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Original Research

Traditional Thai Compress Therapy for Pain Relief and Enhanced Physical Activity in Patients with Rheumatoid Arthritis: A Randomized Controlled Trial

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Abstract

Rheumatoid arthritis (RA) is a persistent inflammatory condition that impacts the joints, resulting in sensations of discomfort, reduced mobility, and localized edema. This study investigates the efficacy of Traditional Thai Compress therapy in mitigating pain and enhancing physical functioning among persons diagnosed with RA. The study was conducted as a randomized controlled trial (RCT). There are the groups where the participants were randomly assigned—each group comprises 141 individuals. To address the possibility of bias and to uphold the objectivity in the research investigation, blinding methods were employed for both therapists and assessors. This study used three questionnaires: the Demographic Questionnaire, the Visual Analogue Scale (VAS) for pain assessment, and the Health Assessment Questionnaire Disability Index (HAQ-DI) for evaluating physical activity levels. After one month of implementing the therapy, there were no notable differences observed in the control group. Additionally, it is worth noting that the intervention group displayed a difference that has been determined to be significant from a statistical standpoint in the level of pain and physical activity ratings among all categories ($p < 0.001$). The Traditional Thai Compress has been found to provide substantial empirical data that supports its therapeutic efficacy in reducing pain and enhancing physical functionality in individuals diagnosed with RA.

Keywords: Traditional; Thai Compress; Pain; Physical activity; Rheumatoid arthritis

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Introduction

Rheumatoid Arthritis (RA) is a persistent and debilitating inflammatory disorder distinguished by joint inflammation and discomfort, leading to substantial impairment in physical health and quality of life [1,2]. Based on a comprehensive analysis of population-based studies, urban regions exhibited a higher period prevalence of RA (0.69%) compared to rural regions (0.54%). Comparatively, the period prevalence of RA was greater in high-income nations (0.49%) than in low-income nations (0.35%) [3]. There is a more considerable prevalence of RA in industrialized nations, as stated by World Health Organization (WHO). This disparity can be attributed to various factors, including demographic characteristics such as an older average age, increased exposure to environmental contaminants and lifestyle-related risk factors, and potential under-diagnosis in countries with lower to middle levels of income [4].

As reported by the WHO, it is worth mentioning that RA is more prevalent among women, occurring two to three times more frequently than in males. Furthermore, the typical age at which this condition begins is noted among individuals in their sixties. The epidemiological data pertaining to RA in Indonesia reveals a prevalence rate of 7.3%, as determined through medical professionals diagnoses [5]. Over the course of time, a multitude of ways have been examined in order to mitigate the symptoms of RA, encompassing both conventional medicines (e.g., diclofenac and leflunomide) and complementary therapies. Traditional Thai Compress has gained considerable attention as a complementary therapy due to its possible efficacy in alleviating pain and improving physical functioning in those diagnosed with RA [6,7].

Traditional Thai Compress, also known as Luk Pra Kob, is a famous herbal treatment for pain and inflammation that has been used in Thailand for decades [8]. The treatment involves applying a warm cloth bag containing various herbs and spices, including lemongrass, ginger, turmeric, and camphor, to the affected area [9]. The anti-inflammatory properties of the herbs and spices included in the compress reduce swelling and inflammation of the joints [10]. Moreover, the warmth generated by the compress enhances circulation to the impacted region, facilitating the healing process and relieving discomfort [11]. With a commercially available compress, traditional Thai Compress therapy can be performed at home. The compress is heated in a microwave or steamer and applied for 10 to 15 minutes, multiple times each day, to the affected area [12,13].

According to a study [14], Traditional Thai Compress therapy is beneficial in lowering knee osteoarthritis patients pain and enhancing their physical function. The study also revealed that participants tolerated the treatment well and that there were no side effects. Another study indicated that Traditional Thai Compress therapy is beneficial in lowering pain and enhancing joint function in RA patients [15].

Thai Herbal Compress Therapy, rooted in tradition, offers a safe and effective herbal remedy for alleviating pain and inflammation in individuals living with RA. The main aim of this study is to investigate how Traditional Thai Compress therapy can reduce pain and enhance physical activity in individuals diagnosed with RA. The secondary aim of this research is to enhance our comprehension of the potential advantages of incorporating this traditional therapeutic method into contemporary healthcare practices.

