

# ‘A Study to Assess the Effect of Hot Water Application with Epsom Salt versus Plain Water Application to Reduce Knee Joint Pain among Senior Citizen in Residing Selected Slum Areas of Pcmc.

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## ABSTRACT

**Introduction:** Aging is a natural process. As people become older, the functioning and adaptability of the tissues and different organs decline and chances of suffering of geriatric populations are more. In India it is the most common cause of job related disability and the second most common neurological ailment- only headache in more common. Heat applications have four main effects on body tissues, including pain relief, muscle relaxation, vasodilatation, and connective tissue relaxation. Epsom salt helps to maintain the proper functioning of muscles and nerves within the body, as well as maintain bone and joint strength. **The present study title:** A comprehensive study to assess the effectiveness of hot water application with Epsom Salt versus plain water application to reduce knee joint pain among old age in area of PCMC. The objectives are To identify the level of joint pain among old age people in Group I and Group II, to evaluate the effectiveness of hot water compress with Epsom salt in reducing joint pain among old age people in Group I and Group II, To find the association between degree of joint pain and selected demographic variables **Material and Methods:** In present study, researcher adopted two group pre-test post-test pre experimental research design. The study carried out on 60 samples. Simple Random sampling technique used. Data analysis was done mainly using descriptive statistics test- Chi square was applied. **Result:** In Group I, in pretest, 3.3% of the old age patients had moderate knee joint pain (score 16-30), 80% of them had severe pain (Score 31-45) and 16.7% of them had extreme joint pain (score 46-60). In posttest, 76.7% of them had mild knee pain and 23.3% of them had moderate knee pain. In Group II, in pretest, 66.7% of the old age patients had moderate knee joint pain (score 16-30) and 33.3% of them had severe pain (Score 31-45). In posttest, 73.3% of the old age patients had moderate knee joint pain (score 16-30) and 26.7% of them had severe pain (Score 31-45). This indicates that the knee **Conclusion:** From the findings it is proved that Epsom salt fomentation found to be effective in relieving Knee Related pain.

**Keywords:** Assess, Effectiveness, Hot Water compress, Hot Water compress with Epsom Salt, Joint Pain, Old aged)

## INTRODUCTION

Aging is a natural process. As people become older, the functioning and adaptability of the tissues and different organs decline and chances of suffering of geriatric populations are more. It has been projected that by the year 2025 there will be 1.2 billion older persons, with two out of three living with osteoarthritis in a developing country. WHO reports (2010) worldwide, osteoarthritis affects 9.6% of men and 18% of women ages above 60 years or older and the condition will be the fourth leading cause of disability by 2020. Pain in the joint is a common concern, affecting up to 90% of Americans at some point in their lifetime. Up to 50% will have more than one episode. joint pain is not a specific disease, rather it is a symptom that may occur from a variety of different processes. Helps to maintain the proper functioning of muscles and nerves within the body, as well as maintain bone and joint strength. (NATIONAL HEALTH SCIENCES 2010). Heat applications have four main effects on body tissues, including pain relief, muscle relaxation, vasodilatation, and connective tissue relaxation.

## NEED FOR THE STUDY

Joint diseases affect millions of people throughout the world, causing pain and disability with great impact on individuals and on society as a whole. Osteoarthritis is the most common joint disease in the near future and is projected to rank second for women and fourth for men in the developed countries in terms of years lived with disability. Men are more often affected than women before the age of 50. Women are affected twice as often as men after the age of 50. Osteoarthritis is most commonly seen in clinical practice usually involving one or two knee joint. Although there is no known cure for most forms of arthritis, and treatment designed for individual patient can reduce or eliminate symptoms and limit functional impairment. The goals of contemporary management of arthritis extend beyond pain control to the enhancement of patients functional status and health-related quality of life.

## OBJECTIVES OF THIS STUDY

- To identify the level of joint pain among old age people in Group I and Group II.
- To evaluate the effectiveness of hot water compress with Epsom salt in reducing joint pain among old age people in Group I and Group II.
- To find the association between degree of joint pain and selected demographic variables of old age people in Group I and Group II.

