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RESEARCH ARTICLE

Effectiveness of Video-Assisted Versus Demonstration-Based Teaching on Intravenous Infusion Skills Among B.Sc. Nursing Students: A True Experimental Study

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Abstract: ***Background:*** Clinical competence in intravenous (IV) infusion is a vital skill for nursing students to ensure safe and confident patient care. Effective teaching strategies can significantly influence skill acquisition. This study aimed to compare the effectiveness of video-assisted teaching versus traditional demonstration method on IV infusion skills among B.Sc Nursing students. ***Methodology***: A true experimental post-test-only design was employed among 80 first-semester B.Sc. Nursing students from selected Nursing Colleges of south region of India. Using simple random sampling, Students were randomly assigned to video-assisted teaching group and a demonstration group. In the demonstration group, the procedure was shown on a 1:10 ratio basis, followed by re-demonstration until competence was achieved. In the video-assisted group, students received the IV infusion procedure video on their mobile devices and were instructed to watch repeatedly until confident. After 30 days, performance was assessed using a structured observational checklist. ***Results***: The video-assisted teaching group achieved a significantly higher mean score (Mean = 41.04, SD = 3.25) compared to the demonstration method of teaching group (Mean = 33.77, SD = 5.20), with a t-value of 12.11 ($p < 0.05$), indicating statistical significance. ***Conclusion***: Video-assisted teaching proved to be more effective than traditional demonstration method of teaching in enhancing IV infusion skills among nursing students. The ability to review procedural steps multiple times contributed a better performance and confidence in skill application. Hence this study suggests, Integration of video-based learning into nursing curricula may enhance practical skill development.

Keywords: Video-assisted teaching, Demonstration method, Intravenous infusion, Nursing education, Clinical skills, Experimental study.

INTRODUCTION

The delivery of high-quality healthcare is greatly influenced by the competencies of nursing professionals, particularly the technical skills in intravenous (IV) infusion. Infusion therapy is a common procedure to which nursing students must master to ensure patient safety and effective treatment. As healthcare system is becoming more complex in nature, the innovative teaching methods and skill acquisition has become increasingly prominent. Among the various teaching strategies, Video-assisted and Demonstration-based methods have emerged as prominent approaches to skill-based training. The Video-assisted method utilizes visual content, typically recordings or instructional videos, to demonstrate procedural techniques. It provides students with the ability to review the material multiple times, allowing for a deeper understanding and better retention of skills. On the other hand, the Demonstration method involves the instructor directly showing students how to perform a procedure, offering real-time guidance and feedback. Nursing students often experience challenges in mastering IV infusion, which can lead to anxiety or poor performance in clinical settings. So, the Nursing education require effective methods of teaching to teach complex procedures like IV infusion to ensure that students are adequately prepared for clinical practice. Hence the study was undertaken to compare the effectiveness of two teaching strategies, that is Video-assisted Vs Demonstration method of teaching.

MATERIALS AND METHODS

For the study True experimental post-test only, design was used. As per the study objectives, intravenous infusion procedure for demonstration as well as video recording were prepared by the researcher along with observation checklist and the same was validated by subject experts. Ethical Committee approved the research study with reference Number SDUCON -2463 and dated 18-07-2023 and a written consent was granted from Sri Devaraj Urs College of Nursing and ETCM College of Nursing. Using simple random sampling technique lottery method, 80 students were included in the study who were studying in first-year BSc Nursing II semester, between the age group of 19 to 21 years, studying in the respective college and willing to participate in the study. Out of 80 students, 40 from Sri Devaraj Urs College of Nursing and another 40 from ETCM College of Nursing. who were studying in first-year BSc Nursing II semester at Sri Devaraj Urs College of Nursing and ETCM. These students were explained

about the study and its objectives and obtained an informed consent. Then ETCM College of Nursing students were provided the intravenous infusion procedure demonstration in the form of audio with video teaching through mobiles whereas for Sri Devraj Urs college of nursing direct demonstration of intravenous infusion procedure was done on 1:10 basis and the same re-demonstration was taken from them until they became perfect. After 30 days of procedure demonstration and video sharing, both group students were assessed individually for their skill on IV arm manikin by using structured observational checklist on intravenous infusion procedure.

RESULTS

Section-I: Distribution of students according Socio-demographic variables.

With regard to socio-demographic data, it was found that a significant number (90% of students in video-assisted and 75% in the direct demonstration) of students in both groups were below 19 years of age group. Similarly, majority of students in both groups were females (in the video-assisted 95% and in direct demonstration 92.5%).

