

**Impact of Cold Application Therapy on Femoral Sheath Removal Pain Among Patients
Undergone Angiography in a Selected Hospital Vadodara**

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ABSTRACT

Background: Percutaneous Coronary Intervention (PCI) is a non-surgical method used to open narrowed arteries that supply heart muscle with coronary arteries. Although several arterial access routes may be employed during PCI, the femoral arterial site has been the most commonly used. It is important to reduce the pain experienced by patients undergoing this procedure. Pain caused by the removal of a femoral catheter may be controlled by using pharmacological treatment such as morphine sulphate or lidocaine infiltration. However, it has also been observed that cold application therapy also effective in reduction of pain during femoral sheath removal in patients underwent angiography. **Aim:** Assess the Impact of cold application therapy on femoral sheath removal pain. **Material and methods:** A quasi experimental one group pre-test post-test research study was conducted among the Patient underwent Angiography Procedure and admitted in the ICCU at multispecialty hospital. Total twenty patients were chosen for this study through the purposive sampling techniques. Cold ice application therapy was used to relieve pain at side of femoral sheath among the patients. To gather patient pain intensity data during femoral sheath removal Numerical Rating Pain Assessment Scale was used. Reliability coefficient was found 0.88 by using Pearson correlation coefficient test retest method. Analysis and interpretation of data is done by using descriptive and inferential statistics. **Results:** The obtained research data revealed that 50 % participant were from the age group of 40 -49 years old and 75 % were from male category. Findings also depicts that majority 18 (90%) participants don't have any history of previous percutaneous intervention. The pain score level of participants reduced after Ice Bag cold application intervention therapy after Femoral Sheath removal as compare before pain score level. Total mean score of pain level before intervention was 7.25; it was reduced up to 5.05. Calculated 't' value at 19 degree of freedom 4.02(2.09) is < 0.05 level of significance. Ice Bag cold application therapy was found significant in reduction of pain after removal of Femoral Sheath Catheter among the patients had undergone the Angiography Procedure. Association was found between the age and pain level of participants. **Conclusion:** Coronary units are the active, multifaceted and highly stressful work environment that evolves ongoing evidence-based experiences while treating patients. Findings also suggest that cold application to femoral region was effective in reducing pain induced by femoral catheter removal in patients undergoing percutaneous coronary intervention. It will be helpful to patients and his / her family to save the hospital treatment cost along with minimal hospitalization duration period.

Key Words: Cold Application Therapy, Angiography, Pain, Femoral sheath.

INTRODUCTION:

Primary PCI is the urgent use of PCI in people with acute myocardial infarction (heart attack), especially where there is evidence of heart damage on the electrocardiogram (ST elevation MI). PCI is an alternative to coronary artery bypass grafting (CABG), which bypasses stenotic arteries by grafting vessels from elsewhere in the body. Under certain circumstances (extensive blockages, background of diabetes), CABG may be superior.¹ It is important to reduce the pain experienced by patients undergoing this procedure. Pain caused by the removal of a femoral catheter may be controlled by using pharmacological methods such as treatment with morphine sulphate or lidocaine infiltration.²

Pain is an important problem in critical care; its management is a priority. The first step in providing adequate pain relief for patients is appropriate assessment. As often as possible, patients' self-reports of pain should be obtained because these reports are the most valid measure of pain.³ Pain may also be controlled using non pharmacological methods, which are patient-specific and aim to establish empathic communication with healthcare staff. Some non pharmacological methods used for pain control improve the patient quality of life such as massage, positioning, hot and cold treatment, transcutaneous electrical nerve stimulation (TENS), acupuncture and progressive muscle relaxation.⁴ Cold application is a non-pharmacological method of pain control, which is an oldest and easiest form of treatment. Demir and Khurshid investigated the effect of cold application upon removal of a chest tube and revealed that cold application reduced pain intensity.⁵

METHODOLOGY: A quasi experimental one group pretest posttest research study was conducted among the Patient underwent Angiography Procedure and admitted in the ICCU at multispecialty hospital. Total twenty patients were chosen for this study through the purposive sampling techniques. Cold ice application therapy was used to relieve pain at side of femoral sheath among the patients. To gather patient pain intensity data during femoral sheath removal Numerical Rating Pain Assessment Scale was used. Reliability coefficient was found 0.88 by using Pearson correlation coefficient test retest method. Analysis and interpretation of data is done by using descriptive and inferential statistics. Cold application therapy was used for 30 min after the femoral sheath removal in Patient underwent Angiography Procedure. Formal verbal and written information consent were taken before

implementation of the cold application. Analysis and interpretation of data were done by using descriptive and inferential statistics.