## REVIEW OF LITERATURE

Many studies have been carried out on foot reflexology. Review of the relevant studies was carried out from the textbooks, journals, articles, review of literature for the present study is organized under the following headings:

### Review of literature Studies related to knee joint pain in old age.

Pytel A, Wrzosek Z. et al. (2012) conducted a preliminary study to estimate patient knowledge on rheumatoid arthritis in the range of their own disease. The subject of studies included 270 people with rheumatoid arthritis. A self-made questionnaire was used for studies, aimed at obtaining basic information about patients with a diagnosed rheumatoid arthritis. The examined patients were divided into 2 groups according to gender. The condition of knowledge of old age on their own disease is definitely higher and relatively high. It was revealed that the interest in obtaining information on the disease is higher in people with higher education both in women and men. Independently of the age, the main source of knowledge on the disease is a doctor, physiotherapist or a nurse. Educational deficiency in therapeutic teams was revealed, which indicates the necessity of developing information programmes and of running trainings, talks aiming at increasing knowledge on rheumatoid arthritis among patients.

Elly M Van Der Wardt. et al. (2011) conducted a study to gain insight into the general public's knowledge and perceptions regarding rheumatic diseases in the Netherlands. A questionnaire was sent by mail to a random sample of 1800 Dutch homes; the response was 658. Questions mainly focused on knowledge, attitudes, behavioural and use of the mass media with regard to rheumatic diseases. The respondents gave the right answer to a mean of 8.2 statements out of 17 true/false statements regarding factual knowledge of rheumatic diseases. Respondents particularly were unaware of several rheumatic disorders. Thus the study concluded that the public in general do not know very much about rheumatic diseases. Lena, et al. (2009) conducted a cross-sectional study on problems among 231 elders in Udipi Taluk, Karnataka. The result of the study showed that a majority of them had problems such as hypertension followed by arthritis, diabetes, asthma, cataract, and anaemia. Among them, 68% of the patients suffered with joint pain. Joint pain was found to be more common among female. A survey conducted by the investigator in the Anderson pet village, Chennai (2009) showed the total number of old age people as 160, among them 90% reported joint pain in either one or both joints. The disease is higher in people with higher education both in women and men. Independently of the age, the main source of knowledge on the disease is a doctor, physiotherapist or a nurse. Educational deficiency in therapeutic teams was revealed, which indicates the necessity of developing information programmes and of running trainings, talks aiming at increasing knowledge on rheumatoid arthritis among patients.

### Review of literature related to hot water application and joint pain

Yildirim, N., Filizulusoy, M., & Bodur, H. (2010) conducted a study to evaluate the effect of heat application on pain, stiffness, physical function and quality of rheumatoid Arthritis the faculty of health sciences, Midwifery department, Cumhuriyet university, Turkey. The intervention group received 20 minute heat application every day for four weeks in addition to routine medication. It was found that heat application decreased pain and disability of the patients with rheumatoid arthritis. Heat application was found to improve the sub dimensions of quality of life scores of physical function, pain and general health perception of patients

Kirk, J.A., & Kersley, G.D. (2009) studied the effectiveness of heat in the physical treatment of rheumatoid arthritis of at Royal national 19 hospitals for rheumatic diseases. Hot packs were given for 20 minutes with temperatures approximately 45 degrees C at the beginning and at the end 41 degree C. Results showed that greater relief from pain and stiffness due to hot application

## MATERIAL AND METHOD:

In present study, researcher adopted two group pre-test post-test pre experimental research design. The study carried out on 60 samples. Simple Random sampling technique used. Data analysis was done mainly using descriptive statistics test- Chi square was applied.

**Description of Tool:**

The tool includes two sections:

**SECTION I:** This section is the first section seeking information on demographic background of old age people i.e. gender, age of sample, educations, marital status, occupation. It consists of total 10 questions.

