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A STUDY TO ASSESS THE EFFECTIVENESS OF GLYCERINE MAGNESIUM SULPHATE APPLICATION VERSUS COLD APPLICATION ON THROMBOPHLEBITIS AMONG PATIENTS RECEIVING INTRAVENOUS THERAPY AT PREM HOSPITAL PANIPAT

Priyanka[1]& Navreet Kaur Saini[2]

1. NPCC Scholar – Ved Nursing College – Panipat
2. Assistant Professor – Ved Nursing College - Panipat

ABSTRACT

Introduction: Phlebitis, which can happen to as many as 75–80% of hospitalised patients, is one of the most typical side effects of peripheral intravenous catheters. The thrombus in the vein produces discomfort and irritation and could obstruct blood flow. **Objectives:** To determine whether applying cold or glycerin magnesium sulphate is more successful at reducing thrombophlebitis in patients who have had intravenous treatment. **Method:** It was quasi-experimental, pre-test-post-test. 60 thrombophlebitis patients were randomly selected and put into two groups. Experimental group-I (N=30) applied glycerin magnesium sulphate and experimental group-II (N=30) applied cold thrice a day for three days to the thrombophlebitis site. Pre-test and post-test used modified visual infusion phlebitis scale. **Result:** Statistical findings revealed that the experimental group-I mean score 6.00 was lesser than the experimental group-II mean score 6.47. The obtained 't' value was 2.191, significant at 0.05 level. **Conclusion**: From the above findings, it was evidenced that glycerin magnesium sulphate application was effective than the cold application on reduction of thrombophlebitis among patients received intravenous therapy.

Key Words: Assess, Effectiveness, Glycerine Magnesium Sulphate, Cold Application, Thrombophlebitis, Intravenous Therapy

Introduction:

IV cannulation uses a cannula to provide venous access. Venous access allows blood sample, fluids**,** drugs, parenteral nourishment, chemotherapy, and blood products. Veins comprise three layers: an endothelium, a thin layer of muscle fibres, and connective tissue. Venous valves prevent blood pooling in dependent extremities and prevent catheters from entering veins.

20–70% of peripheral intravenous treatment patients suffer phlebitis, according to 20-year studies. 90% of surgical and 30% of nonsurgical patients receive intravenous treatment. It continus to cause people agony, catheter replacement, hospital stays, and high healthcare costs.

Hospitals must prevent thrombophlebitis. Nurses must prevent and treat thrombophlebitis complications. Early intravenous phlebitis normally resolves if a cannula is withdrawn or resited. Phlebitis treatment begins with stopping the infusion and removing the PVC (Peripheral Venous Catheter). Consider the patient's wants and symptoms including fever, discomfort, erythema, and cord-like swelling. Phlebitis can be treated with anti-inflammatories and analgesics.

Hygroscopic glycerine magnesium sulphate reduces oedema through vasodilation and improves fluid reabsorption. Cold application is a cheap and effective non-pharmacological treatment for thrombophlebitis. Cold reduces blood flow and numbs tissue, relieving muscle spasms and oedema.

60% of patients worldwide experience intravenous complications. In developed countries, 1, 25,000 problems occur annually. India has 78-82% complications. Tamil Nadu government hospitals have 85% complication rates and private facilities 30-60%. 9 Before commencing an intravenous infusion, a nurse must know its side effects and relevant actions, according to the Infusion Nurses Society National Standards of Practice (Australia). Because to its multifactorial origin, several preventative methods have failed. So, nurses administering IV therapy must be informed of phlebitis prevention measures.

Nurses must detect phlebitis-prone patients. Early detection and intervention minimise treatment disturbance. 13Besides this study, thrombophob ointment or gel, heparinoid application, aleovera gel, icthomal belladonna and glycerin, hot application, and mucus polysaccharide poly sulphate will support my research.Because these therapies have similar therapeutic effects, especially in lowering intravenous site pain and inflammation, nurses are confused about which one is best for patient comfort. This prompted the investigator to compare glycerine magnesium sulphate and cold applications for infusion thrombophlebitis discomfort and inflammation.

Objectives:

1. To assess the pre -test and post-test of peripheral intravenous cannula induced phlebitis among samples receiving magnesium sulphate with glycerine and sample receiving cold compression.
2. To compare pre-test and post- test level of peripheral intravenous cannula induced phlebitis among samples receiving magnesium sulphate with glycerine and cold compression.
3. To determine association of pre -test level of peripheral intravenous cannula induced phlebitis among samples with their selected socio- demographic variables.

