An Effectiveness of Hot Water Application With Epsom Salt on Joint Pain Among Elderly Women At Selected Rural Area At Pudukkottai District

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Abstract- *A quasi experimental research design was conducted among elderly women at selected rural area at Pudukkottai.It aims to evaluate the effectiveness of hot water application with Epsom salt on joint pain among elderly women in experimental group.60 samples were selected using purposive sampling technique. The data was collected using structured questionnaire scheduled. Data was analyzed by using descriptive and inferential statistics. The pre-test mean score of joint pain in the experimental group was 16.33±2.38 and the pre-test mean score in the control group was 15.83±2.85. The mean difference score was 0.50. The calculated paired' test value t=0.737. The post-test mean score of joint pain in the experimental group was 10.27±2.91 and the post-test mean score in the control group was 16.80±2.71. The mean difference score was 6.53. The calculated paired' test value t=8.998. Based on the study findings stated hypothesis H1 there will be significant difference in joint pain among elderly women after hot water application with Epsom salt was accepted.*

Keywords- Effectiveness, hot water application , Epsom salt, joint pain, elderly women

I. INTRODUCTION

Women's health is a broad term as physically mentally and emotionally have problems that are of exclusive concern for women, and which are more common in elderly women or which differ in presentation, severity or consequences in female compared to male. However, the most prevalent diseases in women are cardiovascular diseases and musculoskeletal disorders. The universally lower socio and economic status experienced by women, compared to that of men, also contributes to poor health and lack of access to care among elderly women. As part of this lower socio and economic status, violence against women has become a worldwide public health concern.

Pain is defined as an unpleasant sensation occurring in varying degrees of sensitivity as a consequence of injury, disease or emotional disorder. Pain is major component part of your nervous system. Pain is a important vital role of the nervous system in providing the body with a warning of potential or actual injury. It is both a sensory and emotional experience, affected by psychological factors such as past experiences, beliefs about pain, fear or anxiety.

The word pain comes from the Latin word "Poena" meaning punishment, a fine, a penalty. Pain is defined as an unpleasant sensory and emotional experience associate with actual or potential tissue damage of international association of pain. Despite it triggering pain and suffering perception is a critical component of the body's defence mechanisms. Pain too is part of the body's defence systems it experienced as having quality such as sharp, throbbing, dull nauseating, burning and shooting. It often has both an emotional quality and a sensed bodily location.

Musculoskeletal system plays an important role as people age their point are affected by changes in cartilages inside a point becomes thinner and components of the cartilage become altered which may make joints more susceptible to damage. Additionally joints because the connective tissue within ligaments and tendons becomes more rigid and brittle. This change also limits the range of motion of joints, pain cause discomfort.

Joint pain is the second most common problem and it is the most frequent joint disease with a prevalence of 22% to 39% in India. It is more common in women than men. Nearly 45% of women over the age of 65 years have symptoms while 70% those of over 65 years shows radiological evidence of joint pain complaints.

Knee pain is more common on Indian than other ethnic groups with 6 months prevalence of 31.8% chronic knee pain can potentially cause reduced work productivity through the absentees. Knee pain may leads to osteoarthritis which in an important public health issues it has estimated to be a fourth leading cause of disability by 2020. Global

banking for osteoarthritis based on years lived us the disability moved from 19th in 1990 to 13th in 2015 and osteoarthritis is the 3rd leading musculoskeletal disorder for lived with disability.

Epsom salt which also goes by the name magnesium sulphur and oxygen. It less scientific name actually stems from its prevalence in the village of Epsom in survey England one of the country's introduced the Epsom salt in the Spa town where people came to take the waters from a bitter saline spring through to have medicinal proprieties. Many of Epsom salt's healing properties (relaxation of stiffness) are believed to be come from its high magnesium content a natural mineral that many people don't get in high enough amounts. According to the national institute of health's office of Dietary supplements, magnesium plays an important role in the human body.

