



# A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF SUMAG DRESSING AND COLD COMPRESS ON REDUCING INTRAVENOUS INFILTRATION AMONG PATIENTS ADMITTED IN MEDICAL AND SURGICAL WARD OF NETAJI SUBHASH CHANDRA BOSE MEDICAL COLLEGE, JABALPUR

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## ABSTRACT

This comparative study aims to assess the effectiveness of Sumag dressing and cold compress in reducing intravenous infiltration among patients admitted to the medical and surgical wards of Netaji Subhash Chandra Bose Medical College, Jabalpur. Thrombophlebitis, characterized by inflammation and clot formation in veins, poses a risk during intravenous therapy. Peripheral intravenous devices (PIV) are commonly used in hospitalized patients, yet complications like hematoma, phlebitis, and infections may arise. The study addresses the need to explore interventions for reducing intravenous infiltration, a common issue in medical therapy.

Objectives of the study include assessing the extent of intravenous infiltration using the Infusion Nurse's Society Infiltration Scale, administering Sumag dressing to one group, applying cold compress to another, and comparing their effectiveness. Additionally, the study aims to examine the association between intravenous infiltration scores and selected socio-demographic variables.

Assumptions consider patients on intravenous therapy at risk for infiltration, with the hypothesis predicting a significant difference in the effectiveness of Sumag dressing and cold compress. Furthermore, the study anticipates a significant association between intravenous infiltration and socio-demographic variables. The findings may contribute valuable insights to enhance the management of intravenous therapy complications, ultimately improving patient outcomes.

## INTRODUCTION

**“Don't let yesterday take up too much of today.”-will Rogers**

### Introduction

Thrombophlebitis is an inflammation of the walls of the veins, often accompanied by the formation of a clot. When a clot develops initially in the veins as a result of stasis or hypercoagulability, but without inflammation, the process is referred to as phlebothrombosis.

Peripheral intravenous device (PIV)/catheters are the most commonly used intravenous device in hospitalized patients. They are primarily used for therapeutic purposes such as administration of medications, fluids and/or blood products as well as blood sampling. PIV's are usually considered a low risk; however it can be associated with complications such as hematoma, phlebitis, pain and infections.

### Need for the study

Intravenous infusion has become an indispensable component in medical therapy. It is used to correct electrolyte imbalances, to deliver medications, for blood transfusion or as fluid replacement to correct dehydration. In spite of its therapeutic effects the most frequently encountered problems are infiltration and extravasations. Unfortunately, they are so

common, that they are sometimes overlooked or not addressed as soon as they should be, or else they can produce debilitating effects. (Anumol k. V. 2010)

### Title of the study

“A comparative study to assess the effectiveness of sumag dressing and cold compress on reducing intravenous infiltration among patients admitted in medical and surgical ward of Netaji Subhash Chandra Bose medical college, Jabalpur”

### Objectives

The objectives of the study were to:

1. Assess extent of Intravenous infiltration in Group-I and group -II by Infusion nurse's society infiltration scale among patients admitted in medical and surgical ward of N.S.C.B. medical college, Jabalpur.
2. Administer sumag dressing for reducing Intravenous infiltration to group- I patients admitted in medical and surgical ward of N.S.C.B. medical college, Jabalpur.
3. Administer cold compress for reducing Intravenous infiltration to group- II admitted in medical and surgical ward of N.S.C.B. medical college, Jabalpur.
4. Assess extent of Intravenous infiltration after intervention in group -I and group -II among patients

admitted in medical and surgical ward of N.S.C.B. medical college, Jabalpur.

- Compare the effectiveness of sumag dressing & cold compress for reducing Intravenous infiltration among patients admitted in medical and surgical ward of N.S.C.B. medical college, Jabalpur.
- Find out the association between Intravenous infiltrations score with their selected socio demographic variables.

### Assumption

- Patients on intravenous therapy are at risk for developing infiltration.
- Sumag dressing and cold compress respectively reduces intravenous infiltration & pain.

### Research Hypothesis

**H<sub>1</sub>**- There will be a significant difference between effectiveness of sumag dressing & cold compress in reducing Intravenous infiltration among patients admitted in medical and surgical ward.

**H<sub>2</sub>**-There will be significant association between Intravenous infiltration with their selected socio demographic variables.

### Conceptual Framework

Aims of the present study are to assess the effectiveness of sumag dressing and cold compress for reducing intravenous infiltration. The conceptual framework of this study is based on **Imogene King's** goal attainment model. Each individual is a personal system. Interpersonal systems are formed by human being interaction and transaction.

