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Assess the effectiveness of cold application on pre procedure (AV fistula puncture) pain among hemodialysis patients in tertiary care hospital, Nellore

Merlin Golda, D Revathi, N Subhashini, Josme Mathew and Dr. Arumugam Indira

Abstract
Arteriovenous fistulas (AVFs) are common form of chronic hemodialysis access. Pain during areteriovenous fistula (AVF) cannulation remains a common problem in hemodialysis patients. This study was undertaken to assess the effect of cold application on pre procedure pain due to arteriovenous fistula puncture in hemodialysis patients. A simple random sampling technique was used for selecting sample of 60 patients (30 each in experimental and control groups) who were undergoing hemodialysis by using AVF. Hemodialysis patients, who met the inclusion criteria, were randomly assigned to experimental and control groups. The tools used were sociodemographic data and subjective pain scoring was done by using numerical rating scale. Descriptive statistics and inferential statistics such as paired t-tests, Independent t-test, Chi square were used. The study finding reveals that the subjective pain scores were found to be significantly (P = 0.01) reduced within the experimental group by cold application. This study highlights the need for adopting the alternative methods for reducing the pain at AV fistula cannulation site in health care settings.

Keywords: Effectiveness, Cold application, AV fistula puncture pain, Hemodialysis patients

Introduction
Chronic kidney disease is emerging and most devasting medical, social and economic problem for both patients and their families of our country. Chronic kidney disease is a progressive, irreversible deterioration in renal function in which the body's ability to maintain metabolic, fluid and electrolyte balance fails. Most patients are in the final stage of chronic kidney disease where the glomerular filtration rate is less than 15 ml/hr. At present scenario approximately 100 per million people in a year globally, there could be 1, 00,000 patients from India. Most chronic kidney disease patients, reporting to tertiary care centers in India are in the final stage where renal replacement therapy (RRT) is the only option at this stage. The availability of various renal replacement therapies helps in reducing the severity of symptoms and results in longer survival of end stage renal disease patient's. These patients largely depends on hemodialysis as a renal replacement therapy. Dialysis is a common method of treatment for removing toxic waste products when the kidney unable to perform its function due to impairment Vascular access is the vital life line for hemodialysis. The most common vascular access sites are arteriovenous fistula, arteriovenous graft and venous catheter. According to National Kidney Foundation Dialysis Outcome Quality Initiative [DOQI] (2005) report, AV fistula remains as the gold standard for vascular access in hemodialysis patients. Once mature, the AV fistula has excellent long term patency rates andrarelybecomeinfected.AVfistulacanprovideadequatevascularaccessforover20years.
Figueiredo AE *et al*, (2008) [5] conducted a study on the pain perception with AV fistula cannulation. Pain was assessed by using visual analogue scale for 75 patients during the three consecutive sessions of hemodialysis. The result of the study was that most of the patients experiences moderate to severe pain during AV fistula cannulation.

Mechanism of action
Cold application as a cutaneous stimulation technique is an inexpensive nursing intervention that is advocated to minimize pain in patients. The effect of cutaneous stimulation is best explained through gate control theory proposed by Melzac in 1965.

According to this theory touch impulse are transmitted to the spinal cord greatly by A- delta fibers and pain impulse by the C-fibers. If the impulse transmission in thick fibers (touch) can be increased, this selectively blocks conduction in the thin fibers (pain) by closing a gate consisting of specific nerve cells in dorsal horn of spinal cord. The impulse from cold application is also transmitted by the touch fibers.

Title of the study

A study to assess the effectiveness of cold application on pre procedure (AV fistula puncture) pain among hemodialysis patients in NMCH, Nellore

Objectives

- To assess the intensity of AV fistula puncture pain among hemodialysis patients.
- To assess the effectiveness of cold application on AV fistula puncture pain among hemodialysis patients of experimental group.
- To compare post interventional score on pain perception between experimental and control group.
- To associate the post test pain score of hemodialysis patients with selected socio demographic variables

Methodology

An experimental study design with pre test - post test, control group was adopted for this study. The study was conducted at Narayana General Hospital, Nellore. Sample consists of patients with chronic kidney disease those who are undergoing hemodialysis via an AV fistula in the dialysis unit of NMCH, Nellore. The sample size is 60 in which 30 patients are in experimental and 30 control group respectively. Samples selected by using simple random sampling through lottery method.

