

A Quasi Experimental Study to Evaluate the Effectiveness of Hot Water Application with Epsom Salt on Joint Pain, Stiffness, and Physical Function among Women at Selected Area in Dehradun

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Abstract: Background: Aging is a natural process. Everyone has to get through this stage of life on their own time and pace. In its broadest sense, aging reflects all the changes that occur over time. These changes begin at birth and continue through growth, development, and maturity. Joint pain is no longer a problem that only affects older people. Young adults between the ages of 20 and 40 are increasingly experiencing joint problems and are known to suffer from acute joint pain, especially in the shoulders, elbows, wrists, knees, ankles, feet and toes. Once considered an age-related disease, joint pain is now gradually becoming an epidemic, leading to reduced mobility and flexibility in young and middle-aged people. Objectives: To determine the effectiveness of hot water application with Epsom salt on level of joint pain, stiffness, and physical function among women in experimental and control group. Materials and Methods: Quantitative Approach with quasi-experimental non-equivalent control group pre-test and post-test Research design was used in the study. A convenient sampling technique was used to collect data from 50 Women suffering from joint pain, based on the inclusive criteria 25 samples in experimental group and 25 samples in control group was selected. The study was conducted in Mohabbewala, Dehradun. On the first day data on the demographic variables of the experimental group were collected using a structured interview method. A pretest was then conducted on the participants using the Modified WOMAC scale, Participants applied warm water application containing 4g of Epsom salts in one session (20 minutes) once a day in the morning for 10 days. A post test was conducted on the 10th day after the intervention. For the control group, demographic variables were collected using a structured interview method. Thereafter, a pre-test was conducted on day 1st and post-test was conducted on day 10th using the Modified WOMAC scale. Results: Data analysis showed that the mean post-test level of joint pain scores in experimental group 10.52(SD+ 2.84) was significantly lower than the mean post-test level of joint pain scores in control group 13.16 (SD + 2.66) and mean difference is 2.64. The Independent 't' value was 3.39 which was significant at P < 0.05 level. The mean post-test level of stiffness scores in experimental group 4.08(SD+ 1.35) was significantly lower than the mean post-test level of stiffness score in control group 6.88(SD + 1.142) and mean difference is 2.8. The Independent 't' value was 7.93 which was significant at P < 0.05 level. The mean post-test of level of difficulty in physical function scores in experimental group 26.24(SD+ 8.006) was significantly lower than the mean post-test level of difficulty in physical function scores in control group 47.96 (SD + 5.98) and mean difference is 21.45. The Independent 't' value was 10.91 which was significant at P < 0.05 level. Which showed that hot water application with Epsom salt intervention was effective in reducing the level of joint pain, stiffness and in improving the physical function in experimental group. Conclusion: This study concluded that the hot water application with Epsom salt was effective in reducing joint pain, stiffness and physical function.

Key words: Assess, joint pain, stiffness, physical function, effectiveness, Hot water application, Epsom salt, women.

1. Introduction

Acc. to WHO (2022) People around the world are living longer. Today, most people are expected to live to age 60. In every country in the world, both the size and proportion of older people in the population are increasing. At a biological level, aging results from the effects of various molecular and cellular damages that accumulate over time. As a result, physical and mental performance gradually declines, Common illnesses among older adults include hearing loss, cataracts, refractive errors, back and neck pain, and osteoarthritis.

Pain is a signal from nervous system that something is wrong. This is an unpleasant sensation such as tingling, prickling, stinging, burning or pain. The pain may be sharp or dull. It may come and go, or it may be constant. There are two types of pain: acute and chronic. Acute pain usually occurs suddenly due to illness, injury, or inflammation. Diagnosis and treatment are often possible. The pain usually

goes away, but chronic pain may develop. Chronic pain lasts for a long time and can cause serious problems.

Acc. to Orthopedic & Rheumatologic Institute (2021) Joint problems are common and are usually felt in the hands, feet, hips, knees, and spine. In some cases, the joints may become stiff or painful. Some patients report a burning, throbbing, or "rubbing" sensation. Additionally, joints may feel stiffness in the morning, but movement and activity will loosen them and make feel better. However, being too active can make the pain worse. Joint pain can affect joint function and limit ability to perform basic tasks. Severe joint pain can affect quality of life. Treatment should focus not only on the pain but also on the affected activities and functions. The most common causes of chronic joint pain are osteoarthritis, rheumatoid arthritis, gout, bursitis, viral infections, tendonitis, and injuries.

Worldwide, approximately 10-15% of adults over the age of 60 have some degree of osteoarthritis. While the global prevalence of knee and hip osteoarthritis is 3.8% (95% CI,

3.6– 4.1%) and 0.85% (95). % CI, 0.74–1.02%), the BJD India COPCORD study showed a prevalence of any form of osteoarthritis of 4.39% (3.30 to 5.61). Osteoarthritis of the knee and spine are common in India, while osteoarthritis of the hip is rare. Osteoarthritis in the elderly (>65 years old) is very diverse [17– 60.6%] with a higher incidence rate in rural areas than in urban areas.