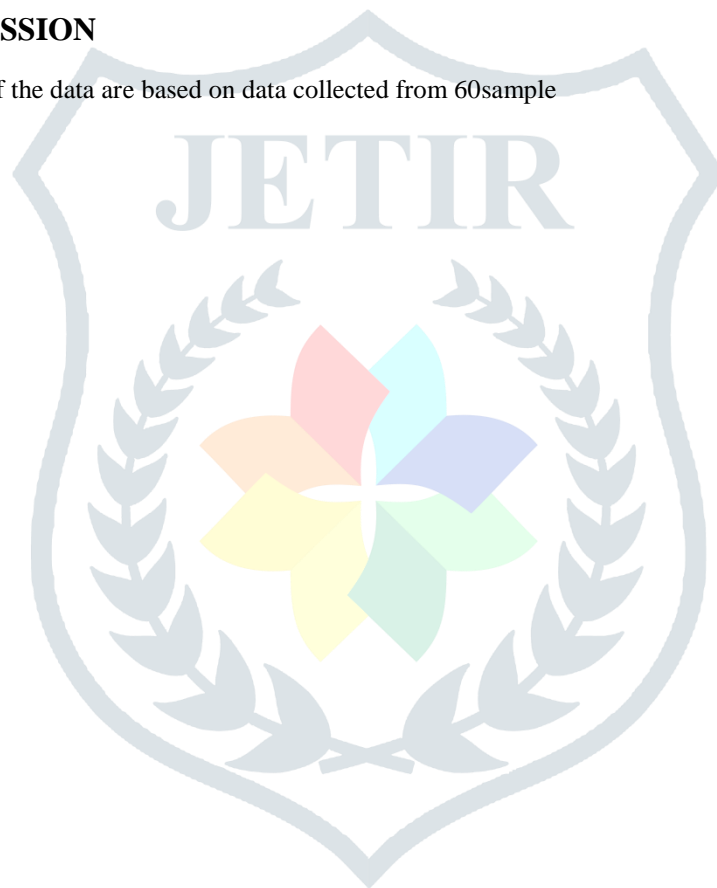
**SECTION II:** This section is the second part of Structured self observation check list, This section is the second part of Structured self observation check list, which consists of questions assessing effect of epsom salt with hot water compress to reduce knee joint pain. which consists of questions assessing effect of epsome salt with hot water compress to reduce knee joint pain.

**Plan for Data Analysis:**

Data analysis was done by using descriptive and inferential statistics based on objectives of study.

**RESULT AND DISCUSSION**

Analysis and interpretation of the data are based on data collected from 60sample



## Description of samples (old age patients) based on their personal characteristics

**Table 1: Description of samples (old age patients) based on their personal characteristics in terms of frequency and percentages.**

n=30, 30

Sr. No	Demographic variable	Group I		Group II	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
<b>1</b>	<b>Age</b>				
	60- 65 years	9	30.0	9	30.0
	66- 70 years	8	26.7	7	23.4
	71- 75 years	7	23.3	7	23.3
	76- 80 years	6	20.0	7	23.3
<b>2</b>	<b>Gender</b>				
	Male	19	63.3	20	66.7
	Female	11	36.7	10	33.3
<b>3</b>	<b>Education</b>				
	Primary	4	13.3	4	13.3
	Secondary	2	6.7	4	13.3
	HigherSecondary	8	26.7	5	16.7
	Diploma	7	23.3	9	30.0
	Degree	9	30.0	8	26.7

Sr. No	Demographic variables	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
4	<b>Occupation</b>				
	Retired / House wife	18	60.0	19	63.3
	Laborer	7	23.3	2	6.7
	Self - employee	4	13.3	9	30.0
5	<b>Monthly income</b>				
	Government employee	1	3.4	0.0	0.0
	< 10,000	19	63.3	16	53.3
	10,001 - 15,000	8	26.7	10	33.4
6	<b>Religion</b>				
	15,001 - 20,000	3	10.0	4	13.3
	Hindu	16	53.3	14	46.7
	Muslim	10	33.4	8	26.6
7	<b>Type of diet</b>				
	Christian	3	10.0	8	26.7
	Others	1	3.3	0.0	0.0
	Vegetarian	12	40.0	15	50.0
	<b>Non- Vegetarian</b>	18	60.0	15	50.0