Criteria for Sample Selection

Inclusion Criteria

1. Patients with chronic kidney disease who are undergoing hemodialysis via AV fistula in hemodialysis unit of NMCH, Nellore.
2. Patients with age between 39 and 61 years.

Exclusion Criteria

1. Contraindications to cold application such as radiation injury, peripheral vascular disease, connective tissue disorders, diabetic neuropathy.
2. Patients who are unconscious or disoriented.
3. Patients who require more than one attempt for fistula puncturing.
4. Patients who suffers from pain other than AV fistula pain.

Variables

Independent variable: cold application

Dependent variable: AV fistula puncture pain.

Method of data collection

Part 1

It deals with the demographic data which includes age, sex, education, occupation, family income and clinical data.

Part II

Standardized numerical rating scale for pain assessment.

Content validity

Validity obtained from experts in Nursing and ethical committee and 1 from HOD of department of Nephrology

Reliability

Reliability of the tool tested by using Karl Pearson coefficient correlation method. The 'r' value is 0.93

Pilot study

Pilot study was conducted and finding revealed that tool was feasible for conducting main study

Data Collection Procedure

- Permission was obtained from the Medical superintendent, HOD of Nephrology department, ethical committee and the nursing superintendent.
- Data collection was done for a period of 4 weeks.
- The patients who fulfilled the inclusive criteria were selected for the study.
- Informed consent was obtained.
- Assessed the level pain by using pain scale for both experimental and control group during AV fistula puncture for hemodialysis on the first visit.
- Applied cold application for experimental group on the next visit.
- 3 ice cubes (made with 30ml of water) were taken and wrap on the unsterile glove.
- Make the patient in a comfortable position.
- Find out the LI-4 meridian point on the contra lateral hand of AV fistula.
- Apply ice cubes on that point 10 minutes prior to the insertion of the catheter needle and which is continued while another staff performing AV fistula cannulation.
- Assessed the level pain by using same pain scale for both experimental and control group during AV fistula puncture after the intervention.

Data Analysis and Statistical Methods Used

The data was analyzed in terms of objectives of the study by using

S. No.	Data Analysis	Method	Purpose
1	Descriptive statistics	Frequency, percentage, mean and standard deviation	Distribution of the Demographic variables. To assess the intensity of AV fistula puncture pain among hemodialysis patients
2	Inferential statistics	Paired t- test	To assess the effectiveness of cold application on AV fistula puncture pain among experimental group.
		Independent t-test	To compare the post test level of pain between experimental and control group.
		Chi-square test	To associate the post test level of pain of hemodialysis patients with selected demographic variables.

3. Results

The data was organized, tabulated, analyzed and interpreted by using descriptive and inferential statistics based on the objectives of the study. The findings were presented in the following sections.

The analysis of the data was mainly classified as

Section-I: Frequency and percentage distribution of socio demographic variables of caregivers

Section II: Assessment of the intensity of AV fistula puncture pain among hemodialysis patients.

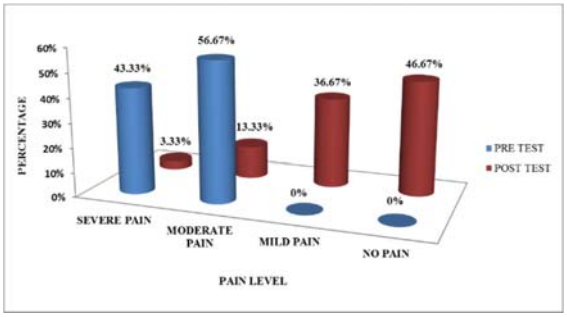
Section III: Comparison of the pretest and post test level of pain among hemodialysis patients in experimental group.

Section IV: Comparison of the post test level of pain between experimental and control group.

Section V: Association of post interventional pain scores with selected socio-demographic variables among hemodialysis patients.