2. Material and Methods

A quasi-experimental non-equivalent control group pre-test and post-test Research design was used in the study. A convenient sampling technique was used to collect data from 50 Women suffering from joint pain, based on the inclusive criteria 25 samples in experimental group and 25 samples in control group was selected. The study was conducted in Mohabbewala, Dehradun. On the first day data on the demographic variables of the experimental group were collected using a structured interview method. A pretest was then conducted on the participants using the Modified WOMAC scale, Participants applied warm water application containing 4g of Epsom salts in one session (20 minutes) once a day in the morning for 10 days. A post test was conducted on the 10th day after the intervention. For the control group, demographic variables were collected using a structured interview method. Thereafter, a pre-test was conducted on day 1st and post-test was conducted on day 10th using the Modified WOMAC scale. It took an average time of about 20-25 minutes for each subject. Data analysis was done by using SPSS version 25. I used both descriptive (mean, percentage, standard deviation) and inferential statistics.

3. Instrument /Tool

The tool consists of four parts, Part I- consists of demographic variables such as age, educational status, religion, occupation, family monthly income, duration of the pain/illness, and any intervention taken to reduce the pain. Part II -Modified WOMAC osteoarthritis index scale was used to assess the level of joint pain among women. It consists of five items. It is classified as having No pain, Mild pain, Moderate pain, Severe pain, and Extreme pain. It is graded as 0, 1, 2, 3, 4, respectively. The overall score is 20. Part III -Modified WOMAC osteoarthritis index scale was used to assess the level of stiffness among women. It consists of two parts. None, mild stiffness, moderate stiffness, severe stiffness, and excessive stiffness were assigned. It was rated as 0, 1, 2, 3, 4, respectively. The overall score is 8. Part IV -Modified WOMAC osteoarthritis index scale was used to assess the level of physical function among women's. It has 17 items. None, mild difficulty in physical function, moderate difficulty in physical function, severe difficulty in physical function, and great difficulty in physical function were assigned. It was assigned a score of 0, 1, 2, 3, 4, respectively. The overall score is 68.

4. Statistical Analysis

Frequency and percentage distribution were used to analyse the demographic variables and the mean and standard deviation were calculated. Independent t' test can be done for comparison of pre-test and post-test values in experimental and control group.

Table 1: Comparison of mean, standard deviation and independent 't' value of post-test level of joint pain among women with joint pain between experimental and control group, n=50

S.NO	Variable	Mean	Standard deviation	Mean difference	Independent 't' value	Table value
1.	Experimental group	10.52	2.84	2.64	3.39	2.011
2.	Control group	13.16	2.66			

p<0.05

Table 2: Comparison of mean, standard deviation and independent 't' value of post-test level of stiffness among women with joint pain between experimental and control group, n=50

S.no	Variable	Mean	Standard deviation	Mean difference	Independent 't' value	Table value
1.	Experimental group	4.08	1.35	2.8	7.93	2.011
2.	Control group	6.88	1.142			

p<0.05

Table 3: Comparison of mean, standard deviation and independent 't' value of post-test level of difficulty in physical function among women with joint pain between experimental and control group, n=50

S.no	variable	Mean	Standard deviation	Mean difference	Independent 't' value	Table value
1.	Experimental group	26.24	8.006	21.45	10.91	2.011
2.	Control group	47.96	5.98			

p<0.05

5. Discussion

This study showed that the mean post-test of level of joint pain scores in experimental group 10.52(SD+ 2.84) was significantly lower than the mean post-test level of joint pain scores in control group 13.16 (SD + 2.66) and mean difference is 2.64. The Independent 't' value was 3.39 which was significant at P < 0.05 level. And the mean post-test of level of stiffness scores in experimental group 4.08(SD+

1.35) was significantly lower than the mean post-test level of stiffness score in control group 6.88(SD + 1.142) and mean difference is 2.8. The Independent 't' value was 7.93 which was significant at P< 0.05 level. And the mean post-test of level of difficulty in physical function scores in experimental group 26.24(SD+ 8.006) was significantly lower than the mean post-test level of difficulty in physical function scores in control group 47.96 (SD + 5.98) and mean difference is 21.45. The Independent 't' value was 10.91 which was

significant at $P < 0.05$ level. Therefore, it can be said that the hot water application with Epsom salt was found to be effective in reducing the level of joint pain, stiffness and physical function among women suffer from joint pain.

6. Ethical Consideration

The study was accepted and recommended by a research committee and formal permission was obtained from the principal of Shri Guru Ram Rai University, College of Nursing, Patel Nagar, Dehradun. To conduct research studies in Mohabbewala, Dehradun, written permission was obtained from the (Parshad of Mohabbewala) prior to data collection. Confidentiality was assured to all subjects to get their cooperation. Informed consent of each subject was obtained before administering research tools to them and subjects were informed that their participation was voluntary and had the freedom to withdraw from the study.

Conflict of Interest

None declared

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