"Effectiveness Of Cold Compression and Meditation on Level of Pain, Depression and Uric Acid Among Patient with Gout Arthritis at Selected Setting"

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Abstract
Arthritis affects 24% of all adults in the United States, or 58.5 million individuals. Gout was prevalent in 41.2 million (95 percent UI 36.7 million, 46.1 million) people worldwide in 2017. Gout, a kind of arthritis caused by the buildup of uric acid crystals in the joints, was also discovered to be more common in males than in women. Aim of the study: To determine effectiveness of cold compress with meditation on level of pain, depression and uric acid among patient with gout arthritis. Methodology: Quantitative research approach was adopted, The samples who met the inclusion criteria were selected by using purposive sampling technique. To assess the pre and post level of pain by using visual pain scale, to assess the pre and post level of depression rating scale was used. The data were analyzed using descriptive and inferential statistics. Results;score of systolic BP was 127.40±18.49 and the post test mean score was 113.0±10.55. The pretest mean score of diastolic BP was 80±10.88 and the post test mean score was 74.40±8.61.The pretest mean score of uric acid was 7.92±1.14 and the post test mean score was 6.48±0.68.The pretest mean score of pain was 3.98±1.81 and the post test mean score was 1.32±1.42.The pretest mean score of depression was 3.88±1.80 and post test mean score was 0.98±1.29. Conclusion: The study concluded that the intervention of present study is very effective to reduce the level of pain, depression of uric acid among patient with gout arthritis.

Key words: (Cold Compress Meditation Level of Pain, Depression Uric Acid Gout Arthritis)

1. Introduction

Arthritis affects more than 350 million individuals worldwide.1Gout was prevalent in 41.2 million people worldwide in 2017, with 7.4 million incident cases and nearly 1.3 million YLD.1 Gout is a systemic disease that results from the deposition of monosodium urate crystals (MSU) in tissues. Increased serum uric acid (SUA) above a specific threshold is a requirement for the formation of uric acid crystals. Despite the fact that hyperuricemia is the main pathogenic defect in gout, many people with hyperuricemia do not develop gout or even form UA crystals. In fact, only 5% of people with hyperuriceamia above 9 mg/dL develop gout.Gouty arthritis causes inflammation pain with only minimum movement in the joint2. The inflammatory process causes central sensitization that can lead to chronic-long-term pain (Harth& Nielson, 2019). The condition now affects about 8.3 million people, or 4% of the population.Worldwide incidence of gout increases gradually due to poor dietary habits such as fast foods, lack of exercises, increased incidence of obesity and metabolic syndrome.5Gout, a kind of arthritis caused by the buildup of uric acid crystals in the joints, was also discovered to be more common in males than in women.Severe gouty arthritis is a clinical expression of a very intense inflammatory process. 4 The initial pathogenic event which sets off the chain process is the intraarticular deposit of monosodium urate crystals. However, urate crystals do not always promote an inflammatory process (e.g., dormant tophus), and only a minority of patients with hyperuricemia develop gout.5 The therapeutic bases for gout should be based on the knowledge surrounding the physiopathology of the inflammatory process. The risk of arthritis increases with age and arthritis is more common among women than men.6 In 2015, 15 million adults reported severe joint pain due to arthritis.4Uric acid crystals (monosodium urate) can form in joints, fluids, and tissues when there is too much uric acid in the body.Hypertension is known as a risk factor for hyperuricemia and gout. Increased systemic blood pressure results in reduced glomerular filtration rate leading to decreased glomerular blood flow and decreased excretion of UA. However, recent data suggest that hyperuricemia leads to increased blood pressure and that uric acid is a true modifiable risk

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factor for development of essential hypertension.7
The pain among people with gouty arthritis has also been shown to increase the degree of depression and psychological distress (Harth& Nielson, 2019).A medical treatment strategy to manage the pain of a flare may be recommended by your health care physician. Nonsteroidal anti-inflammatory medicines (NSAIDs) like ibuprofen, steroids, and the anti-inflammatory drug colchicine are used to treat flares. In addition to medical services,Self-management measures can help you control your gout after treatment.8
The self-management measures outlined below have been shown to minimize pain and impairment, allowing you to continue doing the things you enjoy. Cold therapy (cryotherapy) application has been proven as useful adjuvant therapy on alleviating pain among people with gouty arthritis. This cold compression reduces hypeuriremia and has also been presented to decrease experimental crystal-induced inflammation (Schlesinger, 2006). Extra weight raises uric acid levels in the body and puts additional strain on joints. The management of gouty arthritis with pharmacological therapy usually uses several conventional drugs.9 The high prevalence of chronic pain experienced by sufferers has made the patient undergo non-pharmacological therapy with cold compresses (Cryotherapy) to be more appropriate for joints with signs of inflammation such as redness and swelling that occur in patients with rheumatoid arthritis. Ice (ice packs) and ice water in the treatment of injuries and treatment modalities commonly used in the management of pain and injuries.To maintain a healthy weight, exercise on a regular basis. (EunHye Park, 2022) Through this above statistical report the researcher interested to the do research on effectiveness of cold compression with meditation on level of pain, depression and uric acid among gout arthritis.10
Cold compresses are more appropriate for joints with signs of inflammation such as redness and swelling, while warm compresses are more appropriate for people with joint pain without symptoms of inflammation. If you experience joint pain accompanied by inflammatory symptoms such as rheumatism, gouty arthritis, and arthritis due to infection, choose a cold compress to reduce symptoms.11 While joint pain without symptoms of inflammation such as calcification of the joints, choose a warm compress to reduce the symptoms of pain. Cryotherapy is the use of ice (ice pack) and ice water in the treatment of injuries and a treatment modality commonly used in the management of injuries and pain. Physiologically ice reduces metabolic activity in tissues thereby preventing secondary tissue damage and reducing pain to the central nervous system.

