral intravenous cannulation	Frequency	Percentage
Yes	39	70.90%
No	16	29.09%

Table 4: Shows that out of 55 B.Sc. nursing 2<sup>nd</sup> year students maximum number of students 39 (70.90%) have performed return demonstration, and 16 (29.09%) have not performed return demonstration on peripheral intravenous cannulation.



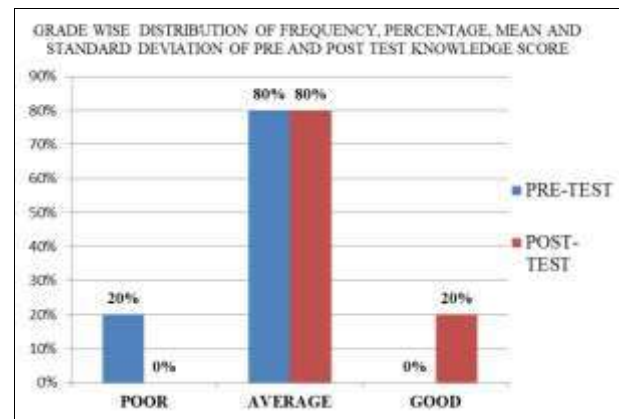
**Fig 4:** pie diagram showing percentage distribution of b.sc nursing 2<sup>nd</sup> year students according to performing return demonstration on peripheral intravenous cannulation.

**Table 5:** Grade wise distribution of pre & posttest knowledge and practice scores of b.sc nursing 2<sup>nd</sup> year students on peripheral intravenous cannulation. “Grade wise distributions of frequency, percentage, mean and standard deviation of pre and posttest knowledge score”. N=55

S.no	Test	Grade	Range	Freq.(f)	%	Mean	S.d.
01	Pre-test	POOR	1 – 10	11	20%	13.5	4.0
		AVERAGE	11 - 20	44	80%		
		GOOD	21 - 30	00	0%		
02	Post- test	POOR	1 – 10	00	0%	17.5	3.0
		AVERAGE	11 - 20	44	80%		
		GOOD	21 - 30	11	20%		

Table 05: Depicts grade wise distribution of pre and posttest knowledge score. In pre-test none of the B.Sc Nursing 2<sup>nd</sup> year students have good knowledge, 80% (44) B.Sc Nursing 2<sup>nd</sup> year students have average knowledge and 20 % (11) B.Sc Nursing 2<sup>nd</sup> year students have poor knowledge regarding peripheral intravenous cannulation.

- In post- test 20% (11) B.Sc Nursing 2<sup>nd</sup> year students have good knowledge, 80% (44) B.Sc Nursing 2<sup>nd</sup> year students have average knowledge and none of the B.Sc. Nursing 2<sup>nd</sup> year students have poor knowledge regarding peripheral intravenous cannulation.
- The mean knowledge score of pre-test is 13.5 with standard deviation 4.0, the mean knowledge score of post test is 17.5 with standard deviation 3.0. Table reveals that there is gain in knowledge score.



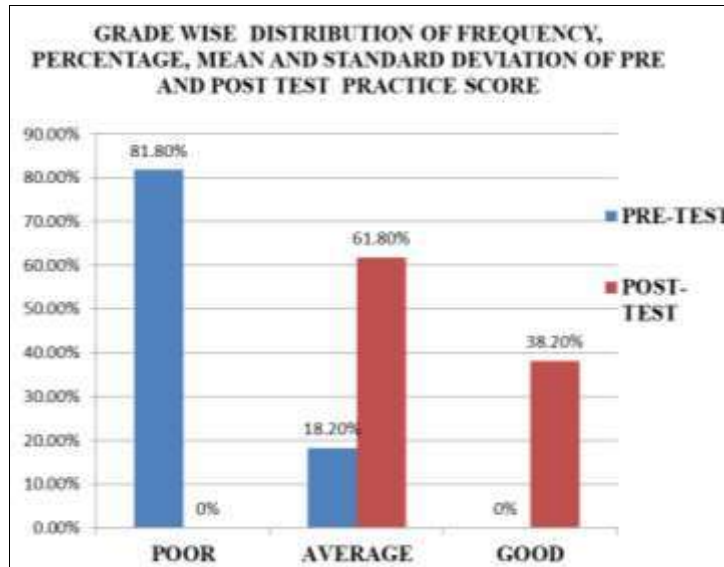
**Fig 5:** Bar diagram shows grade wise distribution of frequency, percentage, mean and standard deviation of pre test and post test knowledge score of b.sc nursing 2<sup>nd</sup> year students on peripheral intravenous cannulation.

