

EFFECTIVENESS OF MECHANICAL HYDROTHERAPY AS A COMPLEMENTARY THERAPY IN THE MANAGEMENT OF PATIENTS WITH ARTHRITIS PAIN.

Authors:

Ms. Deepali Ghungrud*

Corresponding author's name and address: Ms. Arti Raut, Shrimati Radhikabai Meghe Memorial College of Nursing, Datta Meghe Institute of Medical Sciences, Sawangi (M), Wardha.

Corresponding author's email id: aratiraut15714 @ gmail.com Contact number of the corresponding author : 919673771592

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ABSTRACT: Musculoskeletal disorders is a very big skeletal disorder to healthy ageing and the second most common cause of disability, patients are lived with disability it a very big challenging situation for them in ageing. In arthritis, a patient has joint pain, muscles stiffness, it decreases muscles strength and grip & due to pain patients feel anxiety, stress, no quality sleep. To reduce joint pain, muscles stiffness and to decrease muscles strength and grip for short term period, there is need of mechanical hydrotherapy as a better alternative than medication alone.

OBJECTIVE -This study is planned with the objectives 1. To assess the level of pain before mechanical hydrotherapy for patients with arthritis pain. 2. To determine the effectiveness of mechanical hydrotherapy for patients with arthritis pain.

METHODOLOGY- It is parallel group of Experimental study and interventional evaluator approach based study at selected area of Wardha city. The patients of arthritis of age group 40 to 60 years & above as per inclusion/exclusion criteria selected and randomly divided into two group. One group is control group which will receive standard care treatment and interventional group will be on standard treatment with mechanical hydrotherapy i.e. (Warm soak towel massage).The interventional group will receive mechanical hydrotherapy for 7 days and control group only on standard treatment for 7 days. Patients will be closely followed up throughout the trial period.

EXPECTED RESULTS: The Primary outcome includes evaluation of effect of mechanical hydrotherapy to reduce joint pain. Secondary outcome is to increase muscles strength, grip, and quality sleep, free from anxiety, stress and tension^{1,2}.

Ethics approval was obtained from IEC, DMIMS (DMIMS (DU)/IEC/Dec-2019/8643).

Keywords – Effectiveness, mechanical hydrotherapy, complementary, pain, arthritis patients.

INTRODUCTION:

Hydrotherapy is a water based therapy and its characteristics are to maintain health of the people and it helps to prevent and cure the diseases. Now a days, it is used as warm water therapy as complementary therapy in arthritic condition. Its results in reducing joint pain and patients are feel relax. Hydrotherapy is needed in terms of clinical trial. It is very important to highlight the its positive aspects in the management of patient in arthritic condition³.

Arthritis is musculoskeletal disorder which shows effects with respect to age group. Mostly peoples above 40-60 years of age suffer from this disease. Common sign and symptoms of this disease are joint pain, muscles stiffness, decrease in muscles strength and grip, it also deceases range of motion. In United States more than 20% peoples

are suffering from any type of arthritis.⁴ In India prevalence rate is 0.75% overall this disease is common in ageing⁵.

Out of various types of arthritis Osteoarthritis and Rheumatoid arthritis are common in ageing. In osteoarthritis shoulder, wrist, knee and ankle joint are involved and in rheumatoid arthritis swelling will be present and involve small joints⁶.

In any type of arthritis doctors advice medicine i.e. pain killer for reducing pain but along with medicine if the said patient receives or takes benefits of hydrotherapy it will become better to patients and patient will get benefits and feel relaxed soon⁶.

Hot water hydrotherapy is one of the best and natural home remedy & which patients enjoy it, only thing is its proper implementation is needed. This treatment helps to improving blood circulation, tissues in body gets oxygenated blood, it helps in removing toxins from body & also helps in improving immune system³.

Mechanical hydrotherapy helps in reducing joint pain for patient & helps him in having quality sleep, relief from joint pain & also reduce emotional and psychological problem among patient. It also affects the small joints in hands and feet role⁷.