Conceptual Framework: The study's conceptual framework was adapted Wiedenbach's Helpful Art of Clinical Nursing (1964). The theory says nursing has three parts.Recognizing a need, ministering, and validating**.** This study used Wiedenbach's prescriptive theory to achieve the goal.

Research Methodology: This chapter shows how glycerine magnesium sulphate was compared to cold for thrombophlebitis in intravenous treatment patients.

Search Method: This Study Employed Evaluative Research.

Sample: The sample consists of patients admitted in the wards and ICU who have thrombophlebitis and fulfill the Inclusion criteria.

Sample size: 60 Sample, 30 in glycerine magnesium sulphate application, 30 in cold application

Sampling Technique: In the present study Purposive sampling technique was used

SELECTION CRITERIA

Inclusion Criteria

- Patients who are in the age group 18 to above 60.
- Patients who have developed thrombophlebitis due to intravenous therapy.
- Patients who are admitted in all wards.
- Patients who are with phlebitis in the fore arm.
- Patients who are willing to participate.

Exclusion Criteria

- Patients who are not willing to participate in this study.
- Patients who are on cancer drugs.
- Patients who are with paralytic and unconscious condition and are not able to perceive pain patients
- who have a pre -existing skin condition (EX: Dermatitis, Eczema)

Description of the data collection tool

TOOL-A

Interview guide which consist of question of the demographic data

TOOL-B

Modified visual infusion phlebitis scale, It consists of 5 components of pain, cord like swelling, tenderness, warmth, redness. It consists range from scores 1 to 4

SCORING

The score was awarded from 1-4 as per the criteria given in 5 components of modified visual infusion phlebitis scale and the score was graded as follows . The total score range from 5-20.

Score	Level of Thrombophlebitis
5	No thrombophlebitis
6-10	Mild thrombophlebitis
11-15	Moderate thrombophlebitis
16-20	Severe thrombophlebitis

Pilot Study: The OSCAR Hospital Panipat pilot research tested feasibility, relevance, and practicability from 19.5.22 to 26.5.22. Requested permission from OSCAR Hospital Panipat Chairman. Chairman and nursing superintendent were informed of study goals. After describing the study's goal and role, the sample consented.

Simple random sampling chose 6 patients, 3 per group, for the pilot trial. Experimental group 1 applied 50 ml of glycerin mixed with 20 am of magnesium sulphate thrice a day for three days, while experimental group II applied cold for three days. Fourth-day scale post-test. OSCAR Hospital Panipat collected data from 4.6.22 to 4.7.22.

Intravenous treatment patients were examined for thrombophlebitis in the medical, surgical, pre-operative, post-operative, and ICU wards using simple random sampling. Day-to-day data collection.

Before the trial, patients gave written consent. Demographic variables were collected, and thrombophlebitis was assessed using the modified visual infusion phlebitis scale as pretest on the first day glycerin magnesium sulphate application versus cold application. To maintain thrombophlebitis, patients received intravenous therapy three times a day for three days. On the fourth day, the same scale was used to test. The researcher observed the data.

Data collection procedure

(Main study)

Phase 1: The major study at PREM and RAVINDERA Hospital Panipat tested feasibility, relevance, and practicability from 19.6.22 to 14.7.22. Requested permission from PREM and RAVINDERA Hospital Panipat Chairman. Chairman and nursing superintendent were informed of study goals. After describing the study's goal and role, the complete sample consented.

Phase II: The primary study included 60 patients—30 in each group—selected by simple random sampling. Experimental group 1 received 50 cc of glycerin combined with 20 grammes of magnesium sulphate three times a day for three days, while experimental group II received cold for three days.

Phase III: The fourth-day scale post-test. PREM and RAVINDERA Hospital Panipat collected data from 17.7.22–25.7.22. Intravenous treatment patients were examined for thrombophlebitis in the medical, surgical, pre-operative, post-operative, and ICU wards using simple random sampling. Day-to-day data collection.

Plan for data analysis

It was planned to analyze the collected data by using descriptive and inferential statistics.