Methods

Design

The study was designed as a randomized controlled trial (RCT). Participants were randomly assigned to the intervention or the control group.

Participant

The study's inclusion criteria were as follows: individuals who were at least 18 years old at the time of participation, had received a clinical diagnosis of rheumatoid arthritis, were patients enduring pain and reduced physical activity as a result of rheumatoid arthritis, were willing to participate in a randomized controlled trial, possessed the capacity to understand and adhere to instructions pertaining to Traditional Thai Compress Therapy, were available throughout the study period, and made a commitment to attend all scheduled sessions. Severe comorbidities that could impede the achievement of the study's objectives, hypersensitivity reactions to materials utilized in Traditional Thai Compress Therapy, and noncompliance with the study protocol or follow-up visits were deemed as exclusion criteria. Participants were recruited from Satun Hospitals Rheumatology Clinic.

The determination of the sample size was grounded in data from the Arthritis Self-Efficacy of Other Symptoms (ASE-OS) instrument. The mean ASE-OS score of intervention group was 53.66, while that of the control group was 50.27. With an alpha level set at 0.05, a power of 0.90, and an equal allocation ratio of 1:1, the minimum sample size per group required was n = 124. To mitigate the occurrence of dropouts during the research, the researcher included an additional 12% of the minimum required sample size. This was done to ensure that the total sample size for each group reached a count of 141.

Enrolment

Between August and October of 2023, participants were enlisted from a Satun Hospital outpatient rheu-

matology clinic located in Thailand. During their presence at the rheumatology outpatient clinic, the study coordinator assessed the patients eligibility and willingness to participate. All participants gave their informed consent written. Eligibility requirements included a minimum age of 18 and the presence of RA, as well as a mental component summary score of 40 on the baseline Short Form-12 survey. Exclusion criteria encompassed incapacity to provide informed consent owing to cognitive impairment, ongoing dependence on drugs or alcohol, and limited language proficiency.

Randomization and Blinding

Using a computerized allocation technique in SPSS 26.0 for Windows, an independent researcher assigned individuals to the intervention or control group randomly; sequential numbers were created and sealed in opaque envelopes to identify the two groups. Before the completion of the baseline questionnaire, neither the participants nor the researcher was informed of the group assignment. To represent the study process, the CONSORT flowchart was used (Figure1). The intervention was initiated three days after participants provided informed consent.

To mitigate potential bias and maintain impartiality in the research study, blinding was implemented for both the therapists and assessors. This involved withholding information about the treatment conditions from these individuals to minimize the potential influence of the placebo effect. By employing blinding measures, the study aimed to promote unbiased data collection and analysis.

Interventions

Those who met the inclusion criteria were asked to participate. They were made aware of the objectives and protocols. The treatment group received Traditional Thai Compress therapy, which consists of applying warm herbal compresses to the afflicted joints.

Traditional Thai Compress therapy

During a session of Thai compress therapy, the therapist warms a bundle of herbs containing lemongrass, ginger, kaffir lime, turmeric, and camphor in a steamer. All of the ingredients were risk-free and had no side effects [12]. A warm compress was utilized to target specific parts of the body impacted by RA, including the knees, hands, and feet, for a duration of 60 minutes per session. Each area was treated with gentle to moderate pressure. By focusing on those specific areas, this method aimed to alleviate muscle tension and decrease inflammation.

After the therapy, the herbal compresses were removed from the affected joints by the therapist. The therapist concluded the therapy by applying a final massage to the body with their hands, which encouraged relaxation and removed any remaining tension. After instructing the family to perform the Thai Compress