As a researcher, I have seen many patients of arthritis in surrounding community, having severe joint pain, muscles stiffness, muscles pain etc they take treatments at home only instead of going to hospital like applying ointment, taking medicine etc, here in this condition mechanical hydrotherapy is very effective as complementary therapy along with medicine. By applying warm water soak towel massage over affected joint like shoulder joint, wrist joint, and knee joint. When patient will do this in such a condition patient will get fast relief, will feel satisfied, can take quality sleep and improve quality life of patients.

RATIONALE OF STUDY –

Mechanical hydrotherapy is needed for greater improvement in joint stiffness, tenderness, and muscle strength and grip and in knee movement.

During follow up hydrotherapy patients maintained the improvement in physical, emotional and psychological state. Thermal effect results in proper blood circulation. It will be benefit for the musculoskeletal disorder patients to relief from the shoulder, wrist and knee joint pain. Thus there is need of mechanical hydrotherapy for arthritis patients in pain. Hence this study is highlight to determine the effectiveness of mechanical hydrotherapy in arthritis patients⁷.

It is parallel group of Experimental study in which total 70 patients, 35 in interventional group and 35 in control group. Comparator group will be treated with standard treatment and the trial group will be treated with standard treatment and mechanical hydrotherapy. (Warm water soaks towel massage)⁸.

OBJECTIVE: - 1.To assess the level of pain before mechanical hydrotherapy for patients with arthritis pain.2. To determine the effectiveness of mechanical hydrotherapy for patients with arthritis pain.

METHODOLOGY: It is an interventional evaluatory approach based study. It will be conducted in selected area of Wardha city.

1. Inclusion criteria

- Age 40 to 60 years and above
- Attending Ortho OPD at A.V.B.R Hospital Sawangi (m) Wardha.
- Willing to give consent.
- Patients who are available during data collection period.

2. Exclusion criteria

- Having any other orthopedic problems.
- Below < 40 years.
- Patients not willing to participate in the study.

- Patients are not available at the time of data collection.

Sample size: - Prevalence rate of arthritis in India i.e. 0.75 % according to that 3% prevalence rate 70 patients needed in study 35 patients in intervention group and 35 in control group⁵.

So the sample size is calculated by using following formula⁹.

$$N = \frac{1}{2} \times \left(\frac{z_{\frac{\alpha}{2}} + z_{\beta}}{\arcsin\sqrt{p} - \arcsin\sqrt{p_0}} \right)^2$$

