AN INTERVENTIONAL STUDY TO DETERMINE THE EFFECTIVENESS OF HOT WATER COMPRESS WITH EPSOM SALT ON REDUCTION OF KNEE JOINT PAIN AMONG THE AGED 50-65 YEARS RESIDING AT SHANKAR NAGAR, JALNA.

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ABSTRACT: A true experimental study was conducted to assess the effectiveness of hot water compress with Epsom salt to reduce the knee joint pain among aged 50 - 65 years Shankar Nagar Jalna, Maharashtra, India. Data was collected Shankar Nagar, Jalna. The study design used for study was randomized control group design. A total 60 aged were selected by simple randomized sampling technique. A pre- test is done by using numerical pain rating scale. After pre- test an intervention was given as hot water compress with Epsom salt for 10 min up to 7 days, then posttest done immediately after intervention to assess effectiveness of hot water compress with Epsom salt on aged using numerical pain rating scale. The statistical test used for analysis were.The study was conclude, that the hot water compress with Epsom salt is effective to reduce the level of knee joint pain to improve health lead to aged to stay fit.

INTRODUCTION: Aging is the natural process of living organisms and human beings, that represents the universal biological changes that occur with the age and are unaffected by disease and environmental influence. In humans, ageing represents the accumulation of changes in a human being over time and can encompass physical, psychological, and social changes. Ageing increases the risk of human diseases of the roughly 150,000 people who die each day across the globe, about two-thirds die from age-related causes. The common health condition associated with elderly are hair loss , cataract, refractive errors, back and neck pain, chronic obstructive pulmonary disease, diabetes depression, dementia and osteoarthritis. In elderly arthritis is most common health condition having two types Rheumatoid arthritis and osteoarthritis.

Osteoarthritis management is comprehensive and individualized based on Non-pharmacological and pharmacological measures including analgesics, non steroidal anti inflammatory drugs topical pain medications. Non pharmacological measures include hot and cold applications yoga, electrical heat applications and Epsom salt as one of the effective natural mineral.

As the pharmacological methods have major side effects on health like headache indigestion, drowsiness, allergic reactions that's why non pharmacological method preferred as it can be used for long prolong time, easy to follow among elderly and no side effects if used in proper among, where magnesium and sulfates absorb through the skin and have many vital functions especially for joint pain relief.

NEED FOR THE STUDY:

Knee joint (anatomically known as synovial joint) pain is a common musculoskeletal disorder affecting 80% of people at some point in their lives. Knee joint pain is not a specific disease rather it is a symptoms that occurs from osteoarthritis. Osteoarthritis commonly affects the weight bearing joints such as knee, because of ruptured articular cartilage. This will occurs due to the deficiency of calcium and magnesium sulfate, That will leading to degeneration of knee, because of ageing or high joint load the bone modelling and remodelling process will happened. Due to that there is a disruption of cartilage collagen network access by chondrocyte enzyme which is present in synovial joint therefore there is a loss of aggrecan.

This process resulting in inflammation and progression of cartilage loss that ultimately leads to osteoarthritis. This will occur due to the deficiency of calcium and magnesium sulphate. Most people don't get enough magnesium which can affect their nerve, muscle and enzyme function, ultimately leading to contributing to inflammation that can results in joint pain. On the physical side, Epsom salt which is the mineral magnesium sulphate has been found to alleviate pain. Additionally soaking in an Epsom salt and Epsom salt compress helps to pull toxins from the body, which speeds the healing process.

STATEMENT OF THE PROBLEM:

An interventional study to determine the effectiveness of hot water compress with Epsom salt on reduction of knee joint pain among the aged 50-65 years residing at Shankar Nagar, Jalna.