Aim of the study; To determine the effectiveness of cold compression and mediation on level of pain perception, depression and Uric acid among patient with gout arthritis.

Hypothesis: There is significance different in level of pain and depression after administered the cold compress. There is significance different in the level depression after administration medication therapy on gout arthritis.

Ethical Consideration

The study was conducted after getting approval from the IRB of Saveetha College of Nursing, Saveetha Medical College and Hospital (008/04/2021/IRB/SCON). Informed consent forms were translated into Tamil. Written informed consent was obtained from the medical superintendent of SMC, and the written assent form was signed by the participants for their willingness to participate in the study. Ethical principles were followed and adhered to protect the rights of the participants. Confidentiality of the data was ensured throughout the study.

2. Methodology

Quantitative research approach was adopted by the investigators to assess the effectiveness of cold compress with medication on gout arthritis among elderly at SMCH. One group pre and posttest research design was adapted for the study. The samples who met the inclusion criteria were selected by using purposive sampling technique. The inclusion criteria included client with gouty arthritis in the knee or ankle and the age group of 30-70 years. 50 samples out of which 25 were chosen for the experimental and 25 were chosen for the control group. Data was collected using structured questionnaire to assessdemographic variables which include age, sex, occupation, marital status, dietary pattern, duration of pain etc., and clinical variable like BP, BMI, Blood Uric acid level, presence of co-morbidities. To assess the pre and post level of pain by using visual pain scale.The Visual Analog Scale (VAS) instrument has 10 centimeters length. The standard scale anchored by "no pain" marked as a score of 0 and the "worst imaginable pain" marked as a score of 10 cm (Huskisson et al., 1974; Scott & Huskisson, 1976). The higher score identifies greater pain intensity. The depression was assessed by Depression Rating Scale. DS-21 questionnaire is used to measure the negative states of three mental health conditions: depression using a self-report 4-point Likert scale. Data was collected by reflecting thoughts, feelings, and behavior (Oei, Sawang, Goh, &Mukhtar, 2013). The data were analyzed using descriptive and inferential statistics [15].

3. Intervention

Cold Compression: The cold application was administered on a particular site of the joints to decrease the inflammation and numb. The participants maintained their daily activities during the intervention. When daily activity ended, the intervention was begun. cold application therapy immersed the whole part of the inflamed target joints

in the water at 20-30 degree C for 20 minutes/day. The intervention was continued for four weeks.

Meditation: Ask the client tosit comfortably with eyes closed while silently repeating a mantra or a phrase. The goal is to practice twice a day, morning and night, for at least 15 to 20 minutes. This technique is supposed to help clients mind to settle inward and quiet the mind until you reach a silent and peaceful awareness,which can make pain worse.

4. Results and Discussion

Demographic Characteristics

Among 50 samples majority of the age between 41 to 50 year 16 (32.6%) regarding gender 37 were male, regarding occupation 20 (40%) daily wages, dietary pattern 60% were non vegetarian. according to comorbidity status of study samples 24(48%) had hypertension, 17(34%) were had diabetes mellitus, 9(18%) were had renal failure.

Clinical Variables

Regarding pretest on clinical variables of blood pressure results shows that 15 (25%) had normal blood pressure, 17 (34%) were had prehypertension stage, 18(36%) were had stage I hypertension where as in post 32(64%) had normal blood pressure, 18(36%) had pre hypertension stage no one had a stage I hypertension.

Assessment of blood pressure, uric acid, pain and depression among elderly with gout arthritis.

