



The effectiveness of warm application on accessibility of peripheral intravenous cannulation among patient's receiving chemotherapy: A quasi experimental study

¹Sri Manju V, ²Malarvizhi S, ³Dr. Jaeny Kemp

¹M.Sc. (N), Tutor, Institute of Nursing, GKNM Hospital, Coimbatore, Tamil Nadu, India

²Professor, Institute of Nursing, GKNM Hospital, Coimbatore, Tamil Nadu, India

³Former Principal, Institute of Nursing, GKNM Hospital, Coimbatore, Tamil Nadu, India

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Abstract

A Quasi experimental study was done to assess the Effectiveness of Warm application on Accessibility of Peripheral Intravenous cannulation Among Patient's receiving chemotherapy in oncology ward in GKNM hospital, Coimbatore. Using Non-equivalent control group design and purposive sampling, 90 samples were selected and allotted to Experimental and control groups (n=45). Modified Ernestine Weidenbach's helping art model was adopted for conceptual frame work. The data collection was done using Standard Vein Assessment tool (SVAT). The pre-test was performed for all the samples and intervention was provided for 10 minutes prior to cannulation at the selected site for the experimental group and post-test was done. The control group received routine care. The analysis was performed using descriptive and inferential statistics. The study concluded that warm application improves the accessibility of veins for peripheral cannulation ($t=5.535$, $df=88$, $P<0.05$).

Keywords: Effectiveness, warm application, accessibility, peripheral intravenous cannulation, chemotherapy, SVAT

Introduction

Intravenous chemotherapy is one of the effective treatment for cancer patients. Peripheral Intravenous site complications for patients receiving chemotherapy are related to mechanical factors or physical factors like different sizes of cannula, types of chemotherapy, duration of infusing the chemotherapy and location of insertion of cannula, number of insertions, catheter duration more than 72 hours, the acuteness of the disease and pre-existing infections. It is imperative to identify the patients who are at risk for difficulty in intravenous accessibility of peripheral cannulation. The statistics of National Institute of Health, 2022 states that the rate of failure of peripheral intravenous catheter is 35-50%. It is the responsibility of the nurses to identify the risk factors and pay appropriate attention when attempting intravenous cannulation to preserve patient's peripheral vein for the chemotherapy treatment cycles.

Statement of the problem

A Study to Assess the Effectiveness of Warm Application on Accessibility of Peripheral Intravenous Cannulation among Patients Receiving Chemotherapy, in GKNM Hospital, Coimbatore.

Objectives

Assess the accessibility of peripheral vein for intravenous cannulation among the patients receiving chemotherapy in experimental and control group.

- Assess the effectiveness of warm application on accessibility of peripheral intravenous cannulation in experimental group.
- Associate the pre-test scores with selected demographic variables in experimental and control group.

Operational definitions

Effectiveness

Effectiveness refers to the effect of warm application on peripheral vein accessibility for intravenous cannulation among patients receiving chemotherapy

Warm application

Warm application refers to application of hot water bag with the temperature ranging between 37 to 40 degree Celsius on the selected peripheral site of the upper extremity for a duration of 10 minutes prior to peripheral intravenous cannulation.

Peripheral intravenous cannulation

Peripheral intravenous cannulation is a procedure in which intravenous cannula is inserted in a vein of the upper extremity of patients receiving chemotherapy.

Chemotherapy

Patients receiving chemotherapy –patient's diagnosed to cancer and on treatment using intravenous drugs for cancer

in the 2nd to 9th cycle.

Accessibility

Accessibility refers to the ease of insertion of intravenous cannula in the upper extremity of the patients which is measured by using Standard Vein Assessment Tool (SVAT).

Standard Vein Assessment Tool (SVAT)

Standard Vein Assessment Tool (SVAT) is a specific vein quality visual assessment scale with score ranging from 1 to 5.

Hypothesis

H₁: There will be a significant difference in the mean vein accessibility scores of patients receiving warm application

compared to those who have not received.

H₀: There will be no significant association between the peripheral vein accessibility scores with selected demographic variables.