OBJECTIVES:

- To assess the pre-test level of knee joint pain among aged 50-65 years both in experimental and control group.
- To assess the post-test level of knee joint pain among aged 50-65 years both in experimental group and control group.
- To determine the effectiveness of hot water compress with Epsom salt on knee joint pain among aged 50-65 years in experimental group.
- To compare the effectiveness of hot water compress with Epsom salt in pre test and post test level of knee joint pain among aged 50-65 years .
- To find out the association between pre-test level of knee joint pain with selected demographic variable.

HYPOTHESES:

H1 : There is a significant difference between the mean pre test and post test level of knee joint pain score among elderly people in experimental group.

H2 : There is a significant difference between the mean pre test and post test level of knee joint pain score among elderly people in control group.

H3: There is a significant difference in pre test and post test level of knee joint pain score among the aged 50-65 years in both experimental and control group

H4 : There is a significant association between the pret test level of knee joint pain score among elderly people with their selected demographic variable in experimental and control group.

METHODOLOGY:

Research approach: Experimental research approach was adopted for the study. Experimentation is the most significant and sophisticated research method. It is define the approach as a general set of orderly discipline procedure used to acquire information. The quantitative approach was used in this study.

Research design: The research design adopted for the present study was pre-test, post-test, and control group design. It is a type of true experimental design used to explain relationship and examine casualty between independent and dependent variable.

Population:

Target population: It refers to the total number of elderly aged 50-65 years residing at Shankar Nagar, Jalna.

Sampling technique: Simple random sampling technique was adopted for this study. It is most commonly used sampling method in many discipline.

Sample: Elderly aged 50-65 years residing at Shankar Nagar and those who fulfilled inclusion and exclusion criteria. Sample size for this study was 60 sample, 30 sample in experimental group and 30 sample in control group.

Criteria for selection of samples:

Inclusion criteria:

- Male and female of age group 50 years and above.
- Elderly people who have knee joint pain.
- The elderly people who are able to understand Marathi, Hindi, and English.
- Elderly who are able to give consent.

Exclusion criteria:
- People age group less than 50 years.
- Children, young adult are not the part of the study.
- Elderly with severe neuropathies, burn, skin lesion on knee.
- Who are not willing to participate in the study.

Variables of the study:
Independent variable: The independent variable of the research study was hot water compress with Epsom salt.
Dependent variable: The dependent variable of the research study was reduction of knee joint pain.
Description of tool: the tool consist of 2 sections.
Section A: Demographic variables
➢ The demographic variables consist 14 items such as age, gender, education, occupation, marital status, monthly income, types of arthritis, stage of arthritis, causes of arthritis, symptoms of arthritis, duration of pain, any comorbid condition, history of surgery, history of medication.

Section B: Numerical pain rating scale.
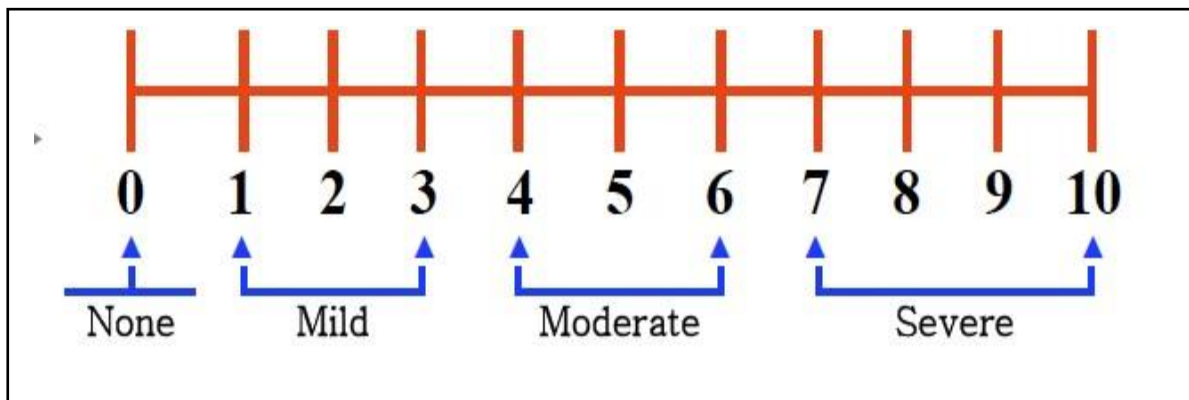
Score interpretation :