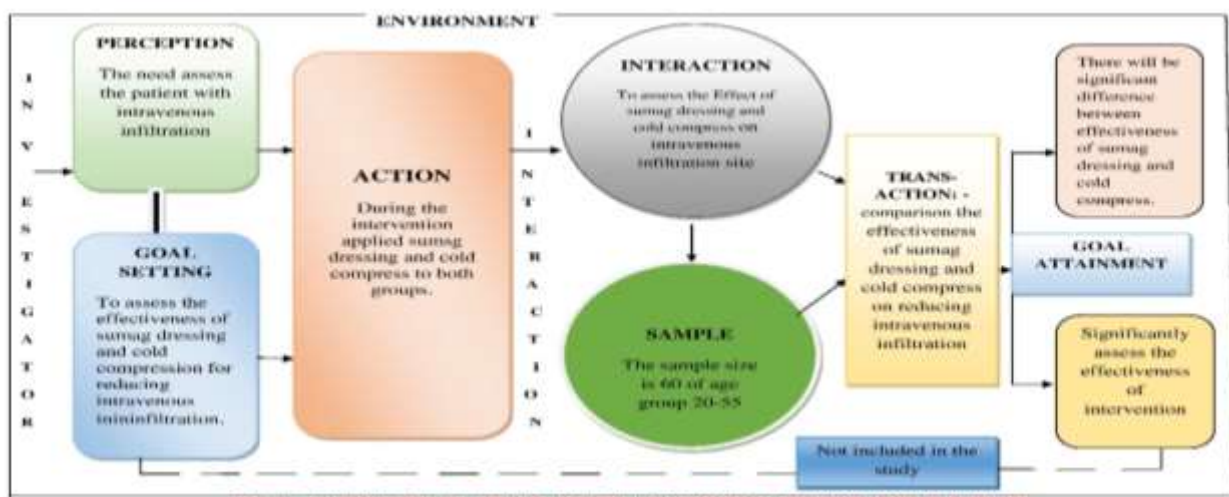


Fig no. 1 CONCEPTUAL FRAME WORK (ACCORDING TO IMOGENE M KING'S)

### REVIEW OF LITERATURE

Many studies of similar area were not profound but the researcher has reviewed available studies to analyze the problem.

- Review of Literature related to intravenous infiltration.
- Review of Literature related to measures to reduce intravenous infiltration.
- Review of Literature related to effects of cold compress and sumag dressing.

### RESEARCH METHODOLOGY

**Kerlinger (1923)**—stated that researcher usually has a choice of research design, methods of data collection and type of analysis. All these must be congruent and appropriate to research problem.

Methodology includes a research approach, research design, description of setting, population, samples and sampling techniques, pilot study and procedure for data collection and plan for data analysis.

### Research Approach

A research approach tells the researcher, the way to collect the data and analyze them. It is the overall plan or blue print to

collect data and how to analyze them. It is the overall plan of the study. (**Polit & hungler, 2005**)

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 comparative research approach is considered to be suitable.

### Research Design

A research design is the overall plan for addressing research questions or for testing the research hypothesis, including specification for enhancing the integrity of the study.

### (Polit & hungler,2005)

A researcher overall plan for obtaining answers to the research question or for testing the research is referred to as research design.

In the present study investigator has adopted a quasi experimental research design.

The use of experimental group in the design helps the researcher to determine whether or not the independent variable had made a change in the experimental group.



The samples were 60 patients. 30 patients in group 1 and 30 patients in group 2, effectiveness is assessed by using infusion nurses society infiltration scale for samples and results are analyzed

**Table 1:**  
**Quasi Experimental Research Design**

Group	Observation	Intervention
Group 1	O <sub>1</sub>	X <sub>1</sub>
Group II	O <sub>2</sub>	X <sub>2</sub>

Setting is the physical location and condition in which the data collection takes place in study. (Polit & Hungler, 2005)

The study was conducted in Netaji Shubhas Chandra Bose Medical College and Hospital at Jabalpur.

Population includes patients with sign and symptoms of intravenous infiltration admitted in medical and surgical ward of Netaji Shubhas Chandra Bose Medical College and Hospital at Jabalpur.

In this study the sample comprises patients with sign and symptoms of intravenous infiltration admitted in medical and surgical ward of Netaji Shubhas Chandra Bose Medical College and Hospital at Jabalpur, who fulfilled the Inclusion criteria.

