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A quasi experimental study to assess the effectiveness of hot and cold application in reducing pain and edema on intravenous infiltration site among the in patients of hospital Dehradun

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Abstract
Intravenous therapy is the giving therapy of liquid substance directly to a vein. The word intravenous simply means "with in the vein". Puncture of any portion of the vein wall by mechanical friction from the catheter/needle cannula may cause the infiltration. Improper cannula size or excessive delivery rate of the fluid is also contributes in infiltration. In this study, random sampling technique was used for 30 sample out of which 15-15 sample belong to group a and group B and were allotted using lottery method sampling. Data was collected with the help criteria for assessing the pitting edema and clinical criteria for grading. The effectiveness of cold and hot application in which mean for posttest of group A 1.067 and posttest of group B is 0.6 and 't value' for group A is 3.75 and for group B is 4.40 and group is shows were effectiveness there group A hot application is more effective than cold application.

Keywords: hot application, cold applications, effectiveness of hot application, effectiveness of cold application, pain, edema, intravenous infiltration

Introduction
Intravenous therapy is commonly referred to as a drip because many system of administration employ a drip chamber. Infiltration can occur when the intravenous cannula dislodges or perforates the wall of the vein. Infiltration is characterized by edema around the insertion site, leakage of intravenous fluid from the insertion site, discomfort and coolness in the area of infiltration and a significant decrease in the flow rate.

2. Objectives
- To assess the pretest level of pain and edema of sample group (A&B) with intravenous infiltration.
- To assess the posttest level of pain and edema after administering hot application for group A and cold application for group B.
- To compare the pretest level of pain and edema in intravenous infiltration site of group A & B.
- To compare the posttest level of pain and edema in intravenous infiltration site of group A&B.
- To compare the pre and posttest level of pain and edema in intravenous infiltration site of group A.
- To compare the pre and posttest level of pain and edema in intravenous infiltration site of group B.
- To correlate the posttest level of pain and edema in infiltrated site of group A & B.
- To associate the posttest level of pain and edema of group A and group B with their selected demographic variables.

3. Assumption
- Patient with Intravenous may experience pain and edema.
- Hot and Cold application over Intravenous infiltration site may reduce pain and edema.

4. Research Approach
Quantitative research approach is used for this study.

- **Research design**

True experimental research design

- **Setting**

The study was conducted in shri mahant inderesh hospital, Dehradun.

- **Population**

The study population comprises of all the hospitalized patient admitted in the following selected wards who are receiving intravenous fluid.

- **Sample**

The sample consists of subjects admitted to the selected inpatient wards at the Shri Mahant Inderesh Hospital, Dehradun fullfilling the inclusive criteria.

- **Sample size**

30 samples samples out of which 15-15 sample belong to group aand group b and were allotted using lottery method sampling.

- **Sampling technique**

Random sampling technique used to select the 30 samples.

- **Data collection instrument**

Tools are used criteria for assessing the Pitting edema and clinical criteria for grading pain.

Table 1: Comparison of Pre Test and Post Test Assessment of Pain and Oedema of Group "A" After Hot Application

S.No.	Grading	% Age For Pre Test	% Age For Post test
1.	0	00	26.66
2.	1	26.66	40
3.	2	33.33	33.33
4.	3	40.00	00
5.	4	00	00

While comparing the pretest and posttest assessment of

group "A" %age it has been shown in the table that in pretest the maximum percentage goes to grade 03 and in posttest maximum was gone to grade 02 and in posttest no case was found with grade 03.

Table 2: Comparison of Pre Test and Post Test Assessment of Pain and Oedema of Group "B" After Cold Application

S. No.	Grading	% Age for Pre Test	% Age for Post Test
1.	0	00	53.33
2.	1	40.00	33.33
3.	2	33.33	13.33
4.	3	26.66	00
5.	4	00	00

While comparing the pretest and posttest assessment percentage of group B it has been concluded that maximum percentage for pretest goes to grade 01 and for posttest it goes to grade zero.

Table 3: Effectiveness of Post Test Assessment Level of Pain and Oedema of Group A and Group B.

S. No.	Grade	% Age of Post Test For Group A	% Age of Post Test For Group B
1.	0	26.66	53.33
2.	1	40.00	33.33
3.	2	33.33	13.33
4.	3	00	00
5.	4	00	00

As shown in table the maximum percentage for grade zero goes to group B and less number of percentage goes to group B for grade 02. So it show that cold application is more effective than the hot one and are least expensive.

5. Recommendations

The study recommends the following for further research

- The study can be conducted in large sample for better generalization.
- A descriptive study can be carried out to assess the factors leading to the development if iv infiltration.
- A study to assess the effectiveness of structured teaching regarding the intravenous infusion therapy for staff nurses working in a hospital.
- A comparative study can be conducted to compare the use of cold application with other non-pharmacological measures in reducing pain and edema of iv infiltration site.
- A study to assess the knowledge, skill, and attitude of staff nurses in management and prevention of iv infiltration.

6. Conclusion

The present study assessed the comparison of effectiveness of hot and cold application in reducing pain and edema. The results revealed that cold application is very effective in reducing pain and edema at $p<0.001$ level than the hot application. On the basis of the study, the investigator concluded that cold application has an significant effect in reducing edema and pain resulting from intravenous infiltration. Hence cold application is expensive, easy to apply and can enhance comfort in patients with intravenous infiltration.

7. References

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