EFFECTIVENESS OF HOT FOMENTATION IN REDUCING THE SYMPTOMS OF OSTEOARTHRITIS

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ABSTRACT:

Osteoarthritis (OA) is the most common form of arthritis with the disease of the knee and hip affecting about 3.8% of people as of 2010. Among those over 60 years old, about 10% of males and 18% of females are affected. It is the cause of about 2% of years lived with disability**.** To evaluate the effectiveness of hot fomentation in reducing the symptoms of osteoarthritis among osteoarthritis patients in selected hospitals of Kanyakumari district of Tamil Nadu. Pre experimental with pre-test and post-test; one group was adopted for this study. 30 osteoarthritis patients, who met the inclusion criteria, were selected. Samples were selected by using non probability convenient sampling technique. Interviews were conducted to find the symptoms of osteoarthritis. Patients had received 5 sittings of hot fomentation. On the day of 5th sitting, post-test was conducted.

Key Words: Osteoarthritis, Hot fomentation, Physical Disability.

About the Author:

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BACKGROUND OF THE STUDY:

As the population ages, the number of people with osteoarthritis will only grow. By 2030, a projected 67 million people will have doctor-diagnosed arthritis. A joint is the point where two or more bones are connected. (Bedson J,2007). The World Health Organization **(WHO)** reports that 80% of people with osteoarthritis of knee have some degree of limitation, with 25% unable to carry out activities of daily life. The major consequences of osteoarthritis are: pain, stiffness, loss of joint mobility, disability, loss of independence, reduced social interaction, deformity, decline in well-being, and to a limited extent, mortality. (Duncan R C, 2006)

The Australian Orthopaedic Association published a study result stating that osteoarthritis is the most common reason for knee joint replacement surgery in Australia, accounting for 96% of primary (initial) total knee replacement procedures in 2001-02 (**AOA 2003**). The number of joint replacement procedures increased by 9.1% between 1999-2000 and 2000-2001, and by 13.4% between 2000-2001 and 2001-2002, according to data from the Australian Orthopaedic Association. (Lynette M March & Hanish Bagga, 2004).

Globally approximately 250 million people have osteoarthritis of the knee (3.6% of the population). OA affects nearly 27 million people in the United States, accounting for 25% of visits to primary care physicians, and half of all NSAID prescriptions. It is estimated that 80% of the population have radiographic evidence of OA by age 65, although only 60% of those will have symptoms. In the United States, hospitalisations for OA increased from 322,000 in 1993 to 735,000 in 2006. Globally OA causes moderate to severe disability in 43.4 million people as of 2004. (Nigel Arden & Michael.C.Nevitt, 2006)

A study was conducted among osteoarthritis patients and found that hot fomentation relieves the pain and improves the functional ability. They were compared to a control group receiving no treatment. The study focussed to reduce the symptoms and expected the outcomes of pain relief, reduction of oedema or swelling, and improvement of knee flexion (bending), range of motion, and function. The study revealed that with hot fomentation given for 20 minutes a day, 5 days a week found improved muscle strength in the leg, improved range of motion in the knee and resulted in less time needed to walk 50 feet, compared to the control group. Hot water fomentations have been used for many years to treat people with various ailments. The use of fomentations is on the rise all over the world. Fomentations are being used in hospitals, homes, and health resorts. The fomentations have a relaxing effect on the body of the people. (R. Aroun Prasanth, 2014).

STATEMENT OF THE PROBLEM:

"A study to evaluate the effectiveness of hot fomentation in reducing the symptoms of osteoarthritis among osteoarthritis patients in selected hospitals at Kanyakumari District".

OBJECTIVES OF THE STUDY:

1. To assess the pre-test and post-test scores of symptoms of osteoarthritis among osteoarthritis patients.
2. To evaluate the effectiveness of hot fomentation in reducing the symptoms of osteoarthritis among osteoarthritis patients.
3. To find out the association between the post-test level of symptoms and selected socio demographic variables.
4. To find out the association between the post-test level of symptoms and clinical variables.