**Sample Size**

In this study the sample size comprises of 60 patients (30 patients in sumag dressing group -I and 30 patients in cold compress group- II) who are having intravenous infiltration as assessed by Infusion nurses society infiltration scale.

**Sampling Technique**

Sampling is a process of selecting a portion of the population to obtain data regarding a problem. The samples for the study will be selected by convenient sampling technique.

**Data was collected with the help of structured multiple questionnaire which contains**

The instrument selected in a research should be as far as possible the vehicle that would best obtain data for drawing conclusion pertinent to the study. The tool acts as an instrument to assess and collect data from the respondents of the study.

The tools selected for the study were:  
 Infusion Nurses Society Infiltration Scale.

**Description of the tool**

The tools consist of three sections:

**Section A:** A demographic Performa (Interview Schedule) to assess the characteristics of the patients include such as Age, Gender.

**Section B:** A Socio-demographic variables according to clinical condition to assess the characteristics of the patients include such as Duration of Intravenous therapy, Type of disease, Site of Intravenous infusion, No. of times Intravenous cannulation done, Duration of admission in the hospital.

**Section C: infusion nurses society infiltration scale** – The infusion nurses society infiltration scale developed by Michelle Berreth, RN, CRNI, CPP, Nancy Delisio, RN, at Infusion Nurses Society, Norwood, MA 02062, USA.

Pilot study is a small-scale study or the trail run of the major study. It is not the same as a small- scale study. The purpose of the pilot study is not so much to test research Hypothesis but rather to test protocols, data collection instrument, sample recruitment strategies and other aspects of a study in preparation for a large study. The purpose of pilot study is two folds: it helps to find the feasibility, improvement and a modification in the research plan before the main study is attempted. Hence pilot study was carried out to test the methodology planned for the main study. The pilot study was conducted in **Seth Govind Das Hospital Jabalpur** from 13/04/18 to 15/04/18. Data for pilot study were collected from 10 patients by convenient sampling technique.

The permission was obtained from the director of hospital prior to the study. The purpose of the study was explained to the subject. The observation of sample and intravenous infiltration was taken on 13/04/18 & after that apply the application of sumag dressing group 1 patients and cold compress group 2 patients for the intervention. On fourth day 16/04/18 Data analysis was done using Karl Pearson correlation coefficient split half technique. The pilot study helped the investigator to visualize practical problems that could be encountered while conducting main study

**DATA ANALYSIS AND INTERPRETATION**

**Organization and presentation of data:**

Data was collected and entered in a master sheet for the statistical analysis. It was interpreted using descriptive and inferential statistical. The data are organized and presented under the following section.

**Section I**

This section deals with analysis of socio demographic variables data of group I sumag dressing, and group II cold compress.

**Section I –(A):** This section deals with analysis of the socio demographic variables data of 30sample group I sumag dressing.

**Section I –(B):** This section deals with analysis of the socio demographic variables data of 30sample group I cold compress.

**Section II-:** This section deal with the distribution of samples of group I sumag dressing and group II cold compress as per grading of intravenous infiltration score during 1to 3days .

**Section II (A):** This section deal with the distribution of samples of group I sumag dressing as per grading of intravenous infiltration score during 1to 3days.

**Section II (B):** This section deals with the distribution of samples of group II cold compress as per grading of intravenous infiltration score during 1to 3days.

**Section III** This section deal with the distribution of sample Mean and SD of group I sumag dressing and group II cold compress.

**Section III (A):** This section deals with the distribution of sample as per Mean and SD of infiltration score of sumag dressing group I.

**Section III (B):** This section deals with the distribution of sample Mean and SD of group II cold compress.

**Section IV-** This section deals with the comparison of Mean difference Scores of among sample between group I sumag dressing and group II cold compress.



**Section-IV (A)** This section deals with the comparison of Mean difference Scores of among sample between group I sumag dressing

**Section-IV (B)** This section deals with the comparison of Mean difference Scores of sample between group II cold compress.

**Section- V** This section deal with the analysis of data to associated to intravenous infiltration of patients with selected demographic variables in group I sumag dressing and group II cold compress.