Sr No	Description	Ranges	Score
1	None	0	0
2	Mild Pain	1-3	1
3	Moderate Pain	4-6	2
4	Severe Pain	7-10	3

Techniques of data collection: The standard numerical pain rating scale used to assess the number of people suffering from knee joint pain residing at Shankar Nagar, Jalna who fulfil the inclusion and exclusion criteria. Sample were selected by simple random sampling technique. Totally 60 sample were selected, 30 in experimental group and 30 in control group. In pre-test all the samples were assessed. Then researcher administered hot water compress with Epsom salt to the experimental group for 20 min up to 7 days only one time in a day. After providing hot water compress with Epsom salt post test was conducted immediately to evaluate the effectiveness of hot water compress with Epsom salt with the help of numerical pain rating scale and entered the recording sheet.

Intervention: hot water compress with Epsom salt for 10 min per day for 7 days.
- Explain the procedure to the sample
- wash hands thoroughly
- Take one container with 1 litre of boiled water.
- Ensure the temperature of water is between 33-37 ∘c
- Add 30gm of Epsom salt in 1 litre water
- Dissolve Epsom salt with Water

- Take cleaned cloth to soaked in water
- Apply the hot water compress with Epsom salt on the knee joint.
- Keep it for 10 minutes, wait for effect
- Check the Epsom Salt compress at regular interval and observe the skin for discolouration or numbness.
- Assess the pain level by using numerical pain rating scale

Methods of data analysis:

Paired 't' test: This test is used to identify the significant difference between pre-test and post-test level of pain among elderly people undergoing hot water compress with Epsom salt intervention.

Chi square test: This test is used to find out the association between the post test level of pain with selected demographic variables.

Reliability and validity of tool: It is the degree of consistency and accuracy with which instruments measure the attributes experts in Vasantarao Naik Institute of Nursing for which it is designed to measure. For this present study the tool was validated by various guides.

Data collection procedure:

The data collection period was 14 days. After obtaining permission from the concerned authority, a survey is conducted by the researcher to find out the grading of knee joint pain in aging patients receiving treatment with Epsom salt with hot water compress. Informed consent is taken from the concerned authority.

The sample is obtained on the basis of inclusion criteria. Initially the researcher developed a rapport with the patients. Then the researcher conducted a pretest by assessing the grading of knee joint pain receiving treatment of Epsom salt with hot water compress among aging osteoarthritis patients along with the collection basic demographic data. On the same day apply Epsom salt with hot water compress 10 min. Then check knee join the pain level of the patient with the help of pain rating scale.

In which the pertest then, intervention then, immediately do the posttest. The study subject were encouraged to repeat the prescribed intervention. Then assess immediately pain level with the help of pain rating scale after every intervention . To know the reduction of pain level of the patient.

Plan for data analysis : Data were collected, arranged and tabulated. Descriptive statistics like frequency, percentage and mean were used for categorical data. Inferential statistics was used to find out the effectiveness of hot water compress with Epsom salt on knee joint pain at chi square test was used associate the knee joint pain with the demographic variables.

RESULT :

Most of the people in experimental group 9(30%) are between 55-59 years and in control group 11(36.70%) of people aged between 50-54 years.

The many of the 18(60%) females in experimental group and 23(76.70%) females in control group.

Most of the 14(46.7%) people are educated up to primary education in experimental group and 14(46.7%) illiterate people are in control group.

Most of the 26(86.7%) people in experimental group and 21(70%) people in control group are married.

Most of the 14(46.7%)females in experimental group and 18(60%) females in control group are housewife.

