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Research article

A QUASI EXPERIMENTAL STUDY TO EVALUATE EFFECTIVENESS OF GLYCERIN MAGNESIUM SULPHATE DRESSING ON PHLEBITIS AMONG PATIENTS UNDERGOING PERIPHERAL INTRAVENOUS INFUSION IN SELECTED HOSPITAL, VADODARA

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ABSTRACT

Introduction: Intravenous therapy is indicated for many reasons. A significant number of patients admitted into hospital receive some forms of intravenous therapy through peripheral venous cannula, which is a common procedure carried out in hospital to allow rapid and accurate administration of medication. However, the intravenous cannulation can have undesirable effects, the most of which is phlebitis, which is due to mechanical, chemical or infectious cause. **Method:** In this study quasi-experimental research approach was used. Non probability purposive sampling technique was used to select the sample from the selected hospital. The research design adopted for the study was pre-test, post-test control group design. In the present study a sample of 60 hospitalised patients and who met the inclusion criteria was selected from the target population. In this study the instruments used are baseline Performa, structured interview schedule to assess the subjective symptoms and observation scale to observe the objective symptoms. **Result:** In experimental group post test mean score 1.10, SD was 0.71 respectively. In control group post test mean score 2.53, SD was 0.78 respectively. The obtained value 7.454 statistically was significant at 0.001 levels. So research hypothesis was accepted. So there was significant difference between post intervention phlebitis among the experimental group and control group. **Discussion:** In the research study findings revealed that Glycerin Magnesium sulphate dressing is highly effective in decrease phlebitis level to the patients.

Keywords: Glycerin magnesium sulphate dressing, Phlebitis patients, Peripheral Intravenous infusion, Effectiveness.

INTRODUCTION

Peripheral-catheter related phlebitis is caused by the inflammation of tunica intima of a superficial vein due to irritation of the tunica by mechanical, chemical or bacterial sources. It is estimated that in U.K 20-80% of patients with peripheral venous cannula develop phlebitis.^[1] A project was undertaken in Ball memorial Hospital to determine the incidence of peripheral intravenous therapy-related phlebitis in an adult population, results showed that phlebitis rate was 3.3%(10/305).^[2] Chemical phlebitis is caused by

drug or fluid being infused through cannula. Factors such as pH and osmolarity of substances have a significant effect on the incidence of phlebitis. If left untreated, it can lead to infection or thrombus formation. Hence it is essential for the nurses to treat the patients with phlebitis promptly with cost effective thus preventing complications related to phlebitis.^[3] Phlebitis is defined as inflammation of a vein, which can be categorized in as chemical, mechanical, or bacterial. Chemical phlebitis can be

caused by an irrigating medication or solution (increased pH or high osmolarity of a solution), rapid infusion rates, and medication incompatibilities. Mechanical phlebitis results from long periods of cannulation, catheter in flexed areas, catheter gauges larger than the vein lumen, and poorly secured catheters. Bacterial phlebitis results from poor hand hygiene, lack of aseptic technique, failure to check all equipments before use and failure to recognize early signs and symptoms of phlebitis. Other factor is poor venipuncture technique phlebitis is characterized by reddened warm area around the insertion site or along the path of the vein, pain or tenderness at the site or along the vein and swelling. Treatment consists of discontinuing the IV line and restarting it in another site and applying a warm, moist compress to the affected site. Phlebitis also prevented by using aseptic technique during insertion, using the appropriate-size cannula or needle for the vein, considering the composition of the fluids and medications when selecting a site and observing the site hourly for complications like phlebitis or any signs of phlebitis.^[4] Magnesium sulfate is a colorless, odorless and a solid substance. It is slightly bitter in taste. It is highly soluble in inorganic solvents like water. It is partially soluble in organic solvents, like glycerin and alcohol. Magnesium sulfate in its anhydrous form is hygroscopic. It has a tendency to attract moisture.^[5,6]

Aims & Objectives:

1. Assess the pre intervention phlebitis in experimental group.
2. Assess the pre intervention phlebitis in control group.
3. Assess the post intervention phlebitis in experimental group.
4. Assess the post intervention phlebitis in control group.
5. Determine the effectiveness of glycerin magnesium sulphate dressing on phlebitis among patient.

MATERIALS AND METHODS

Type of the study: Experimental study

Ethical clearance was obtained from ethical committee and informed consent was taken from the participants. Duration of the study is 2 years.

Sampling technique: Non probability convenient sampling technique was used in this study. In these

study 60 patients was selected 30 for experimental group and 30 for control group.

Inclusion criteria:

1. Patients who were admitted to the Dhiraj hospital during the period of study.
2. Patient above age of 14 years.
3. Patient those who can understand or speak, write or read Gujarati, Hindi, English.
4. Patient who are on peripheral intravenous access as treatment.

Exclusion criteria:

1. Patient who have condition like – DM, HIV, AIDS, Hepatitis, Renal Failure, skin diseases.
2. Patient who are having Central venous access & Venisection.

Methodology: In this study quasi-experimental research approach was used. The research design adopted for the study was pre-test, post-test control group design.

Grouping: there were two groups experimental and control group.

In this study the instruments used are baseline Performa, to assess the subjective symptoms and observation scale to observe the objective symptoms. Jackson's visual infusion phlebitis scale is use for measure the phlebitis according to score.

In this 0 to 5 score in different stages.^[9]

- Score 0 is No signs of phlebitis.
- Score 1 is possibly first signs of phlebitis.
- Score 2 is Early stage of phlebitis.
- Score 3 is Medium stage of phlebitis.
- Score 4 is Advanced stage of phlebitis or start of thrombophlebitis.
- Score 5 is Advanced stage Thrombophlebitis.