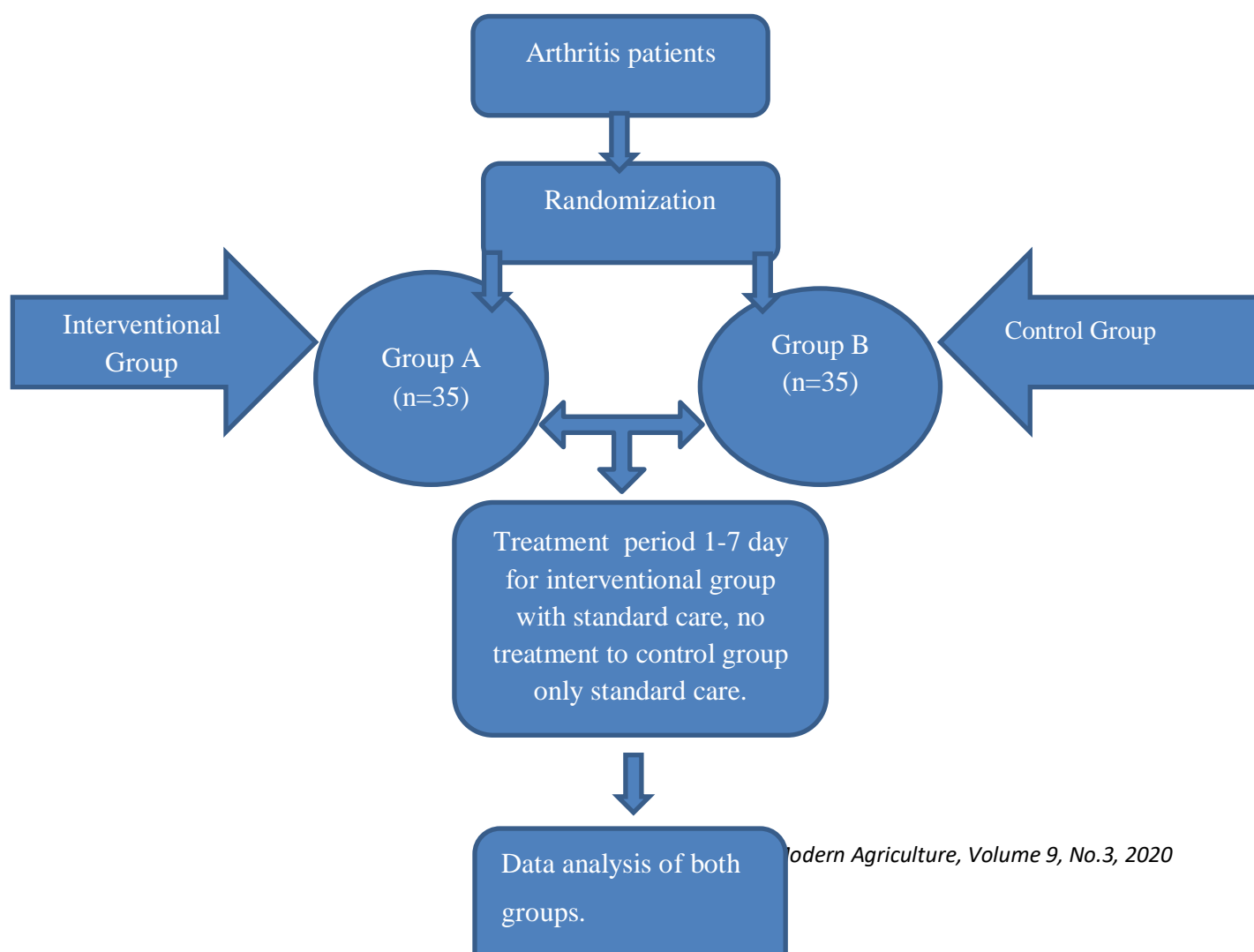
Randomization – All the participants will be assigned randomly by sequentially numbered system. The interventional and control group will be of the same size and characteristics. It will be easy for an investigator for implementation⁵.

Blinding - The participants and the researcher will not be blinded during the clinical trial but, outcome assessors will be blinded.

Interventions - The control group will be provided Standard treatment prescribed by orthopedic doctors and the interventional group will receive mechanical hydrotherapy with Standard treatment. day-1 Assess patients self reported pain level by pain scale (NPRS, 0-10 score.) day -1 to day-7 will give warm soak towel massage, water 99^o to 104^oF. Warm water temperature level check by bath thermometer. Place hot towel 3-4 second on shoulder, wrist and knee joint. Repeat this cycle for 4-8 times a day. After hydrotherapy at day 7 patients self-reported pain level assess by Numerical pain rating scale. (NPRS)

FIGURES AND TABLES:

Fig. 1: Schematic diagram of Study methodology



METHOD OF DATA COLLECTION/ STUDY SHEDULE

<u>Day</u>	<u>Methods of Data collection</u>	<u>Source</u>
<u>Day-1</u>	Allocation & Informed consent and Assess patients self reported pain level by pain scales.	By Pain score 0-10 Numerical pain rating scale.(NPRS)
<u>Day-1 to Day 7</u>	<p><u>Intervention-</u></p> <p>In Mechanical hydrotherapy (compress) I will give.....</p> <p><u>Warm water soaks / towel message.</u></p> <ul style="list-style-type: none"> • Use warm water 99⁰ F to 104⁰ F. • Will check warm water temperature level by bath thermometer. • Will apply hot towel 3-4 second on shoulder, wrist and knee joint. • Repeat this cycle for 4 to 8 times a day. 	Pain score 0-10 Numerical pain rating scale. (NPRS).
<u>Day-7</u>	After hydrotherapy patients self reported pain level assess by pain scale.	Pain score 0-10 Numerical pain rating scale.(NPRS)

OUTCOME MEASURES –

Primary outcomes: - Include evaluation of effectiveness of mechanical hydrotherapy to reduce joint pain^{10,11}.