Many of the people in experimental group 11(36.7%) are having monthly family income between 5001-6000 Rs. and in control group 9(30%) people are having monthly family income >7000Rs.

Majority of the people 23(76.7%) in experimental group and 20(66.7%) people in control group having osteoarthritis.

Most of the people 12(40%) in experimental group and 12(40%) people in control group having cause of arthritis is age, obesity, family history.

Majority of the people 10(23.3%) in experimental group whereas 13(43.3%) in control group having symptom of arthritis is stiffness of muscle and moderate pain.

Many of the people 15(50%) in experimental group and 20(66.7%) people in control group having moderate stage of arthritis.

Most of the people 20(66.7%) having continuous duration of pain in experimental group and 22(73.3%) people having intermittent duration of pain in control group.

Many of the people 17(56.7%) in experimental group and 21(70%) people in control group having chronic renal failure.

Majority of people 26 (86.7) not having history of previous surgery in both experimental and control group.

Most of the people 21(70%) people having history of medication in experimental group whereas 17(56.7) in control group.

REFERENCE

1) https://creakyjoints.org/alternative-medicine/epsom-salt-mineral-baths-arthritis/
2) https://www.medicalnewstoday.com/articles/321627#benefits-of-epsom-salt-baths
3) https://www.painscience.com/articles/epsom-salts.php
4) https://www.supportthefoot.com/blog/does-epsom-salt-work-for-foot-pain/
5) Macwan KR, Savaliya PK. Effectiveness of foot exercise and Epsom salt water on reduction of foot oedema among antenatal mothers. J Clin Diagn Res [Internet]. 2021; Available from: http://dx.doi.org/10.7860/jcdr/2021/47879.14922
6) Pinki Jaiswal*, Suvarna Patil, Sangeeta Jaiswal, Pooja Kakade, Shweta Pal, Kajal Rane. Review on Epsom salt & its applications. 2021; Available from: https://zenodo.org/record/5301475
7) Rajasekharan R, Dinesh S, Shetty P. Effect of Warm Epsom salt pack over Knee Osteoarthritis-A randomized controlled trial. J complement alternate medical research[Internet].2021;7–15.Availablefrom: http://dx.doi.org/10.9734/jocamr/2021/v16i330290
8) SethiD,RaniK.MedicalsurgicalnursingIandII.NewDelhi,India:JaypeeBrothersMedical;2015
9) SmeltzerSC,BareBG,HinkleJL,CheeverKH.Brunnerandsuddarthstextbookofmedicalsurgicalnursing:Inonevolume.12thed.LippincottWilliams&Wilkins;2011.
10) White L. Basic nursing: Foundations of skills and concepts. Florence, AL: Delmar Cengage Learning; 2001.
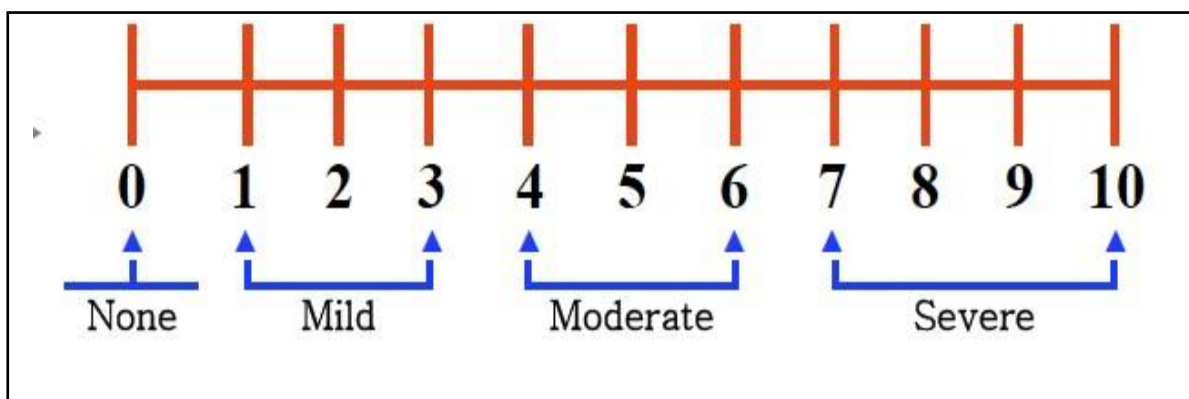
Tool :-

Section A :- The demographic profile of elderly .