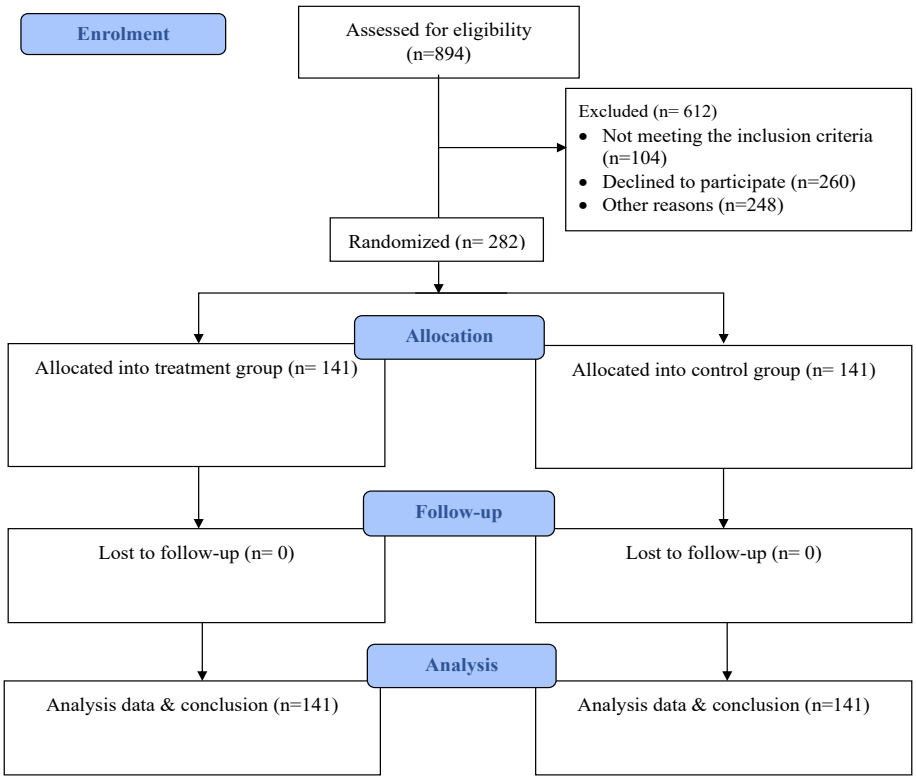

Figure 1. CONSORT flow diagram

independently at home for one month, the researcher evaluated the outcome. As part of the study, families participated in a weekly phone evaluation to discuss their experience with the compressions, address any difficulties encountered, and complete a set of question to evaluate their technique.

Meanwhile, the control group received conventional nursing care without Traditional Thai Compress treatment. The conventional medical treatment (diclofenac and leflunomide) for RA was continued for both groups.

Instruments

After obtaining informed consent and prior to group assignment, a demographic questionnaire was employed to gather information about participants age, gender, educational attainment, occupation, health status, duration of RA, and medication usage. The key outcome indicators for this trial were pain alleviation and amount of physical activity.

Visual Analog Scale (VAS) was used to evaluate pain alleviation. The VAS is a continuous scale that evaluates pain intensity along a straight line of 10, with the endpoints signifying no pain (0) and the greatest suffering imaginable [10]. Patients were instructed to indicate the place on the line that corresponds with their pain level. Measuring the distance between the no-pain end of the line and the patients mark determined their pain score, with higher scores indicating a more intense pain.

The level of physical activity was evaluated through The Health Assessment Questionnaire Disability Index (HAQ-DI). The HAQ-DI comprises twenty questions that evaluate a patient's capacity to complete daily activities such as dressing, grooming, eating, walking, and other activities of daily living. The questionnaire asks patients to assess their capacity to perform these tasks using a scale ranging from 0 (denoting no trouble) to 3 (representing an inability to accomplish the task). Higher scores indicate greater functional impairment. The HAQ-DI, proven to be a dependable and valid assessment of functional capability, enjoys extensive use in clinical trials and research investigations to assess the effectiveness of treatments for RA and various musculoskeletal disorders.

Data analysis

Using SPSS (IBM SPSS Statistics 26) package software, statistical analyses were conducted. Using frequency tables and descriptive statistics, the data were interpreted. For measurements that fit the normal distribution, parametric approaches were applied, whereas non-parametric methods were utilized for those that did not. Frequencies, proportions, arithmetic means, and the standard test value were utilized to examine the data. The groups were subjected to analysis using both the independent t-test and repeated measures analysis of variance (ANOVA). To determine statistical significance, a significance threshold of $P < 0.05$ was utilized.

Ethical considerations

The study ethically adhered to guidelines stipulated in the Helsinki Declaration and obtained approval from the Health Research Ethics Committee at Politeknik Kesehatan Kemenkes Yogyakarta (Approval Number: 04.03/e-KEPK.1/766/2023), with written authorization granted by the institution. The study's purpose and methodology were informed to all participants. The participation was voluntary, and confidentiality was assured.