HYPOTHESES:

H_1 – There will be significant difference between pre-test and post-test score of symptoms of osteoarthritis among osteoarthritis patients.

H_2 – There will be significant association between the post-test level of symptoms and selected socio demographic variables.

H_3 – There will be significant association between the post test level of symptoms and clinical variables.

SAMPLING CRITERIA:

The criteria for sample selection are mainly depicted under two headings, which includes the inclusive criteria and exclusive criteria.

Inclusion Criteria:

- Patients with osteoarthritis in knee in selected hospitals in Kanyakumari district.
- Patients who take and do not take oral medication for osteoarthritis.
- Patients aged between 35 and 75 years with osteoarthritis.
- Patients who are willing to participate in the study.
- Both Males and Females.
- Patients who are available at the time of data collection.

Exclusion Criteria:

- Patients with rheumatoid arthritis with complications.
- Patients, who are taking other therapies like cryotherapy, TENS, diathermy, ultra sound etc.
- Patients, who are having surgical incision, ulcer on the affected arm or legs.
- Patients with Open wounds, Cuts, Burns and Skin rashes.

RESEARCH METHODOLOGY:

For accomplishing the objectives of the study a quasi experimental one group pre-test and post-test design was adopted for the present study. After obtaining formal permission from the authorities of the hospitals the study was conducted at the selected hospitals such as; Ramakrishna hospital, Ultra Physioclinic and Dr.Isaac Bone and Joint specialty Hospital, Marthandam. 30 osteoarthritis patients who fulfilled the inclusion criteria were selected by using Non-Probability Convenient sampling technique. Interview schedule was found to be appropriate to assess the symptoms of osteoarthritis. The tool was developed by the investigator after reviewing related literature and guidance from experts in the field. The tool consisted of 4 parts.

Section: - A

It consisted of eight items for obtaining information about the selected socio demographic datas such as age, gender, religion, marital status, educational status, occupation**,** monthly income of the family and dietary pattern.

Section: - B

It consisted of five items for obtaining information about the clinical variables such as duration of illness, body build, physical mobility, seasonal severity of symptoms and time of occurrence of symptoms.

Section: - C

Numerical pain rating scale

Numerical Rating Scale consisted of 10 numerically scaled scores. The total maximum and minimum scores were 10 and 0 respectively. The score on the numerical scale, was interpreted as,

Score Interpretation

0	No pain
1-3	Mild pain
4-6	Moderate
7-10	Severe pain

Section: - D

Modified Binkley Stratford Lower extremity functional scale

The physical disability is assessed through Binkley Stratford Lower extremity functional scale. It is a four point scale that includes 20 regular activities rated as No difficulty, bit difficulty, Moderate difficulty, Quite a bit difficulty and Extreme difficulty or unable to perform.

Interpretation of Scoring

Each activity score starts from 0-4.

Minimum score: 0

Maximum score: 80

0-20 Extreme difficulty

21-40 Quite a bit difficulty

41-60 Moderate difficulty

61-80 A little bit difficulty

80 No difficulty

The tool was evaluated by the experts for the content validity. Reliability was established using test retest reliability method and it was found to be highly reliable with the value of 1.

Method of data collection:

The data collection included 4 steps.

Step: 1 - Data collected regarding the demographic and clinical variables.

Step: 2 - Levels of osteoarthritis symptoms such as pain and disability were assessed by using Modified Binkley Stratford lower extremity functional scale and numerical pain rating scale.

Step: 3 - After the pre-test, osteoarthritis patients had received five sittings of hot fomentation.

Step: 4 - On the day of 5th sitting post-test was conducted on the selected patients for checking the effectiveness of hot fomentation by using the same tools.

Data analysis:

Descriptive statistics that is frequency, percentage, mean and standard deviation, and inferential statistics that is paired 't' test and chi-square were adopted for the analysis of the study.

RESULTS/ MAJOR FINDINGS:

The findings of the study were organised under 4 sections.

Section-A: Frequency and percentage distribution of osteoarthritis patients based on their socio demographic and clinical variables.