**Table 6:** Grade wise distribution of pre & post test practice score of b.sc nursing 2<sup>nd</sup> year students on peripheral intravenous cannulation. N=55

S.No	Test	Grade	Range	Freq.(F)	%	Mean	S.D.
01	pre-test	Poor	01 – 12	45	81.8%	8.68	3.76
		Average	13 - 24	10	18.2%		
		Good	25 - 36	00	0%		
02	post- test	Poor	1 – 12	00	0%	23.08	2.99
		Average	13 – 24	34	61.8%		
		Good	25 – 36	21	38.2%		

Table 6: Depicts grade wise distribution of pre and post test practice score. In pre-test none of the B.Sc Nursing 2<sup>nd</sup> year students have good practice, 18.2% (10) B.Sc Nursing 2<sup>nd</sup> year students have average practice and 81.8 % ( 45) B.Sc Nursing 2<sup>nd</sup> year students have poor practice regarding peripheral intravenous cannulation.

- In post- test 38.2% (21) B.Sc Nursing 2<sup>nd</sup> year students have good practice, 61.8% (34) B.Sc Nursing 2<sup>nd</sup> year students have average practice and none of the B.Sc Nursing 2<sup>nd</sup> year students had poor practice on peripheral intravenous cannulation.
- The mean practice score of pre-test is 8.68 with standard deviation 3.76, The mean practice score of post test is 23.08 with standard deviation 2.99. Table reveals that there is gain in knowledge score.



**Fig 6:** Bar diagram shows grade wise distribution of frequency, percentage, mean and standard deviation of pre test and post test practice score of b.sc nursing 2<sup>nd</sup> year students on peripheral intravenous cannulation.

This section deals with evaluation of effectiveness of video-assisted teaching programme on knowledge and practice regarding peripheral intravenous cannulation among B.Sc

nursing 2<sup>nd</sup> year students in Anushree college of nursing Jabalpur (M.P.). The hypothesis is tested statistically by using “t” test

**Table 7:** Significance of difference between pre test and post test knowledge scores using “t” test N=55

S. No	Test	Mean knowledge score	Mean difference	s.d	sed	‘t’ Value	‘p’ Value
01	pre-test	13.5	4	2.89	0.49	11.8	t=11.8 (P>0.05) Most Significant at 108 df P value =1.98
02	post-test	17.5					

Table 7- Depicts that the mean knowledge score of pre-test is 13.5 and the mean knowledge score of post test is 17.5, mean difference of pre& post-test is 4, with standard deviation 4.0, standard deviation error 0.67 and calculated ‘t’ value 11.8. The calculated ‘t’ value (11.8) is greater than tabulated value 1.98 (P>0.05) at 108 degree of freedom which is statistically significant.

Hence video-assisted teaching programme on knowledge regarding peripheral cannulation among B.Sc Nursing 2<sup>nd</sup> year students is significantly effective. Hence research hypothesis H1 “There will be significant difference between pre-test and post-test knowledge scores of the B.SC Nursing 2<sup>nd</sup> year students regarding peripheral Intravenous cannulation” is accepted.