Secondary outcome: - is increase muscle strength, muscle grip, joint movement, quality sleep, reduce emotional and psychological problems^{10,11}.

Clinical outcomes – The intensity of joint pain will be measured by the Numerical Pain Rating Scale. (NPRS)

Assessment of adverse event – According to previous studies, no adverse event was observed.

Data management and monitoring - The demographic data (age, sex, education occupation, monthly income), any previous major or minor illness will be recorded when they are participate in study. Where consent will be obtained and data will be collected carefully. While collecting data researcher will keep pen, pencil and pain scale sheet to record the data accurately. Data will be collected in complete form by researcher. Keep data ready for analysis without any delay and problem.

The follow-up Will be taken during treatment, check for adverse event, if any. Researcher will be in contact with the participants during data collection for 1-7 days.

Statistical analysis- Statistical analysis will be performed by using SPSS software version. Student paired t-test and student unpaired t- test and coefficient correlation will be applied to analyze the data¹.

Ethics and dissemination- This study is approved by the Institutional Ethics Committee of DMIMS (DMIMS (DU/IEC/Dec-2019/8643) inform to all participants, researcher will tell them to read carefully and sign the informed consent. all data will keep confidential. The study results will be disseminated to study participants and published in popular publications.

Expected Outcomes / Results: This study is planned to evaluate effectiveness of mechanical hydrotherapy in arthritis patients. Mechanical hydrotherapy helps to reduce joint pain, improvement in joint movement, muscles stiffness, muscle strength and grip, quality sleep, reduce emotional and psychological problem^{11,12}.

In a study by Somaiyya et al¹³, they have mentioned that, A study was conducted on important role of hydrotherapy in the amelioration of oxidant-antioxidant status in rheumatoid arthritis patients, after hydrotherapy therapy, the results mentioned by the researcher, hydrotherapy along with drugs reduced the severity of disease in patients. We expect that, the study finding will benefit arthritis patients.

DISCUSSION:-

A study will be conducted to evaluate the effectiveness of mechanical hydrotherapy as a complementary therapy in the management of patients with arthritis pain in selected area of Wardha city, experimental research design will be selected for this study. There will be 70 participants, 35 participants in interventional group and 35 participants in control group. The samples will be randomly selected. Standardized numerical pain rating scale (NPRS) will be used to measure level of pain score from subject and the obtained data was analyzed using descriptive, inferential statistics and was interpreted in terms of objective of the study. The H₁ hypothesis will be set for the present study i.e. There will be significant difference between level of pain score before mechanical hydrotherapy and after mechanical hydrotherapy and the level of significance will be set at 0.05 levels. There is some evidence to suggest that hydrotherapy has a positive role in reducing pain and improving the health status of patients with arthritis compared with no or other interventions in the short term. There are studies on arthritis reported by Morey et al¹⁴ and Kumar et al¹⁵. Nagrale et al studied Cyriax physiotherapy versus phonophoresis with supervised exercise in subjects with lateral epicondylalgia¹⁶. Rheumatoid arthritis patients suffer from excess mortality from cardiovascular disease. Jukema et al¹⁷, Ray et al¹⁸ and Steg et al¹⁹ have studied Effect of Alirocumab in different cardiovascular conditions. Few related studies were done by Amit Agrawal^{20,21}.

CONCLUSION: Conclusion will be drawn from the statistical analysis.

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