Methodology

A quasi experimental non-equivalent control group design was adopted for the study. The study was conducted in the oncology ward of the GKNM Hospital, Coimbatore. 90 samples were selected using purposive sampling (N=45). For experimental group vein assessment was done using SVAT tool and warm application was provided for 10 minutes prior to cannulation at the selected site and post-test was done using the same tool. The control group received routine preparation for cannulation and was assessed using the same tool.

Results and discussion

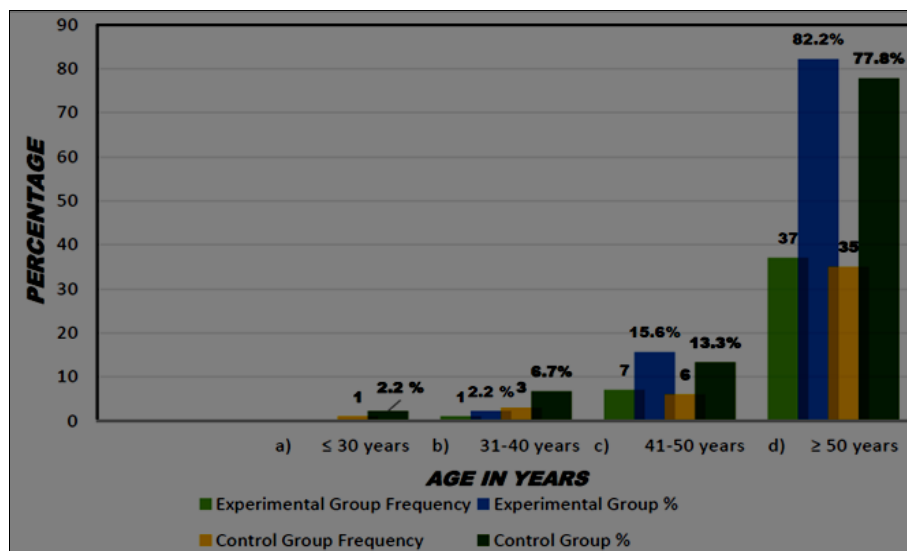


Fig 1: Frequency and percentage distribution of the demographic variables in Experimental group and Control group

Table 1: Frequency and percentage distribution of the demographic variables in Experimental group and Control group N=90

S. No	Demographic variables	Experimental Group		Control Group	
		Frequency	%	Frequency	%
1	Age in Years				
	≤ 30 years	0	0.0	1	2.2
	31-40 years	1	2.2	3	6.7
	41-50 years	7	15.6	6	13.3
	≥ 50 years	37	82.2	35	77.8
2	Gender				
	Male	20	44.4	16	35.6
	Female	25	55.6	29	64.4
3	Education				
	Illiterate	9	20.0	13	28.9
	School level	33	73.3	25	55.6
	Under graduate	3	6.7	4	8.9
	Post graduate	0	0.0	3	6.7
4	Occupation				
	Unemployed	16	35.6	20	44.4
	Self employed	16	35.6	16	35.6
	Private	12	26.7	9	20.0
	Government	1	2.2	0	0.0
5	Religion				
	Hindu	42	93.3	43	95.6
	Christian	3	6.7	1	2.2

	Muslim	0	0.0	1	2.2
	Others	0	0.0	0	0.0
6	Marital status				
	Unmarried	7	15.6	2	4.4
	Married	32	71.1	40	88.9
	Widow/widower	6	13.3	3	6.7
	Divorcee	0	0.0	0	0.0
7	Type of Family				
	Joint	9	20.0	6	13.3
	Nuclear	36	80.0	39	86.7
8	Monthly Income in Rs				
	a) < 20,000	45	100.0	39	86.7
	b) 20,001-30,000	0	0.0	3	6.7
	c) 30,001-40,000	0	0	2	4.4
	d) > 40,000	0	0	1	2.2