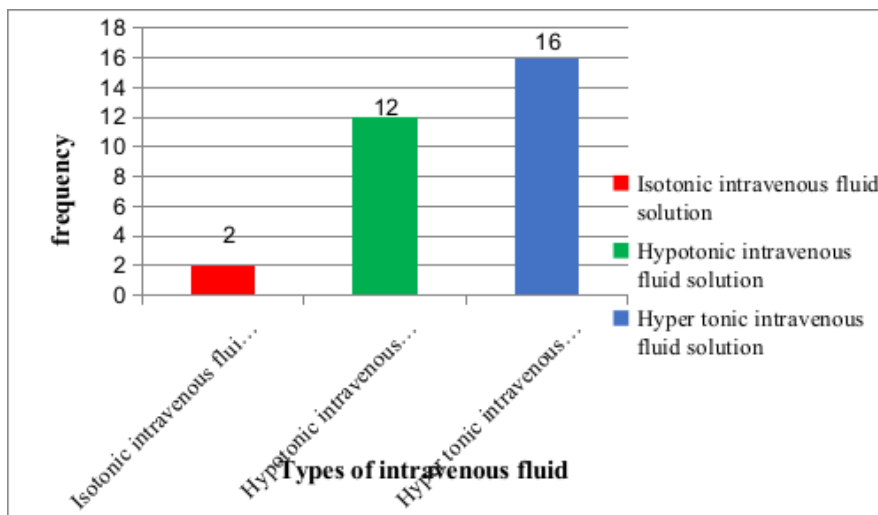
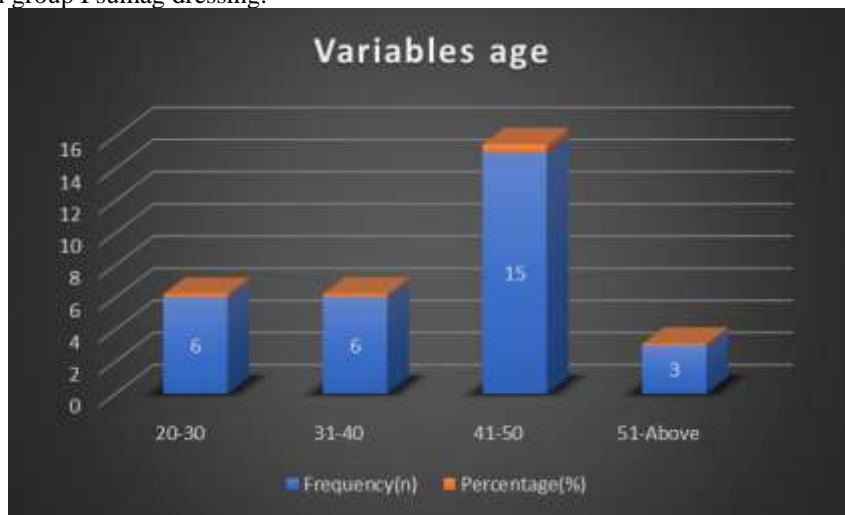
**Section- V (A)** This section deal with the analysis of data to associated to intravenous infiltration of patients with selected demographic variables in group I sumag dressing.

**Section- V (B)** This section deal with the analysis of data to associated to intravenous infiltration of patients with selected demographic variables in group II cold compress.

**Distribution Of Subject According To Their Age.**

N=30

Variables Age	Frequency(n)	Percentage(%)
20-30	6	20%
31-40	6	20%
41-50	15	50%
51-Above	3	10%



**Figure no. 2 Distribution of subject according to their types of intravenous fluid Group – I distribution of samples of group I as per intravenous infiltration score**

Days	Infiltration Grading Score	Sumag dressing (N=30)	
		Frequency (n)	Percentage (%)
1 <sup>st</sup> day	Grade 0	0	0
	Grade 1 <sup>st</sup>	0	0
	Grade 2 <sup>nd</sup>	0	0
	Grade 3 <sup>rd</sup>	7	23.33
	Grade 4 <sup>th</sup>	23	76.67



2nd day	Grade 0	0	0
	Grade 1 <sup>st</sup>	0	0
	Grade 2 <sup>nd</sup>	6	20
	Grade 3 <sup>rd</sup>	17	56.67
	Grade 4 <sup>th</sup>	7	23.33
3 <sup>rd</sup> day	Grade 0	1	3.33
	Grade 1 <sup>st</sup>	16	53.34
	Grade 2 <sup>nd</sup>	12	40
	Grade 3 <sup>rd</sup>	1	3.33
	Grade 4 <sup>th</sup>	0	0

**Table no Table.2.** show that the majority of sample in 1st day was (grade 4) 23(76.67%), and minority of (grade 3) 7 (23.33%), and none of them in grade 0, 1<sup>st</sup> and 2<sup>nd</sup> intravenous infiltration score  
 Distribution of sample Mean and SD of group -I sumag dressing.