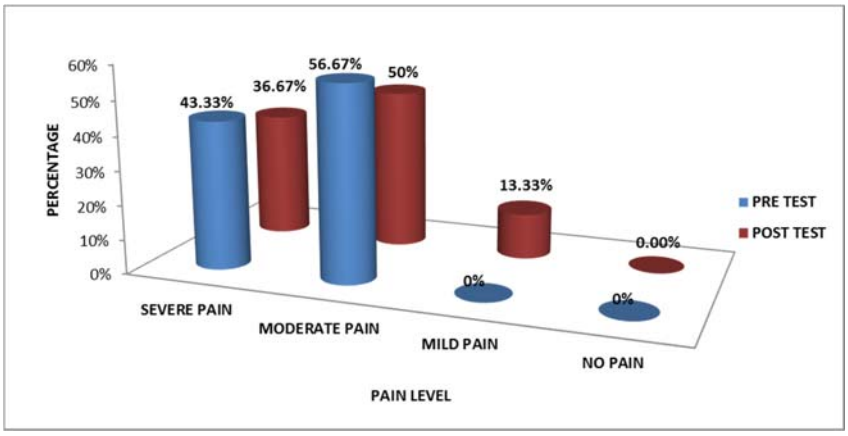
Section I: Frequency and percentage distribution of socio demographic variables of caregivers

S. n	demographic variable	experimental group		Control group	
		frequency	%	frequency	%
1	**Age**				
	A. 40-45 Years	3	10	4	13.33
	B. 46-50 Years	6	20	7	23.33
	C. 5i-55years	12	40	11	36.67
	D. 56-60years	9	30	8	26.67
2	**Sex**				
	A. Men	20	66.67	19	63.33
	B. Women	10	33.33	11	36.67
3	**Education**				
	A. Illiterate	9	30	7	23.33
	B. Primary Education	12	40	11	36.67
	C. Secondary Education	6	20	8	26.67
	D.Graduate	3	10	4	13.33
4	**Occupation**				
	A. Unemployed	16	53.33	19	63.33
	B. Permanent Employee	9	30	8	26.67
	C. Daily Wage	5	16.67	3	10
5	**Family Income Per Month**				
	A. Rs.<3000	6	20	11	36.67
	B. Rs.<3001-5000	7	23.33	8	26.67
	C. Rs.<5001-7000	12	40	5	16.66
	D. Rs.>7001	5	16.67	6	20
6	**Period Of Av Fistula Use**				
	A. 1-6 Months	6	20	8	26.67
	B. 7-12 Months	9	30	8	26.67
	C. 13-18months	10	33.33	8	26.67
	D. 19-2 Months	5	16.67	6	19.99
7	**No. of Hemodialysis Per Week**				
	A. Once	2	6.67	6	20
	B. Twice	24	80	18	60
	C. Thrice	4	13.33	6	20
8	**Sources Of Psychological Support**				
	A. Health Professionals	22	73.33	20	66.66
	B. Family Members	5	16.67	5	16.67
	C. Friends	3	10	5	16.67
9	**Use of Diversional Therapy**				
	A. Yes	7	23.33	6	20
	B. No	23	76.67	24	80



Section II: Assessment of the intensity of AV fistula puncture pain among hemodialysis patients.

Frequency and Percentage Distribution of Pre-Test and Post-Test Score of Av Fistula Puncture Pain among Experimental Group



Frequency and Percentage Distribution of Pre-Test and Post-Test Score Of Av Fistula Puncture Pain among Control Group

Section III: Comparison of the pretest and post test level of pain among hemodialysis patients in experimental group.

Criteria	Level Of Pain		Paired 'T' Test 'T' Cal Value
	MEAN	SD	
Pre test	6.3	1.15	"t"=12.36**
Post test	1.53	0.77	

Section IV: Comparison of the post test level of pain between experimental and control group.

S.N	Criteria	MEAN	SD	"t" cal value	"t" tab value
1	Post - test level of pain among hemodialysis patients in experimental group	1.53	0. 768	11.58**	2.39
2	Post-test level of pain among hemodialysis patients in control group	5.7	1.79		

**= significant at 0.01 level

Section V: Association of Post Interventional Pain Score With Socio –Demographic Variables among Experimental and Control Group

Thechi-square test revealed that there was no statistically significant association between the post interventional pain score with the selected socio demographic variables such as age, sex, education, occupation, income of the family, period of AV fistula use, hemodialysis per week, sources of psychological support and use of diversional therapy among experimental group.