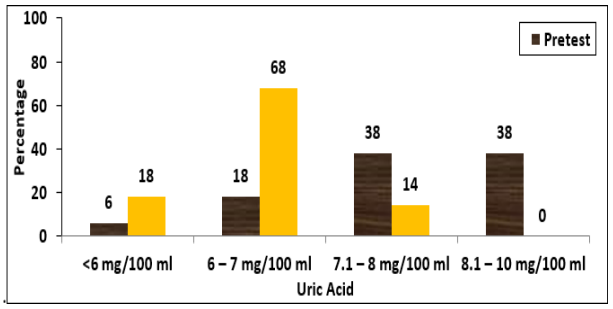
In the pretest, 18(36%) had systolic BP less than 120 mmHg, 15(30%) had 121 – 139 and 141 – 159 mmHg respectively and 2(4%) had ≥160 mmHg of systolic BP whereas in the post test, 32(64%) had less than 120 mmHg and 18(36%) had 121 – 139 mmHg of systolic BP.

Table 1: Frequency and percentage distribution of pretest and post test level of systolic BP among elderly with gout arthritis.N = 50

Systolic BP	Pretest		Post Test	
	F	%	F	%
Less than 120 mmHg	18	36.0	32	64.0
121 – 139 mmHg	15	30.0	18	36.0
141 – 159 mmHg	15	30.0	0	0
≥160 mmHg	2	4.0	0	0

Uric Acid	Pretest		Post Test	
	F	%	F	%
	3	6.0	9	18.0
	9	18.0	34	68.0
	19	38.0	7	14.0
	19	38.0	0	0

The below figure shows that in the pretest, 19(38%) had uric acid in the range of 7.1 – 8mg / 100 ml and 8.1 – 10 mg/100 ml respectively, 9(18%) had 6 – 7 mg/100 ml and 3(6%) had <6 mg/100 ml whereas in the post test, 34(68%) had 6 – 7 mg/100 ml, 9(18%) had <6 mg / 100 ml and 7(14%) had 7.1 – 8 mg/100 ml of uric acid.



Pain	Pretest		Post Test	
	F	%	F	%
No pain (0)	0	0	23	46.0
	23	46.0	22	44.0
	19	38.0	5	10.0
	8	16.0	0	0
Worst pain (10)	0	0	0	0

The above table shows that in the pretest, 23(46%) had mild pain, 19(38%) had moderate pain and 8(16%) had severe pain whereas in the post test, 23(46%) had no pain, 22(44%) had mild pain and 5(10%) had moderate pain.

Depression	Pretest		Post Test	
	F	%	F	%
Balanced mood (0)	0	0	29	58.0
	22	44.0	20	40.0
	21	42.0	1	2.0
	7	14.0	0	0
Despair, suicidal feelings (10)	0	0	0	0

The above table shows that in the pretest, 22(44%) were mildly depressed, 21(42%) were definite malaise and 7(14%) were feeling really bad, at the edge whereas in the post test, 29(58%) had balanced mood, 20(40%) were mildly depressed and 1(2%) was definitely malaise.

The above table 7 shows that in the pretest mean score of systolic BP was 127.40±18.49 and the post test mean score was 113.0±10.55. The pretest mean score of diastolic BP was 80±10.88 and the post test mean score was 74.40±8.61.

Variables	Pretest		Post Test	
	Mean	S. D	Mean	S. D
Systolic BP	127.40	18.49	113.0	10.55
Diastolic BP	80.0	10.88	74.40	8.61
Uric Acid	7.93	1.14	6.48	0.68
Pain	3.98	1.81	1.32	1.42
Depression	3.88	1.80	0.98	1.29

The pretest mean score of uric acid was 7.92±1.14 and the post test mean score was 6.48±0.68. the pretest mean score of pain was 3.98±1.81 and the post test mean score was 1.32±1.42. the pretest mean score of depression was 3.88±1.80 and post test mean score was 0.98±1.29.

2. Effectiveness of cold compress with mediation on gout arthritis among elderly.

Table 6: Comparison of pretest and post test level of blood pressure, uric acid, pain and depression among elderly with gout arthritis.N = 50

Variables	Pretest		Post Test		Mean Difference score	Paired 't' test & p-value
	Mean	S. D	Mean	S. D		
Systolic BP	127.40	18.49	113.0	10.55	14.40	t = 5.892 p=0.0001, S***
Diastolic BP	80.0	10.88	74.40	8.61	5.60	t = 3.055 p=0.004, S**
Uric Acid	7.93	1.14	6.48	0.68	1.44	
Pain	3.98	1.81	1.32	1.42	2.66	
Depression	3.88	1.80	0.98	1.29	2.90	
***p<0.001, S – Significant						

The calculated paired 't' test value for systolic BP (t=5.892), uric acid (t=11.665), pain (t=21.024) and depression (t=14.042) was found to be statistically significant at p<0.001 level which clearly infers that the administration cold compress among post elderly with gout arthritis was found to be effective in improving the gout arthritis among the elderly.