Results

A total of 242 individuals diagnosed with RA, 87 males and 195 females, were enrolled as participants in this study. The sample was split into two groups, with an average age of 54.47. The frequency distribution reveals that the two categories are primarily composed of individuals who have completed a university education. The majority of participants were gainfully employed and had experienced a mean duration of 3 years living with RA (Table 1). There were no notable differences observed between the two groups in terms of patients baseline clinical and demographic parameters at the time of recruitment. Table 1 provides a summary of the pain characteristics and demographic information of the patients.

One month following the administration of the therapy, no statistically significant differences were seen in the control group (Table 2). Besides, the intervention group exhibited a statistically significant difference in the patients VAS HAQ-DI ratings across all categories, as shown in Table 2 ($p < 0.001$).

Discussion

Recent research has elucidated the possible advantages of Traditional Thai Compress therapy in the context of RA, specifically with regards to alleviating pain and improving physical functionality. The aforementioned results illustrate the potential efficacy of this conventional therapeutic approach in enhancing the overall well-being of individuals diagnosed with RA [16].

One of the most formidable facets of living with RA is the enduring pain encountered by individuals affected by this condition. Recent studies have demonstrated that Traditional Thai Compress therapy has the potential to offer efficacious pain alleviation [17]. The use of a heated herbal poultice, comprising of anti-inflammatory herbs and spices, in conjunction with the therapeutic amalgamation of heat and pressure, has demonstrated efficacy in mitigating joint discomfort

Table 1. Demographic Characteristic (n=282)

Characteristic	Control Group n=141	%	Intervention Group n=141	%	Statistical Analysis
Mean Age (SD)	54.26 (14.5)		54.68 (14.8)		p = 0.584
Sex					
Male	38	27	49	34.75	p = 0.379
Female	103	73	92	65.25	
Level of Education					
Elementary School	5	3.55	7	4.96	p = 0.642
Middle School	23	16.31	18	12.77	
High School	21	14.89	25	17.73	
College/University	92	65.25	91	64.54	
Currently Employed					
Yes	109	77.3	85	60.28	p = 0.078
Other chronic health problems					
Yes	88	62.41	116	82.27	p = 0.857
Duration of RA in month (SD)	35 (20.7)		37 (20.8)		p = 0.270

and diminishing inflammation among individuals diagnosed with RA [18]. This study results indicate that the therapy possesses analgesic and anti-inflammatory qualities, which may render it a helpful adjunct to the comprehensive approach required for the efficient management of pain associated with RA.

Individuals suffering from RA often experience joint stiffness and limited mobility, which hinders their ability to engage in physical activities and maintain an active lifestyle. Recent research has indicated that the utilization of Traditional Thai Compress therapy has the potential to augment physical activity levels [19]. Through the enhancement of joint flexibility and the alleviation of muscular tension, the therapeutic intervention facilitates the restoration of patients' mobility and facilitates their engagement in everyday activities with heightened ease. The potential for an expanded range of motion and decreased stiffness is a promising opportunity to improve the physical well-being of those diagnosed with RA [17,20].

The researchers observed a significant reduction in pain levels among the individuals who underwent Traditional Thai Compress therapy, in contrast to the control group that received only conventional pharmaceutical treatment. The use of heat and herbal elements in the compress have a positive effect on reducing joint pain and stiffness, thereby leading to enhanced physical activity in the patients. Significantly, the participants documented an augmentation in flexibility and a heightened sense of ease in their movements, resulting in a comprehensive enhancement of their quality of life.

Although the primary focus is on providing physical treatment, it is important to recognize that the effects of RA transcend beyond the physical realm, having a significant influence on the mental and emotional health of patients. Recent research has indicated that the application of Traditional Thai Compress therapy may yield favourable outcomes in relation to the psychosocial dimensions of RA [21]. Patients diagnosed with RA frequently encounter elevated levels of stress and anxiety in connection with their medical condition, potentially intensifying the severity of their symptoms [22,23]. The therapy's ability to induce relaxation and provide a relaxing experience, combined with the incorporation of aromatic herbs in the compress, has been found to have potential in mitigating stress levels and fostering a state of psychological well-being. The psychological benefits play a crucial role in improving the overall well-being of individuals living with RA [24,25].