Heat application works by improving circulation and blood flow to a particulars area due to increased temperature. Increasing temperature of the affected area even slightly reduces the discomfort and increased muscle flexibility. Heat application can relax and soothe muscles and heal damaged tissues .Performed heat application as non-pharmacological method for the pain control in women with joint pain and stiffness. However the basic scientific data supporting the therapeutic effects of reduce the joint pain and stiffness by using the superficial applications of heat on the knee pain. The purpose of the study is considering the basic information about in evidence for the superficial heat application in the treatment of the joint pain.

II. OBJECTIVES

1. To assess the level of joint pain among elderly women in experimental and control group.
2. To evaluate the effectiveness of hot water application with Epsom salt on joint pain among elderly women in experimental group.
3. To compare the pretest and posttest level of joint pain among elderly women between experimental and control group.
4. To find the association between the posttest level of joint pain among elderly women's and their selected demographic variables in experimental and control group.

III. HYPOTHESIS

H_1: There is a significant difference between pre-test and post-test level of joint pain among elderly women in the Experimental group

H_2: There is a significant reduction in the level of joint pain after using of hot water application with Epsom salt among elderly women Interventional Group compared to the women in control Group.

H_3: There will be a significant association between posttest levels of joint Pain with their selected demographic variables

IV. OPERATIONAL DEFINITION

Effectiveness:

It refers to producing of an intended (or) desired result with uses of hot water foot bath with Epsom salt women with joint pain and stiffness.

Hot water application:

A hot water application is the application of a hot water on the joint area to decrease muscle tone, to promote healing and to provide warmth and to relive pain and congestion

Epsom salt:

Epsom salt is white crystalline salt that is a hydrated magnesium sulfate with cathartic properties. Epsom salt absorbed through the skin and enters into the blood stream which acts on the nerves and muscles. It helps to promote muscle relaxation, reduce stress, pain, stiffness and swelling in joints.

Hot water application with Epsom salt:

Hot water application with Epsom salt is a therapy used for therapeutic purposes to relieve pain and stiffness .It is a local application of moist heat.

Joint pain:

Joint pain is an unpleasant sensation felt in one (or) more joints often caused by inflammation and infection

Elderly:

Those who fall in the age group of 60 years and above.

V. ASSUMPTION

- Elderly women may experience joint pain.
- Elderly women may have limited physical mobility due to joint pain.

- Hot water application may reduce the inflammation, pain, stiffness and promote muscle relaxation.
- Nurses play an important role in reducing the joint pain

VI. RESEARCH METHODOLOGY

Quasi experimental research design was adopted for this study. The study was conducted in parambur at Pudukkottai; Tamil Nadu. Sixty elderly women were selected for this study through the purposive sampling technique. The data were collected after obtaining permission from president of the village .Informed consent from the subjects was obtained from clients and the confidentiality has been assured. On the day one, the demographic variables was collected and pre-test was done for both groups. To fill 8litres warm water with a temperature of between 920F to 1000 and add 4 grams of Epsom salt. Take a towel and immerse it into hot water .squeeze the towel completely and apply on the joint. Duration of the procedure is for 20 minutes daily once in the morning and evening continue for 14days alone twice a day in experimental group. At the end of the 14th day post-test was done in both groups by using modified WOMAC osteoarthritis index scale.

An experimental research design pre-test- post-test control group design.

GROUPS	PRE TEST	INTERVENTION	POST TEST
Experimental group	01	X	02
Control group	01	-	02

O1 - Pre-test measurement of joint pain and stiffness
X - Intervention
O2 - Post-test measurement of joint pain and stiffness

VII. RESULTS AND DISCUSSION

Majority of the elderly women (67%) were in the age group of 76-80 years in the experimental group and most of them (60%) were studied 12 th standard. Majority of them (60%) are unemployment. 73% of the elderly women were married. Most of the elderly women (60%) were having the history of treatment and 40% of them were not taking any kind of treatment. 84 % of them are non-vegetarian and 16% of them are vegetarian. Most of them (53 %) were not having habits of doing regular exercise and 47 % of them were having habits of doing regular exercise in the experimental group.