Results:

Table – I: Frequency and Percentage Distribution of Samples According to DemographicVariables in Experimental Group

(n = 30)

S. No	Demographic Variables	Options	Frequency (f)	Percentage (%)	Frequency (F)	Percentage (%)
1	Age	21 - 31	7	23.3	5	16.7
		32 - 41	8	26.7	6	20.0
		42 - 51	10	33.3	12	40.0
		52 - 61	5	16.7	7	23.3
2	Gender	Male	15	50.0	15	50.0
		Female	15	50.0	15	50.0
3	Any addiction	Cigarette Smoking	5	16.7	6	20.0
		Alcohol	8	26.7	7	23.3
		Tobacco	4	13.3	2	6.7
		None	13	43.3	15	50.0
4	Body Mass Index	Under Weight	2	6.7	2	6.7
		Normal	15	50.0	11	36.7
		Over Weight	4	13.3	7	23.3
		Obese	6	20.0	4	13.3
		Extremely obese	3	10.0	6	20.0
5	Diagnosis of Patient	Renal failure	7	23.3	7	23.3
		COPD	10	33.3	13	43.3
		Seizure	2	6.7	2	6.7
		Others	11	36.7	8	26.7
6	Duration of disease	Acute	16	53.3	19	63.3
		Chronic	14	46.7	11	36.7

7	Level of ambulation	Mobile	15	50.0	17	56.7
		Partially Mobile	14	46.7	11	36.7
		Immobile	1	3.3	2	6.7
8	Name of cannulated vein	Basilic vein	2	6.7	5	16.7
		Cephalic vein	22	73.3	16	53.3
		Median vein	6	20.0	9	30.0
9	Qualification of the nurse who cannulatedthe patient	GNM	7	23.3	5	16.7
		PB. B. SC	17	56.7	19	63.3
		B. Sc	6	20.0	6	20.0
10	Size of the cannula	18 G	11	36.7	1	3.3
		20 G	7	23.3	17	56.7
		22 G	12	40.0	12	40.0
11	Duration of the cannulain situ	2 - 3 DAYS	5	16.7	1	3.3
		Above 3 DAYS	25	83.3	15	50.0
12	Types of drug administered i	Antibiotic	3	10.0	14	46.7
		Anticoagulant	12	40.0	0	0
		inotropes	9	30.0	15	50.0
		Cytotoxic Drugs	6	20.0	9	30.0
13	History of chronic vascular diseases	Yes	6	20.0	6	20.0
		No	24	80.0	9	30.0
14	Type of Vascular Disease	Atherosclerosis	3	10.0	21	70.0
		Deep Vein Thrombosis	2	6.6	3	33.3
		Coronary Artery Disease	1	3.4	2	22.3
15	Types of Infusion	Heparin	6	20.0	4	44.4
		Saline	18	60.0	3	10.0
		None	6	20.0	16	53.3

Demographic variable sample frequency and experimental group percentage distribution are shown above. 10 (33.3%) experimental samples were 42–51. 8 (26.7%) were 32–41. 7 (23.3%) were 21–31. 15 (50%) experimental samples were gender-balanced. 43.3% of experimental group 13 samples are tobacco-free. Alcoholics: 8. 15 (50.0%) had normal BMIs. 6 (20%) were obese. 4 (13.3%). The experimental group had 10 COPD patients (33.3%). 7 (23.3%) samples had renal failure. 14 (46.7%) were chronic, 16 (53.3%) acute. The experimental group had 15 mobile (50.0%) and 14 partially mobile (46.7%) samples. The experimental group had 22 (73.3%) cephalic vein and 6 (20.0%) median vein cannulated samples. 17 (56.7%) Post-Basic (N) nurses and 7 (23.3%) GNM nurses cannulated experimental samples. 12 samples (40.0%) were cannulated with 22 G needles, 11 (36.7%) with 18 G. 83.33% of experimental group 25 samples had cannulas for over 3 days. 5 (16.7%) had cannula 1–3 days. 12 (40.0%) experimental group samples received anticoagulants. Nine had inotropes (30%). 24 (80.0%) of the experimental group were vascular disease-free. 18 (60.0%) experimental group infusion samples received saline and 6 (20%) heparin. Demographic variable sample frequency and percentage distribution for experimental group ii are