**Table 8:** Significance of difference between pre test and post test practice scores using ‘t’ test. N=55

S. No	Test	Mean practice score	Mean difference	s.d	sed	‘t’ Value	‘p’ Value
01	pre-test	8.68	14.4	3.6	0.62	20.8	t=20.8 (P>0.05) More Significant at 108 df P value =1.98
02	post-test	23.08					

Table 08- Depicts that the mean practice score of pre-test is 8.68 and the mean practice score of post test is 23.08, mean difference of pre& post-test is 14.4, with standard deviation 3.6, standard deviation error 0.62 and calculated ‘t’ value 20.8. The calculated ‘t’ value (20.8) is greater than tabulated value 1.98 (P>0.05) at 108 degree of freedom which is statistically significant.

regarding peripheral Intravenous cannulation” is accepted.

**Discussion**

The mean knowledge score of pre-test is 13.5 with standard deviation 4.0, the mean knowledge score of post-test is 17.5 with standard deviation 3.0. Findings revealed that there is gain in knowledge score about peripheral intravenous cannulation as compared to pre-test knowledge score after administration of video assisted teaching programme on peripheral intravenous cannulation.

The mean practice score of pre-test is 8.68 with standard deviation 3.76, the mean practice score of post-test is 23.08

- Hence video-assisted teaching programme on practice regarding peripheral cannulation among B.Sc Nursing 2<sup>nd</sup> year students is significantly effective.
- Hence research hypothesis H2 “There will be significant difference between pre-test and post-test practice scores of the B.SC Nursing 2<sup>nd</sup> year students

with standard deviation 2.99. Findings revealed that there is gain in practice score about peripheral intravenous cannulation as compared to pre-test practice score after administration of video assisted teaching programme on peripheral intravenous cannulation.

Findings shows that the mean knowledge score of pre-test is 13.5, the mean knowledge score of post-test is 17.5 with mean difference of 4 standard deviation is 2.89, standard error 0.49 and the calculated 'T' value is 11.8 at degree of freedom 108 is more than the tabulated 't' value 1.99 and level of  $p > 0.05$  which is showing the 't' test was significant.

Findings concluded that video-assisted teaching programme was effective in improving the knowledge of B.Sc Nursing 2<sup>nd</sup> year students on peripheral intravenous cannulation.

### Conclusion

Findings revealed that post test samples have more knowledge score about peripheral intravenous cannulation as compared to pre-test knowledge score before administration of video-assisted teaching program regarding peripheral intravenous cannulation & regarding practice findings revealed that the post-test practice score of samples are more as compared to pre-test score before administration of video-assisted teaching programme on peripheral intravenous cannulation. This shows video-assisted teaching programme on peripheral intravenous cannulation is effective in increasing the knowledge and practice of B.Sc Nursing 2<sup>nd</sup> year students at the level of ( $p < 0.05$ ). The overall experience of the researcher is quiet inspirable.

### What does this study convey?

Nursing education is developing rapidly in India & nurses from our country can be found all over the world providing care & education. The education background of a nurse should equip her with the knowledge necessary to function as a health educator.

Emphasis should be placed on the development of healthy practice through innovative teaching methods. The present study shows that video-assisted teaching programme on peripheral intravenous cannulation helps to improve the level of knowledge and practice of nursing students, thus it can be included in the curriculum, to improve the level of knowledge and practice level of health care providers.

### How will use these findings

The findings of the study will serve as the basis for the nurses to conduct future qualitative and quantitative research on peripheral intravenous cannulation and also to identify the different methods of teaching peripheral intravenous cannulation which can bring down severity of complications of peripheral intravenous cannulation. The video-assisted programme on peripheral intravenous cannulation in the present study could be a motivation for replication of future studies in this area. This would ultimately help in improving quality care & promote nursing status and its image in various setting. Research will provide nurse the credibility to influence the health policy. This study will serve as a valuable reference

### How can the finding be put into practice

Nursing have very important role to play in the early detection treatment and prevention of the disease and also enable individual and families to attain and maintain highest

possible level of health. The ultimate goal of nursing intervention is to help people to help themselves. Hence the most important role of nurse in relation to health promotion is that of a care provider. As nurse it can said that nurses have an important responsibility of performing peripheral intravenous cannulation in the clinical area like ICU, ICCU, emergency ward, OT, etc. Video-assisted programme in the present study shows that it can serve as to improve the knowledge and practice of staff nurses working in various health care settings.

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