Majority of the elderly women (50%) were in the age group of 66-70 years in the control group and most of them (40%) were studied 12 th standard. Majority of the elderly women (54%) were unemployed .80% of the elderly women were married and 20% of them were widower. Most of the elderly women (64%) were having the history of treatment and 36% of them were not taking any kind of treatment. 63 % of them are non-vegetarian and 37% of them are vegetarian. Most of them (57 %) were not having habits of doing regular exercise and 43 % of them were having habits of doing regular exercise in the experimental group

Table 1:Frequency and percentage distribution of demographic variables of elderly women in the experimental and control group.

Demographic Variables	Experimental Group		Control Group	
	No.	%	No.	%
Age in years				
60 -65 years	6	20	6	20
66 – 70 years	10	33	15	50
71 -75 years	12	40	6	20
76 – 80 years	2	67	3	10
Educational status				
12th standard	18	60	12	40
Diploma	6	20	7	23
Undergraduate	6	20	11	37
Occupation				
Unemployed	16	54	18	60
Retired from professional	14	46	12	40
Marital status				
Married	24	80	22	73
Widow	6	20	8	27
History of treatment				
Yes	19	64	18	60
No	11	36	12	40
Diet pattern				
Vegetarian	5	16	11	37
Non vegetarian	25	84	19	63
Regular exercise				
Yes	16	53	13	43
No	14	47	17	57

NS -Not Significant

Table 2: Frequency and percentage distribution of pre-test and post-test level of joint pain among elderly women in the experimental group.

Joint pain	Pre-test score		Post-test score	
	No	%	No	%
None (0)	0	0	0	0
Mild (1- 5)	0	0	1	3.3
Moderate (6-10)	0	0	16	53.4
Severe (11-15)	9	30	13	43.3
Extreme (16 -20)	21	70	0	0

The above table 2 shows that in the pre-test of experimental group, 21(70%) had extreme joint pain and

9(30%) had severe joint pain. Whereas in the post test, 16(53.4%) had moderate joint pain, 13(43.3%) had severe joint pain and only 1(3.3%) had mild joint pain.

Table 3: Comparison of pre-test and post-test mean score of hot water application with Epsom Salt on joint pain among elderly women in experimental group.

n = 30

Joint Pain	Mean	S.D	Mean Difference Score	Paired 't' test value
Pretest	16.33	2.38	6.06	t = 7.863 p=0.0001 S***
Post Test	10.27	2.91		

***p<0.001, S – Significant

The table 3 show that the pre-test means score of joint pain was 16.33±2.38 and the post-test mean score was 10.27±2.91. The mean difference score was 6.06. The calculated paired t' test value t=7.863 was found to be statistically highly significant at p<0.001 level.

This clearly infers that Hot water application with Epsom salt administered to elderly women with joint pain was found to be effective in reducing the level of joint pain among elderly women in the post test.

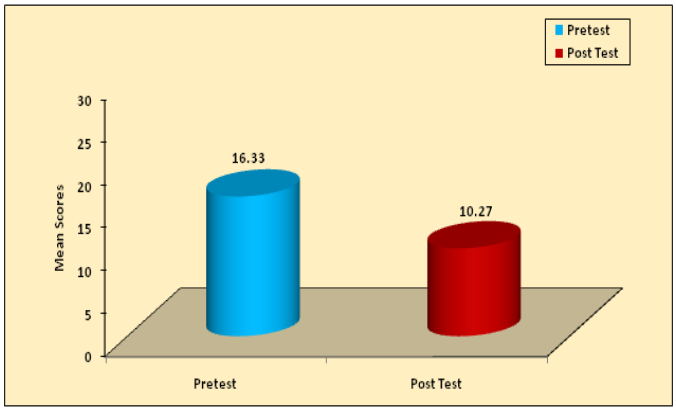

Fig : 1 Comparison of pre-test and post-test mean score of hot water application with Epsom Salt on joint pain among elderly women in the experimental group

Table 4: Comparison of pre-test and post-test level of joint pain among elderly women between the experimental and control group.