Section –B: Frequency and percentage distribution of osteoarthritis patients based on the level of symptoms of osteoarthritis.

Section-C: Effectiveness of hot fomentation in reducing the symptoms of osteoarthritis.

Section-D: Association between the post-test level of symptoms and selected socio demographic and clinical variables.

Section-A: Frequency and percentage distribution of osteoarthritis patients based on their socio-demographic and clinical variables.

With regard to socio-demographic variables, the maximum number of osteoarthritis patients (73%) was between the age group of 56-65 years. Majority of them (76.60%) were females. Most of them 14 (46.66%) were Christians. All of them 30 (100%) were married. Majority of them 18 (60%) had completed school education. Most of them 21 (70%) had <Rs.5000 as their monthly income. All of them 30 (100%) were non-vegetarians. With respect to occupation, majority 14 (53.3%) were not having any specific occupation.

With regard to clinical variables majority of them 19 (63.3%) had their duration of illness between 1-2 years. Most of them 18 (60%) were overweight. Most osteoarthritis patients 19 (63.3%) were able to move their legs with mild restriction. Majority of them 27 (90%) had their severity of symptoms during winter. In most osteoarthritis patients 15 (50%) symptoms occurred in the morning.

Section –B: Frequency and percentage distribution of osteoarthritis patients based on the level of symptoms of osteoarthritis.

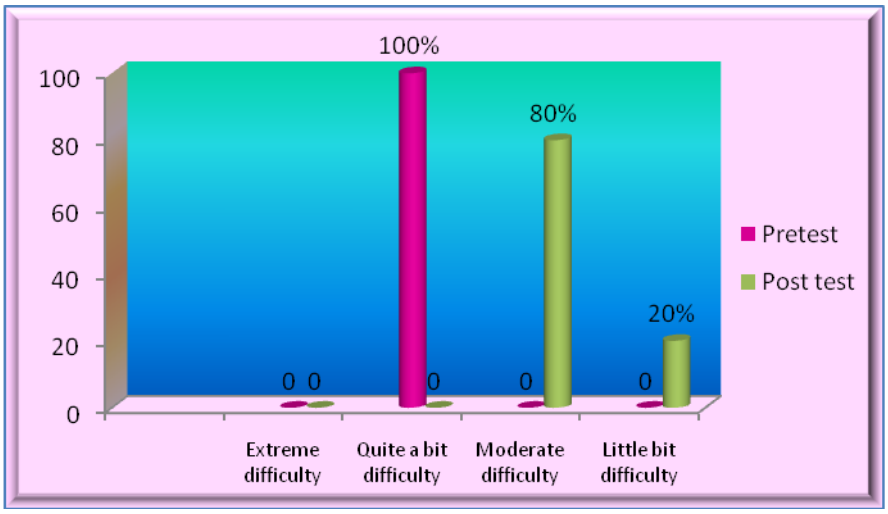

Figure 1:- Frequency and percentage distribution of samples based on their level of physical disability

Figure 1 shows that in the pre-test all 30(100%) osteoarthritis patients had 'quite a bit' difficulty during their physical activities. Where as in the post-test majority of them 24 (80%) had 'moderate difficulty' and 6 (20%) had 'little bit difficulty' during their physical activities. None of them were found in 'extreme' and 'quite a bit difficulty'.

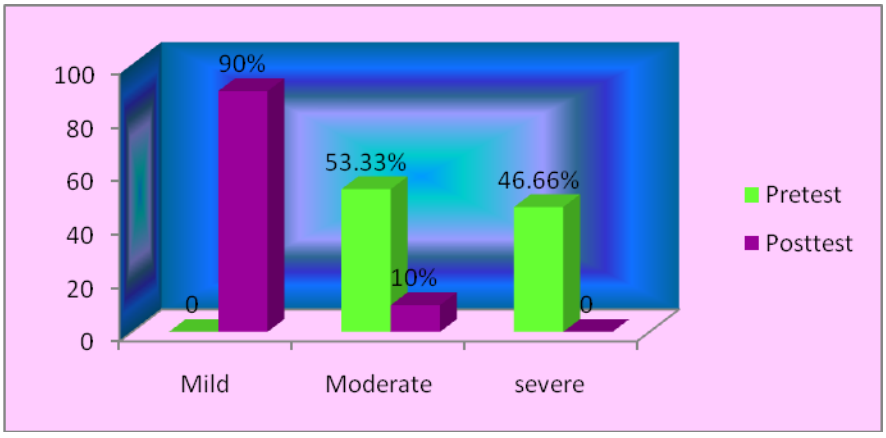

Figure 2:- Frequency and percentage distribution of samples based on their level of pain