The table 6 also depicts that the calculated paired't' test value for uric acid (t=3.055) was found to be statistically significant at p<0.01 level which clearly infers that the administration cold compress among post elderly with gout arthritis was found to be effective in improving the gout arthritis among the elderly. (Table 6)

Demographic Variables					
	Systolic BP	Diastolic BP	Uric Acid	Pain	Depression
Gender					
Male					
Female					

The table 4 shows that the demographic variable gender **(t=2.283, p = 0.027)** had shown statistically significant association with post test level of systolic BP among elderly with gout arthritis at p<0.05 level and the other demographic variables had not shown statistically significant association with post test level of systolic BP among elderly with gout arthritis.

The table 4 shows that the demographic variable gender **(t=2.127, p = 0.039)** had shown statistically significant association with post test level of diastolic BP among elderly with gout arthritis at p<0.05 level and the other demographic variables had not shown statistically significant association with post test level of diastolic BP among elderly with gout arthritis.

The table 4 also shows that none of the demographic variables had shown statistically significant association with post test level of uric acid and pain among elderly with gout arthritis.

5. Discussion

Gout is a disease associated with uric acid deposition in the joints and kidneys.Gout is extremely painful in nature which mainly affects big toe, mid foot, ankle and knees. In the present study, the findings of pretest identified that, 23(46%) had mild pain, 19(38%) had moderate pain and 8(16%) had severe pain whereas in the post test, 23(46%) had no pain, 22(44%) had mild pain and 5(10%) had moderate pain. This results was supported by Kurniasari 2022) A community based randomized clinical trial was done to investigate the effect of cold water immersion for about 28 days on reduction of pain, stress, anxiety among 76 clients with gout arthritis and the end results of the study identified that there was a significant reduction in pain, anxiety and depression. The present study findings of paired't' test value for systolic BP (t=5.892), uric acid (t=11.665), pain (t=21.024) and depression (t=14.042) was found to be statistically significant at p<0.001. Current study was supported by G. Bhuvaneswari et al., 2020 The mean pretest knee pain level was 1.9, with a standard deviation of 12.69 and the post-test mean was 0.59, with a standard deviation of 17.03 individually. The test criticalness of was count utilizing matched t-test of after implementing the alternative complementary therapy. The got t value is 6.84, which was huge p<.00001. The study conducted by Changchien TC, 2015, study results also shows that the distribution of age and sex was similar in both cohorts. Most patients were men, and more than half were less than 49 years of age in our study. Our findings that women and aging were both significantly associated

with depressive disorders, was consistent with epidemiologic characteristics of depressive disorders. However, the further stratified analysis showed that men and patients aged ≤49 years had a high risk of depression among patients with gout. the another study finding, Sakshi shan et al (2022) Conducted a Gout is a metabolic disorder characterized by hyperuricemia and abnormal deposition of uric acid around tissues and in and around joints. H. toffee, marked. Gout is a progressive disease and can lead to disability if not treated effectively. The aim of this study was to systematically review the literature on the effects of gouty arthritis on physical activity. We conducted a systematic review of the effects of gouty arthritis on physical activity. One of the inclusion criteria for the review was physical activity in gouty arthritis. Comorbidities were associated with gouty arthritis and long-term symptoms. Physically active patients had significantly lower uric acid levels and fewer gout attacks compared to physically inactive patients.
Hence it was concluded that present study findings and supportive studies proves that application of cold compression with meditation therapy found to be an effective intervention on reduction of uric acid levels among clients with gout arthritis. Hence as nursing professionals we can administer a cold compress for reducing pain, uric acid levels, anxiety and depression as a part of nursing care as a cost-effective measure for gout arthritis clients. The present study results also revealed that calculated paired't' test value for uric acid (t=3.055) was found to be statistically significant at p<0.01 level which clearly infers that the administration cold compress among post elderly with gout arthritis was found to be effective in improving the gout arthritis among the elderly. This result was supported by James A Prior et al (2016) Conducted a study aims to assess the prevalence of depression and anxiety and to examine potential risk factors for depression and anxiety in gout patients in China. A self-report survey was conducted among 226 gout patients and 232 age- and sex-matched healthy subjects. Patients were asked to complete a series of standardized self-assessment questionnaires. Data were analyzed using univariate and multiple regressions. She found that 15.0% of her gout patients had depression and 5.3% had anxiety. Hence the present study and the supportive study findings concluded and proven that cold water immersion serves as one of the effective interventions for reducing the pain, uric acid and depression levels among gout arthritis clients.

6. Conclusion

Gout is independently associated with higher medical and arthritic comorbidity and cold therapy was used in gout. As a result, the cold therapy should be a proper adjuvant alternative method for gout patients. Demonstrating that cold therapy helps in reducing the pain of individuals with gout, there is little evidence to support this hypothesis.

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