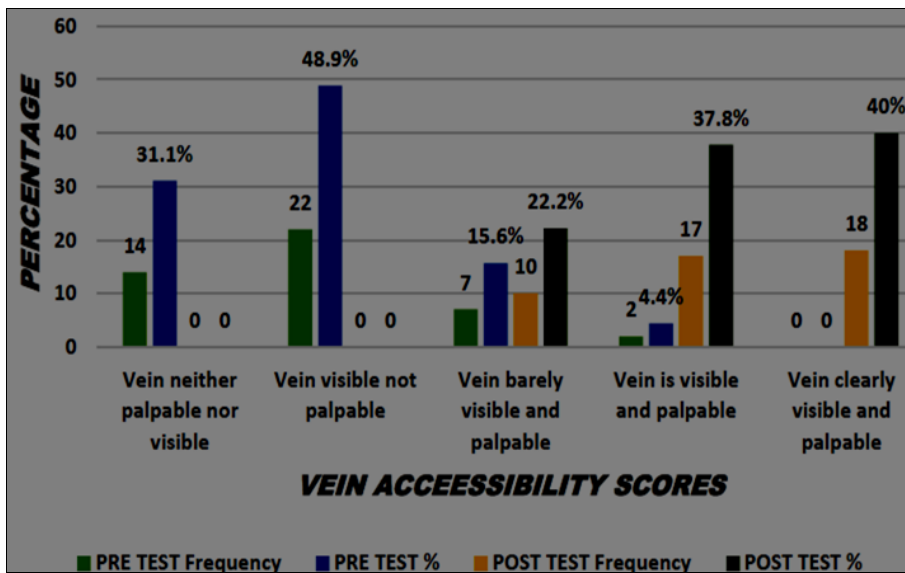


Fig 2: Frequency and percentage distribution of pre -test and post- test vein accessibility scores in experimental group

Table 2: Frequency and percentage distribution of pre -test and post- test vein accessibility scores in experimental group n=45

Vein accessibility scores	Pre test		Post test	
	Frequency	%	Frequency	%
Vein neither palpable nor visible	14	31.1	0	0.0
Vein visible not palpable	22	48.9	0	0.0
Vein barely visible and palpable	7	15.6	10	22.2
Vein is visible and palpable	2	4.4	17	37.8
Vein clearly visible and palpable	0	0.0	18	40.0

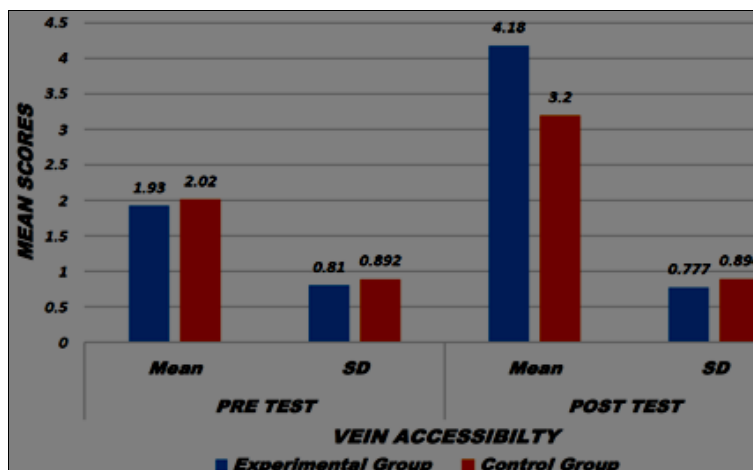


Fig 3: Frequency and percentage distribution of pre -test and post- test vein accessibility scores in control group

Table 3: Frequency and percentage distribution of pre -test and post- test vein accessibility scores in control group n=45

Vein accessibility scores	Pre test		Post test	
	Frequency	%	Frequency	%
Vein neither palpable nor visible	13	28.9	0	0.0
Vein visible not palpable	22	48.9	10	22.2
Vein barely visible and palpable	6	13.3	20	44.4
Vein is visible and palpable	4	8.9	11	24.4
Vein clearly visible and palpable	0	0.0	4	8.9