Days of study	Mean	SD
1st day	3.76	0.42
2 <sup>nd</sup> day	3.03	0.67
3 <sup>rd</sup> day	1.43	0.65

**Table no.3** Depict the distribution of intravenous infiltration score of Group-I by Infusion Nurses Society Infiltration Scale. 1<sup>st</sup> day mean was of intravenous infiltration 3.76 and SD was

Day of study	Sumag dressing Group-I		Cold compress Group-II		Mean Difference	SD Difference	t test
	Mean	SD	Mean	SD			
1 <sup>st</sup> Day	3.76	0.42	3.66	0.47	0.1	0.04	0.97
2 <sup>nd</sup> Day	3.03	0.67	2.9	0.74	0.13	0.08	0.78
3 <sup>rd</sup> Day	1.43	0.65	1.67	0.59	0.24	0.02	1.58

**Table no 4 Significance of difference between sumag dressing and cold compress by using ‘t’ test.**

This section deals with the Mean difference of day 1<sup>st</sup> was 0.1, day 2<sup>nd</sup> was 0.13 and day 3<sup>rd</sup> was 0.24 and SD difference of day 1<sup>st</sup> was 0.04 and day 2<sup>nd</sup> 0.08 and day 3<sup>rd</sup> 0.02.

The calculated t-value at the 0.05 level of significance day 1<sup>st</sup> was 0.97, day 2<sup>nd</sup> was 0.78 and day 3<sup>rd</sup> was 1.58. the calculated t-value lower than table value. Hence **H1** is non excepted. The result show that the cold compress and sumag dressing had similar effect on reducing intravenous infiltration.

Association of intravenous infiltration score of patients with selected demographic variables in group one sumag dressing. Description of Age, Duration of intravenous therapy, Types of disease, Sites of intravenous infusion, number of time intravenous cannulation done, number of intravenous cannula , types of cannula, types of intravenous fluid solution, duration of admission in the hospital is significant and gender none significant.

**Summary**

This chapter deals with the analysis of data and interpretation of the findings. The data obtained are summarized in the data sheet using both descriptive and inferential statistics.

0.42, 2<sup>nd</sup> day mean was 3.03and SD was 0.67, 3<sup>rd</sup> day mean was 1.43, and SD was intravenous infiltration score was 0.65

**Comparison of Mean and SD Of Sumag Dressing and Cold Compress**

**SECTION IV-** This section deals with the comparison of Mean difference scores of among sample between group -I sumag dressing and group -II cold compress.

**Section-IV A-** This section deals with the comparison of Mean difference Scores of sample group I sumag dressing

**Section-IV B –** This section deals with the comparison of Mean difference Scores of sample Group-II cold compress.

The analysis has been organized and presented under 5 sections. Frequency and percentage were used to analyze the socio demographic & clinical variables. Frequency, percentage, mean and standard deviation were used to assess the effectiveness of sumag dressing & cold compress among patientss. And associated with intravenous infiltration of patients with selected demographic variables in group one sumag dressing and group two cold compress

**The Major Findings Of The Study Are Summarized As Follows**

**Findings Related To Socio Demographic Variable In group**

**-I sumag dressing-:** Show that out of 30 sample the majority 15 (50%)ware 41-50 years age, regarding gender the majority 17(56.67%) ware male, According to duration of intra venous therapy the majority 17 (56.67%) ware >4 days, With regard to types of disease the majority 17(56.67) ware in moderate types of disease, With regard to type of intravenous cannula The majority of 23(76.67)ware winged with port cannula, According to site of intra venous infusion The majority of 15(50% )ware Cephalic vein site of intravenous infusion, With regard to types of intravenous fluid solution The majority of 14(46.67%) ware hyper tonic intravenous fluid solution, According to numbers of times intravenous cannulation done The majority of 10(33.33%) were twice times intravenous cannulation done, The majority of 16(53.33%) were 20 G



(number), numbers of intra venous cannula, According to duration of admission in the hospital The majority of sample 16(53.33%) were 8-15 days duration of admission in the hospital.

**In Group-II cold compress dressing-:** Show that out of 30 sample the majority 14 (46.66%) were 41-50 years age, regarding gender the majority 14 (46.66%) were 41-50 years age, regarding gender the majority 16(53.33%) were female, , According to duration of intra venous therapy the majority 19(63.33%) were >4 days, With regard to types of disease the majority 24(80%) were in Moderate types of disease, With regard to type of intravenous cannula The majority of 22(73.33%) were winged with port cannula, According to site of intra venous infusion The majority of 16(53.33%) were Cephalic vein site of intravenous infusion, With regard to types of intravenous fluid solution The majority of 14(46.67%) were Hypo tonic intravenous fluid solution, According to numbers of times intravenous cannulation done The majority of 16(53.33%) were twice, 9(30%) were twice times intravenous cannulation done, according to number of intravenous cannula the majority of 19(63.33%) were 20 G, According to duration of admission in the hospital The majority of sample 19(63.33%) were < 7 days admission in the hospital.