shown above. 12 (40.0%) experimental group ii samples were 42–51. 7 (23.3%) were 52–61. 5 (16,7%) were 21–31. 15 (50.0%) experimental group ii samples were male. 15 (50.0%) experimental samples are not addicted to tobacco, alcohol, or cigarettes. 6 (20%) smoked. 11 (36.7%) had normal BMIs. 7 (23.3%). 6 (13.3%). 13 (43.3%) experimental group ii patients had COPD. 8 (26.7%). 11 (36.7%) were chronic, 19 (63.3%) acute. 17 (56.7%) mobile and 11 (36.7%) partially mobile in experimental group ii. In experimental group ii, 16 (53.3%) were cephalic vein cannulated and 9 (30.0%) median vein. 19 (63.3%) samples were cannulated by Post-Basic (N) nurses and 6 (20%) by B. Sc. (N) nurses in experimental group II. In experimental group ii, 17 (56.7%) samples were cannulated with 20 G needles and 12 (40.0%) with 22 G needles. In experimental group ii 15, 50% of samples had cannulas for more than 1–3 days. 14 (46.7%) had cannula longer than 3 days. Anti-coagulants were administered to 15 samples in experimental group ii (50.0%). 9 (30%) others had inotropes. In experimental group ii, 21 (70.0%) of samples had no history of vascular disease, while 9 (30%) did. In experimental group ii, 16 (53.3%) samples received saline and 11 (36.7%) received heparin during infusion.

The below graph shows the percentage distribution of samples by thrombophilia level during pre-test in Experimental II and Experimental Group IID. During pre-test assessment for thrombophlebitis, half of the samples in experimental group one (15%) had moderate thrombophlebitis, while in Experimental Group II, 14 (46.7%) had moderate. 10 samples in Experimental Group I and II had severe thrombophlebitis. In Experimental Group II, 5 (16.7%) samples had mild thrombophlebitis, while in Group I, 7 (23.3%) did.

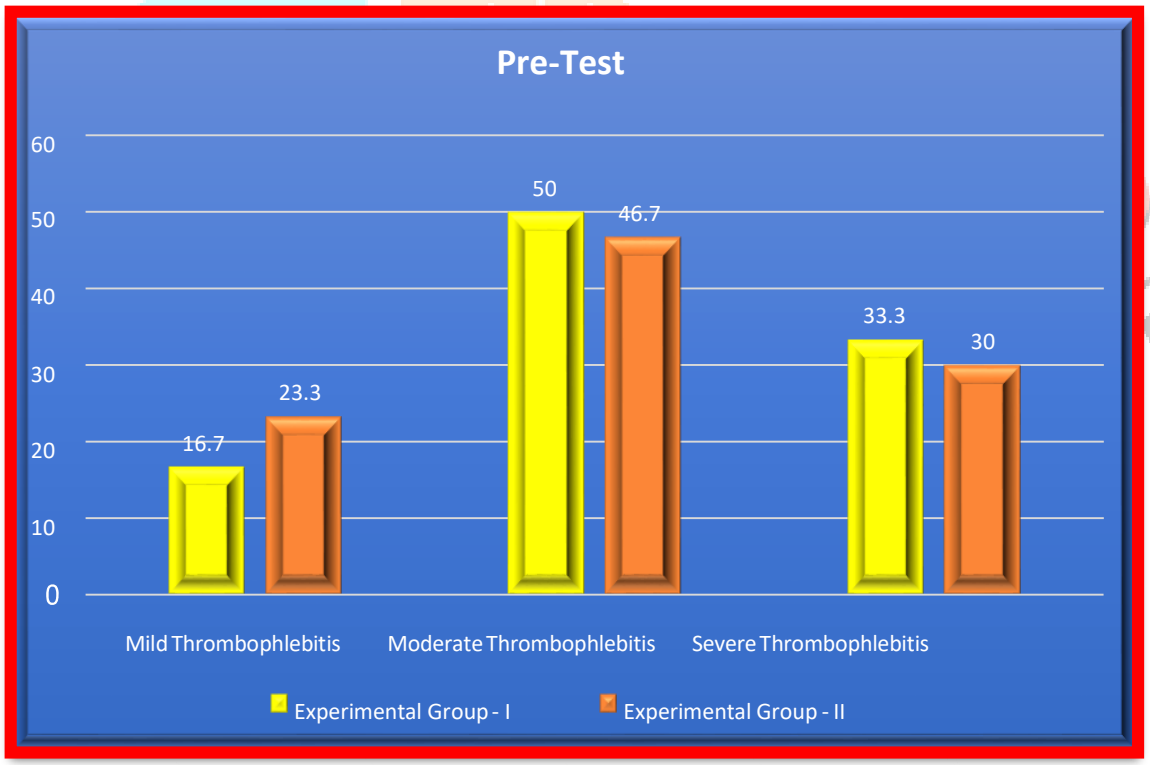

Table – III: Frequency and Percentage Distribution of Samples According to Level of Thrombophlebitis during Post – test in Experimental - I and Experimental Group -II

(n = 60)

S. No	Level of thrombophlebitis	Experimental Group - I		Experimental Group -II	
		f	%	F	%
1	No thrombophlebitis	5	16.7	4	13.3
2	Mild thrombophlebitis	19	63.3	11	36.7
3	Moderate thrombophlebitis	6	20.0	14	46.7
4	Severe thrombophlebitis	0	0	1	3.3

The above table shows the Frequency and Percentage Distribution of Samples According to Level of Thrombophlebitis during Post-Test in Experimental Group I and II.