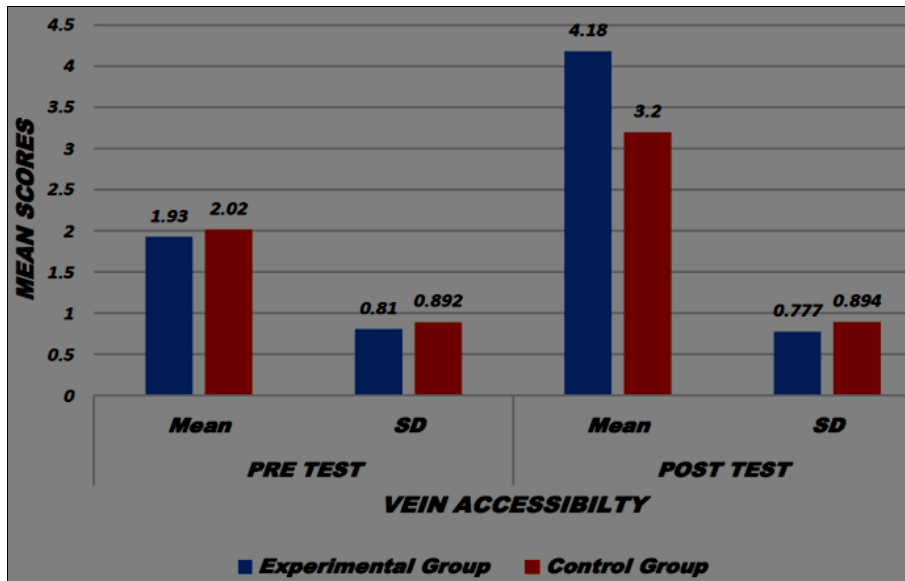


Fig 4: Comparison of post-test vein accessibility scores in experimental group and control group

Table 4: Comparison of post-test vein accessibility scores in experimental group and control group N=90

Test	Experimental Group		Control Group		Unpaired “t” value	df	Significant value
	Mean	SD	Mean	SD			
Post-test	4.18	0.777	3.20	0.894	5.535	88	0.000 *

Statistically, there was a significant difference in the mean vein accessibility score in experimental group and control group in post-test ($t=5.535$, $df=88$, $P<0.05$). Hence the hypothesis H_1 there will be a significant difference in the mean vein accessibility scores of the samples receiving warm application compared to those who have not received warm application was accepted.

Results and discussion

The findings concluded that the mean difference observed in control group was (1.22) was less compared to experimental group (2.25) which showed that the intervention provided to the experimental group was effective in improving vein accessibility.

Conclusion

Thus the study concluded that, warm application was effective in improving vein accessibility among patients receiving peripheral intravenous chemotherapy.

Recommendations

Warm application prior to peripheral intravenous cannulation is a cost effective method and can be incorporated as a evidence based practice in hospital settings.

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Author’s Contribution

Not available

Conflict of Interest

Not available

Financial Support

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References

1. Brunner, Suddarth’s. Textbook of Medical –surgical Nursing. (12th edition.). New Delhi: Wolters Kluwer Publishers; c2010.
2. Desai P. Practical Clinical Oncology. (1st edition.). New Delhi: Jaypee Brothers Publishers; c2014.
3. Kataria. Principles and Management of Cancer. (1ST edition.). New Delhi: Jaypee Brothers Publishers; c2016.
4. Kothari CR. Research methodology, methods and technologies. (4th edition.). New Delhi: Vishwaprakasan Publishers; c1996.
5. Kozier B, Erb G. Fundamentals of Nursing concepts, Process and practice. (7th edition.). India: Pearson education; c2004.
6. Homayouni A. Investigating the effect of local warming on vein diameter in the antecubital area in adults aged 20-40 years. British Journal of Nursing. 2019, 28(8). doi.org/10.12968/bjon.2019.28.8.S20.
7. Alexandrou. Use of short peripheral intravenous

catheters: characteristics, management, and outcomes worldwide. *Journal of hospital medicine*, 2018, 13(5). doi: 10.12788/jhm.3039.

8. Armenteros. Prevalence of difficult venous access and associated risk factors in highly complex hospitalised patients. *Journal of clinical nursing*. 2017;26(23-24):4267 -4275. doi: 10.1111/jocn.13750.

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