Sr. No	Demographic variables	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
8	<b>How long have you been diagnosed with knee joint pain</b>				
	< 6 months	1	3.3	5	16.7
	6 months - 1 year	15	50.0	7	23.3
	1 year- 2 years	5	16.7	8	26.7
	> 2 years	9	30.0	10	33.3

9	How long have you been taking treatment for knee joint pain				
	< 6 months	3	10.0	9	30.0
	6 months - 1 year	14	46.7	7	23.4
	1 year- 2 years	6	20.0	4	13.3
	> 2 years	7	23.3	10	33.3
10	Do you perform any exercise? If yes, what type of exercise				
	Walking	10	33.3	8	26.7
	Breathing exercise	0	0.0	4	13.3
	Yoga	4	13.4	6	20.0
	No	16	53.3	12	40.0

In Group I, Majority of 26.7% of had age 66-70 years, 63.3% of them were males 30% of them had degree, 60% of them were retired/housewives, 63.3% of them had monthly income less than Rs.10000, 53.3% of them were Hindu, 60% of them were non-vegetarian, 50% of them were diagnosed for 6 months to 1 years, 23.3% of them were diagnosed for knee pain for more than 2 years. In gr.2 Majority of 30% of the old age patients had age 60-65 years, 30% of them had diploma, 63.3% of them were retired/housewives. 53.3% of them had monthly income less than Rs.10000. 46.7% of them were Hindu, 33.3% of them were diagnosed for knee pain for more than 2 years. 33.3% of them were diagnosed for knee pain for more than 2 years. 40% of them did exercise.

## Section II

Analysis of data related to level of joint pain among old age patients in Group I and Group II