RESULTS:

1. Description of Demographic Variables of participants

Findings of Demographic variables of participants revealed that maximum participants 10 (50%) belongs to the 40-49 years age group and 8 (40%) participants were in the more than 50 years age group. Data also shows that majority of participants are 15(75%) are male and 5 (25%) were only female participants. Findings also showed that majority 18 (90%) participants don't have any history of previous percutaneous intervention.

2. Comparison of Pain Level of Participants before and after Cold Application Therapy

Table 1: Comparisons of Pain level of participants before and after cold application therapy through Numerical Rating Pain assessment scale

n=20

| Pain Score | Before Intervention | After Intervention |
|---------------------|---------------------|--------------------|
| | Frequency (%) | Frequency (%) |
| Mild Pain (>3) | 0 (0%) | 0 (%) |
| Moderate Pain (4-7) | 12 (60%) | 20 (100%) |
| Severe Pain (<8) | 8 (40%) | 0 (0%) |
| Total | 20 (100%) | 20 (100%) |

Table 1 shows that highest 12 (60%) of patients felt moderate pain, followed by severe pain of 8(40%) before cold application but after cold application all 20 (100%) had moderate whereas none of them had severe pain

3. Effectiveness of Cold Application on Femoral Sheath Removal

Table 2: Overall Comparisons of Pain Score of participants before and after cold application therapy through Numerical Rating Pain assessment scale

n=20

| Pain Score | Mean Score | Standard Deviation | Degree Of Freedom | calculated 't' value | 't' table value | Level of significance |
|----------------------------|------------|--------------------|-------------------|----------------------|-----------------|-----------------------|
| Before Intervention | 7.25 | 0.73 | 19 | 4.02 | 2.09 | 0.05* |
| After | 5.05 | 1.28 | | | | |

| Intervention | | | | | | |
|--------------|--|--|--|--|--|--|
|--------------|--|--|--|--|--|--|

Above table 2 depicts that total mean score of pain level before intervention was 7.25; it was reduced up to 5.05. Calculated 't' value at 19 degree of freedom 4.02(2.09) is < 0.05 level of significance, hence, Ice Bag cold application therapy significant in reduction of pain after removal of Femoral Sheath Catheter among the patients had undergone the Angiography Procedure.

4. Association of level of pain of participant before cold application therapy with selected demographic variables of participants.

Calculated 'P' value was greater than 0.05, level of significance, hence H_0 was accepted. Therefore, concludes that there was no significant association between pain score and gender $P(0.1089 < 0.05)$, Previous PCI $P(0.4947 < 0.05)$, Complication related to Femoral Sheath $P(1 < 0.05)$. However, Calculated P value was less than 0.05, level of significance, hence H_0 was accepted. Therefore, concludes that there was significant association between pain score and gender $P(0.0007 < 0.05)$.

DISCUSSION:

A randomized controlled trial by **Bayındır S, Çürük G, Oguzhan A.**, with frequent measures and two-group was conducted among 52 each in experimental and control group to assess the experienced by the patients was evaluated. Results found that there was no pain statistically significant difference was determined between the two groups (4.0 (3.0-4.0) in the experimental group and 6.0 (4.0-7.0) in the control group) ($p < 0.001$).⁶ Similarly in present study also shows that effective implication of cold therapy to reduce severity of pain in which calculated 't' value at 19 degree of freedom 4.02(2.09) is < 0.05 level of significance. On the basis of the findings that cold application therapy reduce pain in patients of femoral sheath removal, access to these treatments and integration of providers with highly experienced and competent nurses in providing cold application therapy for femoral sheath removal patients.

A study done by **Wentworth L, Bechtum E, Hejlik J, Scott C, Munger T, Brady P et. al.**, measured that patient satisfaction with vascular access site pain management. Patient satisfaction was high (9.4 on the VAS) in both experimental and control groups, with no statistical difference noted. However in present study, as there was no control group but in

experimental group there was decrease in intensity of pain from severe (before cold application) to moderate (after cold application)

Ethical considerations: formal ethical approval received from institutional ethical committee, informed consent was obtained from participants and assured of anonymity.

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Conflict of interest: Nil

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