In Experimental Group I, 19 (63.3%) samples had mild thrombophlebitis, while 14 (46.7%) in Experimental Group II had moderate. 5 (16.7%) of experimental group and 4 (13.3%) of experimental group II had no thrombophlebitis. In Experimental Group I, none of the samples had severe thrombophlebitis during post-test, while in Experimental Group II, one sample (3.3%) did.I and II

Table – IV: Comparison of pre – test and post – test thrombophlebitis score of samples in experimental group – I using paired‘t’ test

(n = 30)

Assessments	Mean	Mean Difference	Standard Deviation	Paired ‘t’ test	‘p’ Value	Level of Significance
Experimental Group – I						
Pre – Test	13.73	1.14	3.062	11.269 (df = 29)	0.001	Significant
Post – Test	8.67		2.584			
Experimental Group – II						
Pre – Test	13.20	2.8	3.527	10.260	0.001	Significant
Post – Test	10.40		3.460	(df = 29)		

Table – IV depicts the Comparison of pre – test and post – test thrombophlebitis score of samples in experimental group - I using paired‘t’ test.

In experimental group – I the pre - test mean and standard deviation thrombophlebitis score was 13.73 ± 3.062. during post-test mean and standard deviation scores were 8.67 ± 2.584. the mean difference score was 1.14. the obtained paired ‘t’ test score was 11.269 for the degree of freedom 29. It was statistically significant at the ‘p’ value ≤ than 0.001.

In Experimental Group –II the pre - test mean and standard deviation thrombophlebitis score was 13.20 ± 3.527. during post-test mean and standard deviation scores were 10.40 ± 3.460. the mean difference score was 2.8 the obtained paired ‘t’ test score was 10.260 for the degree of freedom 29. It was statistically significant at the ‘p’ value ≤ than 0.001.

Table – VII: Comparison of post – test thrombophlebitis score of samples in experimental - I and Experimental Group –II using independent‘t’ test

(N = 60)

Post – Test	Mean	Mean Difference	Standard Deviation	Independent ‘t’ test	‘p’ Value	Level of Significance
Experimental Group – I	8.67	1.73	2.564	2.204 (df = 58)	0.001	Significant
Experimental Group -II	10.40		3.460			

Table – VII depicts the comparison of post – test thrombophlebitis score of samples in experimental – I and Experimental Group –II using independent‘t’ test

The post - test mean and standard deviation thrombophlebitis score in experimental group - I was 8.67 ± 2.564 and among samples in experimental group – II the post - test mean and standard deviation scores were 10.40 ± 3.460. The mean difference score was 1.73 the obtained independent ‘t’ test score was 2.204 for the degree of freedom 58. It was statistically significant at the ‘p’ value ≤ than 0.05.

Discussion:

Lin Jing and MS SHARMILE (2018) supported the study's findings by observing the curative effect of cold application versus magnesium sulphate dressing on thrombophlebitis in the control group of 80 patients with external cold application and in the experimental group of 74 patients treated with 13 magnesium sulphate group and comparing their effects. The cold application group received 91.75% of the results, while the magnesium sulphate group received only 81.62%. There was no significant difference between the effects of magnesium sulphate and commonly used drugs.

MS.Sharmile (2005) investigated the effectiveness of magnesium sulphate application versus cold application in reducing swelling and pain in railway hospital perambur out of 60 thrombophlebitis cases that were randomly divided over 6 hours. Following the completion of 6 hours of post-assessment. The mean before the assessment was 3.8, and the mean after the assessment was 0.5. She discovered that the magnesium sulphate dressing reduced swelling and pain perception at the infusion site significantly more than the cold compress.

Conclusion:

The goal of this study was to compare the efficacy of glycerin magnesium sulphate application versus cold application in reducing thrombophlebitis in patients receiving intravenous therapy at PREM hospital in Panipat. According to the findings, glycerin magnesium sulphate application is more effective than cold application in reducing thrombophlebitis in patients receiving intravenous therapy.

As a result, mgso4 can be recommended to patients receiving intravenous therapy to reduce thrombophlebitis.

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