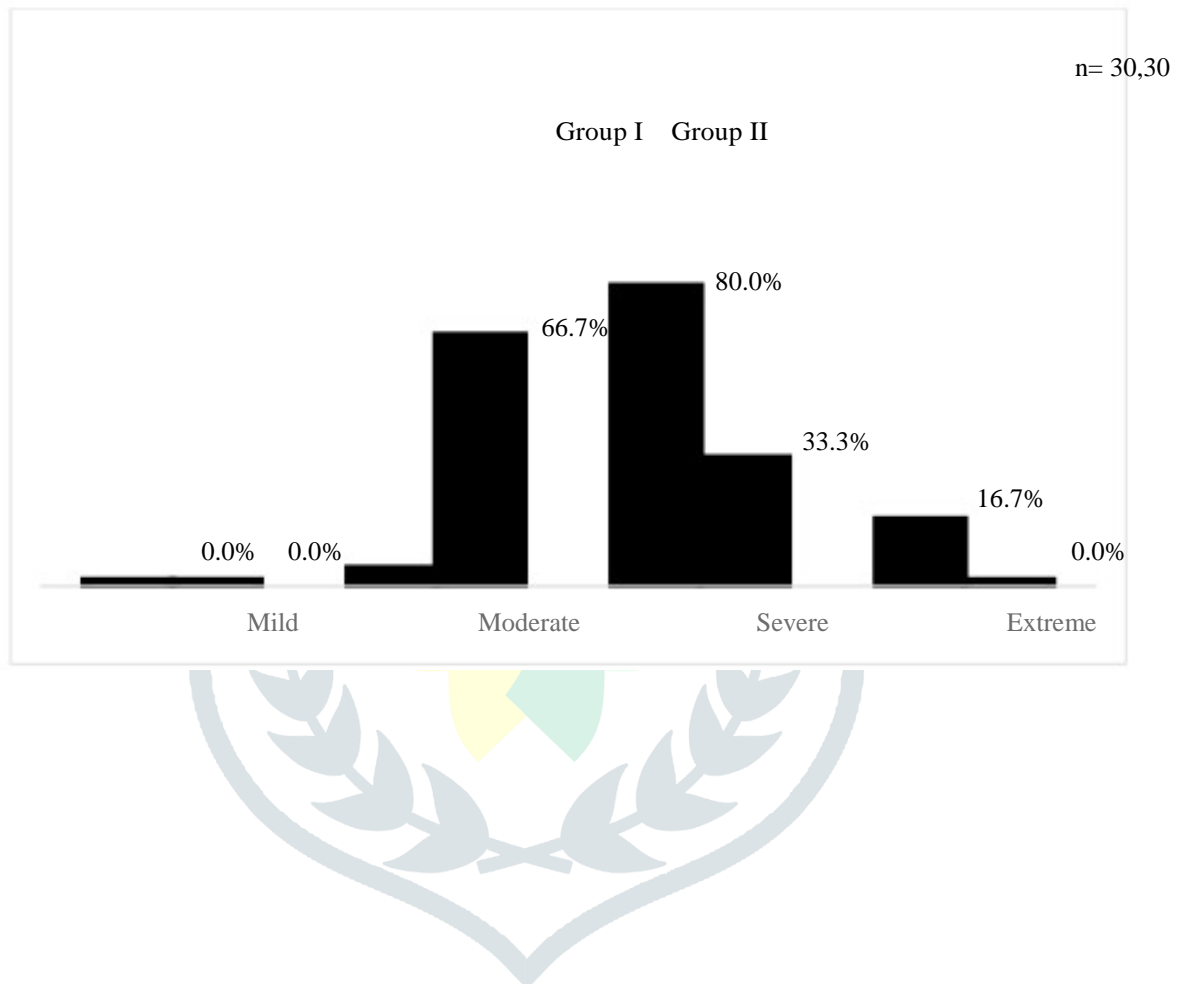
n= 30,30

Joint pain	Group I		Group II	
	Pretest		Pretest	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Mild (Score 0-15)	0	0.0	0	0.0
Moderate (Score 16-30)	1	3.3	20	66.7
Severe (Score 31-45)	24	80.0	10	33.3
Extreme (Score 46-60)	5	16.7	0	0.0

Table shows that In Group I, 3.3% of the old age patients had moderate knee joint pain (score 16-30), 80% of them had severe pain (Score 31-45) and 16.7% of them had extreme joint pain (score 46-60). In Group II, 66.7% of the old age patients had moderate knee joint pain (score 16-30) and 33.3% of them had severe pain (Score 31-45).

Figure no 11.

Bar graph shows analysis related to knee joint pain among old age patients in Group I and Group II.



## Section III

Analysis of data related to the effectiveness of hot water compress with Epsom salt in reducing joint pain among old age patients in Group I and Group II

Joint pain	Group I				Group II			
	Pretest		Posttest		Pretest		Posttest	
	No.	%	No.	%	No.	%	No.	%
Mild (Score 0-15)	0	0.0	23	76.7	0	0.0	0	0.0
Moderate (Score 16-30)	1	3.3	7	23.3	20	66.7	22	73.3
Severe (Score 31-45)	24	80.0	0	0.0	10	33.3	8	26.7
Extreme (Score 46-60)	5	16.7	0	0.0	0	0.0	0	0.0

Table shows that In Group I, in pre-test, 3.3% of the old age patients had moderate knee joint pain (score 16-30), 80% of them had severe pain (Score 31-45) and 16.7% of them had extreme joint pain (score 46-60). In post-test, 76.7% of them had mild knee joint pain and 23.3% of them had moderate knee joint pain. In Group II, in pre-test, 66.7% of the old age patients had moderate knee joint pain (score 16-30) and 33.3% of them had severe pain (Score 31-45). In post-test, 73.3% of the old age patients had moderate knee joint pain (score 16-30) and 26.7% of them had severe pain (Score 31-45). This indicates that the knee pain in Group I improved remarkably after hot water compress with Epsom salt compared to that in Group II, where in the knee pain worsened.