Figure 2 shows that in the pre-test, majority of them 16 (53.33%) had moderate level of pain and 14 (46.66%) had severe pain. Whereas in the post-test majority of them 27 (90%) had mild pain and only 3 (19%) had moderate pain. None of them had severe pain.

Section-C: Effectiveness of hot fomentation in reducing the symptoms of osteoarthritis.

Table: 1 - Mean, Standard deviation & 't' value on pre-test and post-test levels of pain among osteoarthritis patients.

n=30

Pain	Mean	SD	MD	't'-value	P-value
Pre test	6.7	1.16	4.43	25.90*	1.699 (df=29)
Post test	2.27	1.03			

- **Significant at 0.05% level.**

Table 1 shows that the pre-test mean pain score is 6.7 with the standard deviation of 1.16 and the post-test mean pain score is 2.27 with the standard deviation of 1.03. The mean difference is 4.43. The calculated 't' value was 25.90 which was more than the table value (P=1.699) at 0.05% level of significance with the degree of freedom 29. It shows that there was a significant difference in the pre-test and post-test level of pain after hot fomentation.

Table:2 - Mean, Standard deviation & 't' value on pre-test and post-test level of physical disability among osteoarthritis patients.

n=30

Physical disability	Mean	SD	MD	't'-value	P-value
Pre test	32.17	5.30	-25.23	24.98*	1.699 (df=29)
Post test	57.4	5.92			

- **Significant at 0.05% level.**

Table 2 shows the pre-test mean physical disability score was 32.17 with the standard deviation of 5.30 and the post-test mean physical disability score was 57.4 with the standard deviation of 5.92. The mean difference was -25.23. The calculated 't' value is 24.98 which is more than the table value (P=1.699) at 0.05% level of significance with the degree of freedom 29. It shows that there was a significant difference in the pre-test and post-test levels of physical disability after hot fomentation.

From the above two tables it was inferred that hot fomentation is more effective in reducing the symptoms of osteoarthritis among osteoarthritis patients. Hence the research hypothesis (H_1) was accepted.

Section-D: Association between the post test level of symptoms and selected socio demographic and clinical variables.

There was a significant association found at 0.05 levels between the symptoms of osteoarthritis (physical disability & pain) and the demographic variables, age and gender. There was no association found between symptoms of osteoarthritis (physical disability and pain) and other demographic variables such as religion, marital status, education, monthly income, occupation and diet pattern among osteoarthritis patients. Hence the research hypothesis (H_2) was accepted.

There was a significant association found at 0.05 levels between the symptoms of osteoarthritis (physical disability & pain) and the clinical variables such as body build and physical mobility. There was no association found between symptoms of osteoarthritis (physical disability and pain) and other clinical variables such as duration of illness, severity and occurrence of symptoms among osteoarthritis patients. Hence the research hypothesis (H_3) was accepted.

RECOMMENDATIONS:

- The study can be conducted among larger samples to generalise the study findings.
- A comparative study can be conducted with different interventions.
- A similar study can be conducted by giving interventions for longer duration.

CONCLUSION:

Thus the study concluded that the physical disability was reduced after hot fomentation and improved physical ability. And the pain was also reduced after hot fomentation and the patient performed the activities with less difficulty. Hence it is believed that hot fomentation was proved to be more effective in reducing the symptoms of osteoarthritis. Although further research is needed to substantiate these conclusions, there were many research evidences existing that considered hot fomentation as an evidence-based treatment option for relieving pain and disability due to osteoarthritis.

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