N = 60(30+30)

Joint Pain	Group	Mean	S.D	Mean Difference Score & %	Paired 't' test value
Pretest	Experimental	16.33	2.38	0.50	t = 0.737 p=0.464 N.S
	Control	15.83	2.85		
Post Test	Experimental	10.27	2.91	6.53	t = 8.998 p=0.0001 S***
	Control	16.80	2.71		

Table 5: Association of post-test level of joint pain among elderly women with their selected demographic variables in the experimental group.

n = 30

Demographic Variables	Mild Pain		Moderate Pain		Severe Pain		Chi-Square Test Value
	No.	%	No.	%	No.	%	
Age in years							χ^2=5.610 d.f=6 p=0.227 N.S
60 – 65 years	0	0	5	16.7	6	20.0	
66- 70 years	0	0	5	16.7	2	6.7	
71 -75 years	1	3.3	6	20.0	4	13.3	
76 -80 years	0	0	0	0	1	3.3	
Educational status							χ^2=6.731 d.f=4 p=0.151 N.S
12 th Standard	0	0	12	40.0	6	20.0	
Diploma	1	3.3	2	6.7	3	10.0	
Undergraduate	0	0	2	6.7	4	13.3	
Occupation							χ^2= 1.196 d.f=2 p=0. 382 N.S
Unemployed	1	3.3	9	13.3	6	20.0	
Retried from professional	0	0	7	23.3	7	23.3	
Marital status							χ^2= 1.961 d.f=2 p=0. 382 N.S
Married	1	3.3	12	40.0	7	23.3	
Widow	0	0	4	13.3	6	20	
History of treatment							χ^2=1.927 d.f=2 p=0.382 N.S
Yes	0	0	10	33.3	9	30.0	
No	1	3.3	6	20.0	4	13.3	
Diet pattern							χ^2=8.400 d.f=2 p=0.015 S*
Vegetarian	1	3.3	4	13.3	0	0	
Non vegetarian	-	-	-	-	-	-	
Both	0	0	12	40.0	13	43.3	
Regular exercise							χ^2=3.807 d.f=2 p=0.149 N.S
Yes	1	3.3	6	20.0	9	30.0	
No	0	0	10	33.3	4	13.3	

ss*p<0.05, S – Significant, N.S – Not Significant

The table 5 shows that the demographic variable diet pattern ($\chi 2$=8.400, p=0.015) had shown statistically significant association with post-test level of joint pain among women at p<0.05 level and the other demographic variables had not shown statistically significant association with post-test level of joint pain among elderly women in the experimental group.

Table 6: Association of post-test level of joint pain among elderly women with their selected demographic variables in the control group.

n = 30

Demographic Variables	Moderate Pain		Severe Pain		Extreme Pain		Chi-Square Test Value
	No.	%	No.	%	No.	%	
Age in years							$\chi 2$=5.992 d.f=6 p=0.227 N.S
60 – 65 years	0	0	1	3.3	5	16.7	
66 – 70 years	0	0	2	6.7	13	43.3	
71 – 75years	1	3.3	2	6.7	3	10.0	
76 -80 years	0	0	1	3.3	2	6.7	
Educational status							$\chi 2$=7.691 d.f=4 p=0.104 N.S
12th standard	0	0	0	0	12	40.0	
Diploma	0	0	3	10.0	4	13.3	
Undergraduate	1	3.3	3	10.0	7	23.3	
Occupation							$\chi 2$= 2.559
Unemployed	3	10	3	10.0	11	36.7	
Retried from professional	0	0	3	10.0	10	33.3	d.f=4 p=0. 209 N.S
Marital status							$\chi 2$= 0.462 d.f=4 p=0.426 N.S
Married	1	3.3	4	13.3	16	53.3	
Widow	0	0	2	6.7	7	23.3	
History of treatment							$\chi 2$=4.155 d.f=2 p=0.125 N.S
Yes	0	0	2	6.7	16	53.3	
No	1	3.3	4	13.3	7	23.3	
Diet pattern							$\chi 2$=0.668 d.f=2 p=0.716 N.S
Vegetarian	0	0	2	6.7	9	30.0	
Non vegetarian	-	-	-	-	-	-	
Both	1	3.3	4	13.3	14	46.7	
Regular exercise							$\chi 2$=3.234 d.f=2 p=0.198.N.S
Yes	1	3.3	1	3.3	11	36.7	
No	0	0	5	16.7	12	40.0	