Table 4: Paired t-test for the effectiveness of hot water compress with Epsom salt in reducing knee joint pain among old age patients.

n= 30,30

	Mean	SD	T	df	p-value
Pre-test	40.8	5.3	28.4	29	0.000
Post-test	14.1	2.2			

Researcher applied paired t-test for the comparison of pre-test and post-test pain for the effectiveness of hot water compress with epsom salt in reducing joint pain among old aged persons. Average pain score in pre-test was 40.8 which reduced to 14.1 in post-test. t-value for this test was 28.4 with 29 degrees of freedom. Corresponding p-value was 0.000, which is small (less than 0.05), the Null hypothesis is rejected. This is evident that the hot water compress with epsom salt was significantly effective in improving the joint pain among old age people. Hence  $H_1$  is accepted.

## DISCUSSION:

In present study two sample t-test for the comparison of Group I and Group II for the effectiveness of hot water compress with Epsom salt in reducing joint pain among old age patients. Average pain score change in experimental group was 26.7 which was 0.8 in control group. T-value for this test was 27.3 with 58 degrees of freedom. Corresponding p-value was 0.000 which is small (less than 0.05), the null hypothesis is rejected and  $H_1$  is accepted. Average reduction in pain score in Group I is significantly higher as compared to that in Group II. It is evident that the hot water compress with epsom salt is significantly effective in reducing joint pain among old age patients. There was no significant association between age, gender, body mass index, type of physical activity, duration of knee pain, treatment with their demographic variables at  $p < 0.05$  level. Hence the hypothesis  $H_2$  there will be no significant association between pre -test level of knee joint pain and selected demographic variables of patients with knee joint pain who received Epsom salt fomentation hence  $H_2$  is rejected and  $H_1$  is accepted. From all the above findings it can be considered that most of the old age people given hot compress had less effect in reducing knee joint pain. And hot water with Epsom salt compress had more effective in reducing knee joint pain.

## CONCLUSION

The purpose of the study was to assess the effectiveness of Epsom salt fomentation on knee joint pain among patients with knee pain. From the findings it is proved that Epsom salt fomentation found to be effective in relieving Knee Related pain.

## IMPLICATIONS

The findings are useful in the field of education nurses, administration of nurses and clinical practice.

## COMMUNITY NURSING PRACTICE

Community health nursing practice is an established activity based on recognized needs and functioning within the health care programme, co - coordination and implementing its plan and activity for the welfare of the society. The nurse has an important role in providing safe and effective nursing care to enhance the reduction of knee joint pain among old age patient's with knee joint pain.

## NURSING EDUCATION

The study has proved that hot water compress with Epsom salt therapy has effect in reducing knee joint pain in the patients. To practice this, nursing personnel need to have adequate knowledge, desirable attitude and skill regarding the hot water compress with Epsom salt therapy. These findings would help nursing faculty to give importance for hot water compress with Epsom salt therapy as a nursing intervention in the management of knee joint pain. Motivate the nursing students to use this intervention in the management of these patients.

## NURSING ADMINISTRATION

As a part of administration, the nurse administrator Conduct in- service programme and continuing nursing education programme for nurses for effective management of knee related symptoms among patients with knee joint pain. The nurse advisers can make awareness among staff nurses about significance of epsom salt fomentation for reducing knee related symptoms among patients with knee joint pain through workshops and seminars.

## NURSING RESEARCH

This study also brings about the fact that more studies need to be done at different settings which was culturally acceptable Implications for nursing administration. Nursing administrator should prepare a procedure manual and protocol which can be used at the community setting. Clinical Nurses and Nurse Educators should be given an in-service education to update their knowledge regarding the hot water compress with Epsom salt therapy and its technique in reducing knee joint pain among old age people..

## LIMITATION

Small sample size may not be generalized to larger population with different level of literacy.

Lack of follow up on the practice of the hot water applications with Epsom salt in their home care management

## RECOMMENDATIONS

A longitudinal study can be conducted to assess the effect of hot water compress with Epsom salt therapy in reducing the pain.

The same study can be conducted among different age groups.

A comparative study can be done to determine the effect of hot water compress with Epsom salt therapy in different settings.

The study can be conducted by using other techniques of the hot water compress with Epsom salt that was Cold water compress with Epsom salt.

This study can be done a comparative study between cold and hot water compress with Epsom salt.

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