Discussion

The main common access for hemodialysis is AV fistula. It is surgically created communication between the artery and vein. Pain is the common experiencing problem during each cycle of hemodialysis. The present study was conducted with an aim to elicit pre procedure cold application on AV Fistula cannulation site reduces the intensity of pain. 30 patients who receiving hemodialysis were divided into experimental and control groups. The study finding revealed that during the pre test, 13(43.33%) clients had severe pain and 17(56.67%) clients had moderate pain. In the post test pain score level was reduced as 1(3.33%) clients had severe pain and 4(13.33%) had moderate pain, 11(36.67%) had mild pain and 14(46.67%) had no pain and in control group during the pre test 13(43.33%) had severe pain and 17(56.67%) had moderate pain. In the post test 11(36.67%) had severe pain, 15(50%) had moderate pain and 4(13.33%) had mild pain. Showed that there was no reduction in pain scores without intervention. These results are consistent with the study conducted by Elsharawy MA (2000) [1] with an aim to assess the effectiveness of ice application on the LI-4 meridian point prior to intramuscular injection in reducing pain among children. It was a post test only design. Sample size was 60; 30 in experimental and 30 in control group. Pain was assessed using visual analogue scale and observational check list. Data was analyzed using descriptive and inferential statistical method. Pain score was categorized as mild pain, moderate pain and severe pain. The statistical analysis showed that 24(80%) children experienced mild pain and only 6(20%) experienced severe pain after IM injection among experimental group whereas in control group 28 (93.3%) children experienced severe pain and 2(16.7%) had moderate pain

Conclusion

This study showed that samples in both experimental and control group had moderate to severe pain during pre test but after the cold application there was a significant reduction in pain scores among the experimental group. The pain scores remains same and even some clients' pain level got increased among control group. This implies that cold application is helpful in reducing AV fistula puncture pain among hemodialysis patients.

5. References

1. Elsharawy MA. Effect of cold application on reduction of IM injection pain among children, Acta Chir Belg, 2000; 105(4):355-8.
2. Bleakley CM, McDonough SM, Mac Auley DC, Bjordal. Cryotherapy for acute ankle sprains: a randomised controlled study of two different icing protocols, Clin J Sport Med. 2007; 17(4):335.
3. Bruno CS Carvalho, Isabel CF da Cruz. Chronic Renal Patients In Whom The Effect Of Application of Cold Compress As Compared With The Use of Topical Anesthetics Before The Punch of Fistula-Arteriovenous

to Minimize Pain, Journal of Specialized Nursing Care. 2010; 3(1):233-38.
4. Cho YC, Tsay SL. The effect of acupressure with ice massage on fatigue and depression in patients with ESRD, J Nurs Res. 2004; 12(1):51-9.
5. Figueiredo AE, Viegas A, Monteiro M, Poli-de-Figueiredo CE. Research into pain perception with arteriovenous fistula (AVF) cannulation, J Ren Care. 2008; 34(4):169-72.
6. Lynda K Ball. Improving Arteriovenous Fistula Cannulation Skills Nephrology Nursing Journal. 2005, 32(6).
7. Aruna G. Effectiveness of moist heat and dry heat application on healing of episiotomy wound among postnatal mothers, Narayana Nursing Journal. 2015; 3(3):36-38.
8. Mac Auley DC. Ice therapy: how good is the evidence? J Sports Med. 2001; 22(5):379-84.
9. Subhashini N, Dr. Arumugam Indira. Assess the burden among caregivers of patients undergoing hemodialysis in tertiary care hospital, Nellore, International Journal of Applied Research. 2016; 2(4):559-561.
10. Anu Thomas. A comparative study to assess the effectiveness of sacral massage versus hot application in sacral area of pain during active first stage of labour, Narayana Nursing Journal. 2013; 2(2):29-31.