Patients who are getting score 3, 4, 5 according to scale those patients apply glycerin magnesium sulphate dressing at affected site,

The study conducted in the following phases,

Phase 1: Pre test level of Phlebitis will be assessed using Jackson's visual infusion phlebitis scale.

Phase 2: 20gram of magnesium sulphate diluted in 100 ml of glycerin and this combination applied on site of phlebitis with help of roller bandage and the limb will be elevated. This procedure will be repeated two times in a day continuous for 2days

Phase 3: After second application of intervention the post test level of Phlebitis assessed by using the Jackson's visual infusion phlebitis scale.

RESULTS

Table1: Analysis of observational score on effectiveness of glycerin magnesium sulphate dressing on phlebitis among patient

	GROUP	N	Mean	Standard Deviation	Std. Error Mean	Mean Difference	t value	p value
POST	EXPERIMENTAL	30	1.10	0.71	0.130	-1.43	7.454	<0.001
	CONTROL	30	2.53	0.78	0.142			

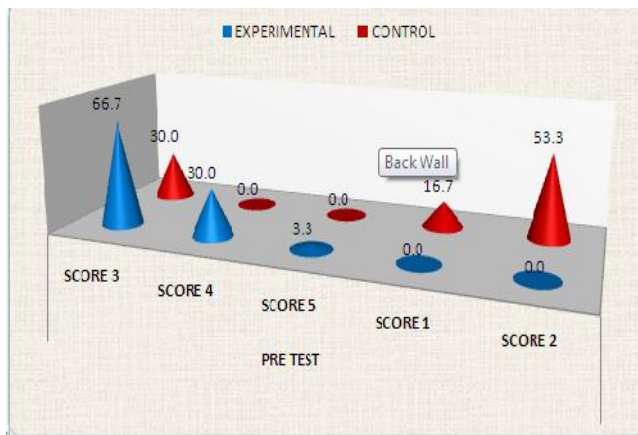


Fig 1: Cone diagram showing Pre Test Phlebitis Level among Experimental Group and Control Group

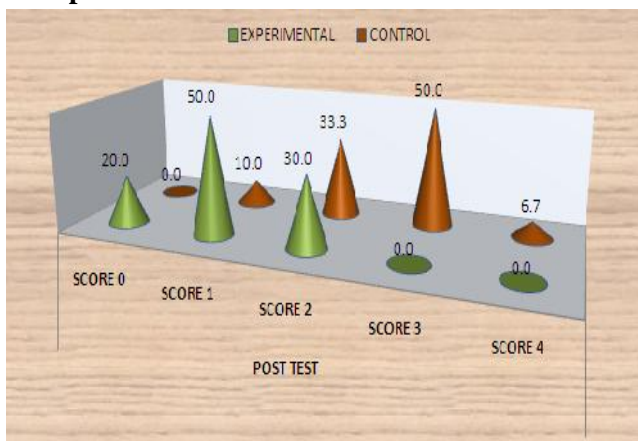


Fig 2: Bar diagram showing Post Test Phlebitis Level among Experimental Group and Control Group

DISCUSSION

Joseph Jency.(2009), conducted a quasi-experimental study was conducted in a selected hospital of Mangalore to compare the effectiveness of selected nursing interventions such as hot fomentation, thrombophob and ichthammol glycerine on patients with phlebitis related to peripheral intravenous infusion.^[7] The sample consisted of 45 subjects who had developed intravenous infusion related phlebitis, Signs and symptoms of phlebitis was measured by phlebitis measurement chart, erythema observation

check list and pain scale. Three treatments were administered to 15 patients each for 3 days two times a day. The data analyzed by using ANOVA and 't' test. The findings of the study revealed that among the three modalities of treatment of phlebitis, it was found that warm ichthammol glycerine dressing was most effective in reducing in duration, swelling, palpable venous cord, erythema and pain at $p < 0.001$. The pre-treatment pain score were 7.67 and it was reduced to 1.47 on the 3rd post-treatment day.^[8] The pre test of experimental group that majority 20(66.7%) hospitalized patient had medium stage of phlebitis, 9(30%) hospitalized patient had Advanced stage of phlebitis or start of thrombophlebitis and 1(3.3%) hospitalized patient had Advanced stage Thrombophlebitis.

The pre test of control group that majority 9(30%) hospitalized patient had medium stage of phlebitis, 5(16.7%) hospitalized patient had possibly first signs of phlebitis and 16(53.3%) hospitalized patient had Early stage of phlebitis.

The post test of experimental group that majority 15(50%) hospitalized patient had possibly first signs of phlebitis, 9(30%) hospitalized patient had Early stage of phlebitis and 6(20%) hospitalized patient had no sign of phlebitis.

The post test of control group that majority 15(50%) hospitalized patient had medium stage of phlebitis, 10(33.3%) hospitalized patient had Early stage of phlebitis had possibly first signs of phlebitis, 3(10%) hospitalized patient had possibly first signs of phlebitis and 2(6.7%) hospitalized patient had Advanced stage of phlebitis or start of thrombophlebitis.^[9]

In experimental group post test mean score 1.10, SD was 0.71 respectively. In control group post test mean score 2.53, SD was 0.78 respectively. The obtained value 7.454 statistically was significant at 0.001 level. So research hypothesis was accepted.

CONCLUSION

There was significant difference between post intervention phlebitis among the experimental group and control group. All the statistical evidence showed in phlebitis scale, which is directly proportionate to the effectiveness of the glycerin magnesium dressing on phlebitis patient.

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Conflict of Interest: Nil

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