N=60

Demographic Variables	Experimental Group n₁=30	Control Group n₂=30
Age(yrs)		
50-54 yrs	8(26.7%)	**11(36.7%)**
55-59 yrs	9(30%)	**5(16.7%)**
60-64 yrs	6(20%)	**6(20%)**
≥65 yrs	7(23.3%)	**8(26.7%)**
Gender		
Male	12(40%)	**7(23.3%)**
Female	18(60%)	**23(76.7%)**
Education		
Illiterate	8(26.7%)	**14(46.7%)**
Primary	14(46.7%)	**10(33.3%)**
Undergraduate	7(23.3%)	**4(13.3%)**
Post Graduate	1(3.3%)	**2(6.7%)**
Marital Status		
Unmarried	1(3.3%)	**0(0%)**
Married	26(86.7%)	**21(70%)**
Widow	3(10%)	**9(30%)**
Occupation		
Housewife	14(46.7%)	**18(60%)**
Daily Worker	7(23.3%)	**6(20%)**
Professionals	5(16.7%)	**4(13.3%)**
Retired	4(13.3%)	**2(6.7%)**
Monthly family income(Rs)		
≤5000 Rs	7(23.3%)	**8(26.7%)**

5001-6000 Rs	11(36.7%)	**7(23.3%)**
6001-7000 Rs	3(10%)	**6(20%)**
>7000 Rs	9(30%)	**9(30%)**
Type of arthritis		
Osteoarthritis	23(76.7%)	**20(66.7%)**
Rheumatoid Arthritis	4(13.3%)	**10(33.3%)**
Reactive Arthritis	3(10%)	**0(0%)**
Causes of arthritis		
Age, obesity, family history	12(40%)	**12(40%)**
Muscle Weakness	7(23.3%)	**9(30%)**
Menopause	5(16.7%)	**4(13.3%)**
Wear and tear of joint over use	6(20%)	**5(16.7%)**
Symptoms of osteoarthritis		
Swelling and limited range of motion	8(26.7%)	**9(30%)**
Stiffness in muscle and moderate pain	10(23.3%)	**13(43.3%)**
Cracking and granting noise	5(16.7%)	**6(20%)**
All of the above	7(23.3%)	**2(6.7%)**
Stage of arthritis		
Mild	3(10%)	**8(26.7%)**
Moderate	15(50%)	**20(66.7%)**
Severe	12(40%)	**2(6.7%)**
Duration of pain		
Continuous	20(66.7%)	**6(20%)**
Intermittent	7(23.3%)	**22(73.3%)**
Subsides after medications	3(10%)	**2(6.7%)**
Any co-morbid condition		
Hypertension	9(30%)	**5(16.7%)**
Diabetes Mellitus	4(13.3%)	**4(13.3%)**
Chronic renal failure	17(56.7%)	**21(70%)**
Osteoarthritis	0(0%)	**0(0%)**
History of previous surgery		
Yes	4(13.3%)	**4(13.3%)**
No	26(86.7%)	**26(86.7%)**
History of medication		
Yes	21(70%)	**17(56.7%)**
No	**9(30%)**	**13(43.3%)**

Section B :- Numerical Pain Rating Scale

Score interpretation :

Sr No	Description	Ranges	Score
1	None	0	0
2	Mild Pain	1-3	1
3	Moderate Pain	4-6	2
4	Severe Pain	7-10	3