*p<0.05, S – Significant, N.S – Not Significant

The table 6 shows that none of the demographic variables had shown statistically significant association with post-test level of joint pain among elderly women in the control group.

VIII. DISCUSSION

This chapter highlights the discussion of the data analysed based on the objectives and hypotheses of the study. The problem stated is 'an experimental study to evaluate the effectiveness of hot water application with Epsom salt on joint pain and stiffness among elderly women in selected rural area. The discussion based on the objectives and hypotheses specified in the study.

In experimental group in pre-test assessment of joint pain, majority 70%had extreme joint pain and 30% had severe joint pain. In the post-test 53.4% had moderate joint pain, 43.3% had severe joint pain and only 3.3% had mild joint pain. In control group pre-test, majority pain 53.4% had extreme joint pain, 43.3% had severe joint pain and 3.3%had moderate pain. In the post test, majority 76.7% had extreme joint pain, 20% had severe joint pain and only 3.3% had moderate joint pain.

The pre-test mean score of joint pain was 16.33±2.38 and the post-test mean score was 10.27±2.91. The mean difference score was 6.06. The calculated paired' test value t=7.863 p<0.001 level. Based on the study findings stated hypotheses H1 there will be significant difference in joint pain among elderly women after hot water application with Epsom salt was accepted.

The pre-test mean score of joint pain in the experimental group was 16.33±2.38 and the pre-test mean score in the control group was 15.83±2.85. The mean difference score was 0.50. The calculated paired' test value t=0.737. The post-test mean score of joint pain in the experimental group was 10.27±2.91 and the post-test mean score in the control group was 16.80±2.71. The mean difference score was 6.53. The calculated paired' test value t=8.998

IX. CONCLUSION

The objective of the study was to evaluate the effectiveness of hot water application with Epsom salt on joint pain among elderly women .Evaluative approach and quasi experimental research design was adopted for this study. Independent variables were hot water and Epsom salt and dependent variable was joint pain. The conceptual framework adopted for the present study was based on modified Wiedenbach's Helping Art clinical Nursing Theory (1964).The tool used in this study was modified WOMAC

Osteoarthritis index score scale. The main study was conducted in the 60 samples were recruited through the simple random sampling technique .Hot water foot bath with Epsom salt was done twice a day for 14 days for experimental group and no intervention was given for control group .Post-test was done at the end of 14th day.The study result that in experimental group post-test joint pain mean was 10.27 with standard deviation 2.91 and in the control group it was 16.80 with standard deviation 2.71. The mean difference 6.53 and the calculated' value 8.998 was significant at $p< 0.001$ level.

Based on the study findings stated hypotheses H1 there will be significant difference in joint pain among elderly women after hot water application with Epsom salt was accepted.

The association between post-assessment level of Joint pain and elderly women in experimental group age , educational status , occupation ,marital status , history of treatment , diet pattern and regular exercise with their demographic variable .The demographic variable diet pattern ($\chi 2=8.400$, $p=0.015$) had shown statistically significant association with post-test level of joint pain among elderly women at $p<0.05$ level and the other demographic variables had not shown statistically significant association with post-test level of joint pain among women in the experimental group..

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