Section-II: Effectiveness of Video-assisted Vs Demonstration method of teaching on Intravenous Infusion Skills

With regard to effectiveness of video-assisted versus direct demonstration method of teaching on intravenous infusion skills, the mean score of video assisted method was 41.04 with SD of 3.25 and the mean value of direct demonstration was 33.77 with SD of 5.20. The obtained t value 12.11 with df of 79 and it was significant at 0.05 level and the same is presented in table-1. This indicates that the video-assisted learning method was found to be **more effective** than the direct demonstration in teaching intravenous infusion skills as evidenced by the higher mean score and greater consistency in the results.

Table-1: Effectiveness of Video-assisted Vs Demonstration method of teaching N =80

Variables	Mean	SD	df	Paired t Value	P value
Video assist teaching(n=40)	41.04	3.25	79	**12.11***	0.05
Direct Demonstration(n=40)	33.77	5.20			

* **SS:** Statistically significant

Section-III: Association of video assisted versus direct demonstration method with selected Socio-demographic variables

With regard to association between video asst. Vs direct demonstration method of learning, students aged below19 years were found that, there was no significant difference between both teaching methods whereas between 19 to 21 years of age group, higher performance was observed in both methods, especially in the video-assisted group (Excellent: 31 students) compared to demonstration (Excellent: 4 students) and the same is presented in table-II.

Table-II: Association between video asst. Vs direct demonstration with selected Socio-demographic variable

Category		Video assist teaching					Demonstration				
		Good ≤25	Excellent >25	X^2	Df	p-value	Good ≤25	Excellent >25	X^2	Df	p-value
Age	<19Yrs	2	2	1.22	2	0.26	4	1	0.45	1	0.50
	19-21 yrs	10	31				36	4			
Previous academic score	>80%	9	10	4.25	3	0.20	4	1	1.03	3	0.45
	71-80%	2	3				20	3			
	61-70%	5	5				14	1			
	50-60%	6	5				1	1			

Discussion

This study aimed to know the effectiveness of Video-assisted versus Demonstration method of teaching on intravenous (IV) infusion skills among nursing students at selected Nursing Colleges at South region of India. With regard to socio-demographic data, it was found that majority students from both groups were below 19 years of age and most of them were females. This was

supported by the study on sociodemographic characteristics and learning styles on academic performance in science, which states that adolescent age can affect students' academic achievements.

With regard to effectiveness of video-assisted versus direct demonstration method of teaching on intravenous infusion skills, both methods enhanced students' competency level, except skill acquisition, retention, and confidence levels, video assisted teaching was found to be more effective then demonstration method of learning. This finding was aligning with the study on comparison between video-assisted teaching program Vs traditional demonstration method of teaching, where video-assisted teaching program scored much better than the traditional.

With regard to association between video asst. Vs direct demonstration method of learning, it was observed that higher the age group had higher the performance in both methods of learning. Both instructional approaches appear to be effective across various age groups. To support this results few studies suggest that older students may perform better but the evidence remains inconclusive.

CONCLUSION

Intravenous infusion is the most common invasive procedure used in the health care settings and nurses require skill to perform this procedure without causing any pain to the patients. This intravenous infusion procedure is learnt by nursing students in the second semester of B.Sc(N) by traditional demonstration method in the lab but present generation students are more interested in learning through new technology. Hence the study was undertaken to evaluate the effectiveness of video assisted versus demonstration method of teaching on intravenous infusion skills among second semester of B.Sc(N) students. The study findings revealed that, video-assisted teaching is significantly more effective than traditional demonstration method teaching in enhancing intravenous infusion skills. This was found to be statistically significant in post-test scores of video-based teaching comparing to demonstration method because it helped students for repeated viewing, better visualization, and flexible learning, thereby fostering greater competency and confidence in clinical skills. Incorporating such innovative approaches can strengthen skill acquisition and prepare nursing students to deliver safer and more proficient patient care.

IMPLICATIONS

- The Nurse educators can integrate video-assisted teaching methods along with traditional demonstration method of teaching while teaching nursing procedures.
- Nurse administrators can invest in technological tools needed for video-based learning, especially for skill-based competencies required for lab procedures.
- Implementation of video-assisted teaching can reduce procedural errors, enhance patient safety and improve quality of care in health care settings.

Conflicts of Interest: None

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