#### **Group – II B Findings related to the frequency and percentage of cold compress**

Intravenous infiltration score of Group-II in 1<sup>st</sup> day none of the sample was in grade 0 and grade 1 and 2 but 10 (33.33%) sample having grade 3 and 20(66.67%) sample having grade 4 intravenous infiltration score.

Intravenous infiltration score of group Group-II in 2<sup>nd</sup> day none of the sample was in grade 0, grade 1 but 10 (33.33%) sample having grade 2<sup>nd</sup> and 13(43.33%) sample having grade 3<sup>rd</sup> and only 7(23.33%) sample having grade 4 intravenous infiltration score.

Intravenous infiltration score of group Group-II in 3<sup>rd</sup> day none of the sample was in grade 0 and grade 4<sup>th</sup> and 12(40%) sample having grade 1<sup>st</sup> and 16 (53.34%) sample having grade 2<sup>nd</sup> and only 2(6.67%) sample was having grade 3<sup>rd</sup> intravenous infiltration score.

#### **Findings related to the mean score and SD of Group -IA sumag dressing and Group -11B cold compress**

This section deal with the Mean and SD score of intravenous infiltration in the (group one) sumag dressing during Days of 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> days using Infusion Nurses Society Infiltration Scale.

1<sup>st</sup> day-: Mean intravenous infiltration score of group 1 was 3.76 and SD was 0.42 in 2<sup>nd</sup> day Mean intravenous infiltration was 3.03 with SD score of 0.65, and in 3<sup>rd</sup> day Mean intravenous infiltration was 1.43 with SD 0.61.

#### **Findings related to the mean score and SD of group –II B cold compress**

This section deal with the Mean and SD score of inflammation infiltration in the Group II cold compress during Days of 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> days using Infusion Nurses Society Infiltration Scale.

1<sup>st</sup> day Mean intravenous infiltration score of group -II A was 3.66 and SD was 0.44. 2<sup>nd</sup> day Mean intravenous infiltration score was 2.9 with SD score 0.74 and in 3<sup>rd</sup> day Mean intravenous infiltration score was 1.67 and SD 0.59.

#### **Findings related Significance of difference between sumag dressing and cold compress by using ‘t’ test**

Comparison of Mean difference scores of inflammation infiltration of sample between sumag dressing, and cold compress during 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> days using Infusion Nurses Society Infiltration Scale Shows the mean score of sumag dressing of 1<sup>st</sup> day was 3.76, 2<sup>nd</sup> day 3.03, and 3<sup>rd</sup> day 1.43. SD score of sumag dressing was 1<sup>st</sup> day 0.42, 2<sup>nd</sup> day 0.65 and 3<sup>rd</sup> day 0.615 score.

Mean score of cold compress of 1<sup>st</sup> day 3.66, 2<sup>nd</sup> day 2.9, and 3<sup>rd</sup> day 1.67. SD score of 1<sup>st</sup> day was 0.47, 2<sup>nd</sup> day 0.74, and 3<sup>rd</sup> day 0.59.

#### **This section deals with the analysis of data to association to intravenous infiltration of patients with selected demographic variables in group - sumag dressing**

It deal with the analysis of data to associated to intravenous infiltration of patients with selected demographic variables age, duration of intravenous infiltration therapy, types of disease, types of intravenous infiltration cannula, sites of intravenous infusion, types of intravenous infiltration fluid, numbers of time intravenous infiltration cannulation done, numbers of intravenous infiltration cannula, duration of admission in the hospital, in group one sumag dressing and group I sumag dressing compress was found significant and gender was non-significant. Hence it fulfill objective no 6 and hypothesis H<sub>2</sub> is accepted.

#### **Conclusion**

In the study after the detailed analysis this study leads to the following conclusion:-

In the study show the effectiveness of sumag dressing and cold compress for reducing intravenous infiltration in the apply sumag dressing and cold compress on 3 consecutive days.

The present study also proved that there was a significant difference between sumag dressing and cold compress. So it may be stated that the application of sumag dressing is effective in reducing inflammation infiltration

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