While recent research has indicated the possible advantages of Traditional Thai Compress therapy for individuals with RA, it is imperative to exercise prudence and seek guidance from healthcare professionals. The consideration of patient safety and individual responses is crucial. It is recommended to engage with qualified professionals in order to ensure the proper administration of the therapy. Patients diagnosed with RA are advised to engage in a thorough consultation with their healthcare providers regarding the potential therapy. This discussion is essential to determine its alignment with the patient's current treatment plan and to recognize it as a vital element of a comprehensive approach to managing their condition.

Additionally, the research emphasized the need of adopting a comprehensive approach to Traditional Thai Compress therapy, which encompasses not only

Table 2. Comparison of the scores between the intervention and control groups (n=282)

Variable	Control (n=141) X ± SD	Intervention (n=141) X ± SD
Pain level		
Pre-test	6.38 ± 1.87	5.7 ± 2.393
Post-test	5.89 ± 0.903	4.03 ± 1.165
Analysis		
p value	0.004	0.004
Physical Activity Dressing & grooming		
Pre-test	2.99 ± 0.531	3.01 ± 0.586
Post-test	2.92 ± 0.568	1.46 ± 0.344
Analysis		
p value	0.271	< 0.001
Arising		
Pre-test	2.95 ± 0.617	3.02 ± 0.555
Post-test	3.01 ± 0.568	1.51 ± 0.351
Analysis		
p value	p = 0.368	< 0.001
Eating		
Pre-test	3.04 ± 0.448	2.98 ± 0.497
Post-test	2.98 ± 0.486	1.53 ± 0.305
Analysis		
p value	0.346	< 0.001
Walking		
Pre-test	2.98 ± 0.609	3.02 ± 0.574
Post-test	3.01 ± 0.581	1.49 ± 0.361
Analysis		
p value	0.642	< 0.001
Hygiene		
Pre-test	3.01 ± 0.439	3.01 ± 0.484
Post-test	2.97 ± 0.407	1.48 ± 0.307
Analysis		
p value	0.541	< 0.001
Reach		
Pre-test	3.04 ± 0.528	3.02 ± 0.582
Post-test	2.95 ± 0.569	1.5 ± 0.385
Analysis		
p value	0.152	< 0.001
Grip		
Pre-test	2.98 ± 0.469	2.99 ± 0.475
Post-test	3.05 ± 0.465	1.5 ± 0.288
Analysis		
p value	0.197	< 0.001
Activities		
Pre-test	3.01 ± 0.444	2.97 ± 0.498
Post-test	2.99 ± 0.503	1.49 ± 0.291
Analysis		
p value	0.747	< 0.001

the alleviation of physical symptoms but also the enhancement of psychological welfare. The therapy sessions are found to elicit a sense of relaxation and a decrease in reported stress levels among patients. The management of RA necessitates a thorough consideration of psychological aspects, since they have the potential to exert a substantial influence on pain perception and the overall lived experience of individuals with this condition.

Limitation

The utilization of Traditional Thai Compress therapy has demonstrated potential in offering transient pain alleviation and enhancing physical functionality, albeit its efficacy may not endure over an extended period of time. RA is a persistent medical illness, and although medication can provide temporary relief from symptoms, it may not effectively target the fundamental pathological mechanisms of the disease. In order to maintain the advantages of the intervention, it may be necessary for patients to engage in periodic sessions, which can provide limitations in terms of both time and money.

Another limitation pertains to the lack of firmly established evidence-based recommendations on the optimal frequency and duration of Traditional Thai Compress therapy, specifically within RA. The phytochemical profile of herbal compresses can significantly differ depending on the herbs utilized in the formulation. Although certain plants are commonly used in traditional therapies, there is no universally accepted or standardized formula for the herbal mixture used in these compresses. Various civilizations and traditions may employ various herbs believed to possess healing characteristics. In the absence of explicit guidelines, individuals seeking medical care and healthcare professionals may have difficulties in ascertaining the most effective course of therapy. Moreover, the absence of established protocols may impede the incorporation of this therapy into conventional RA management.

Conclusion

The Traditional Thai Compress presents convincing empirical evidence supporting the therapeutic effectiveness of this modality in alleviating pain and improving physical functioning among those diagnosed with RA. Nevertheless, it is imperative to acknowledge that although this therapeutic approach exhibits potential, it should not be regarded as a solitary intervention for RA. However, it is essential to note that when administered by skilled practitioners and under the guidance of healthcare specialists, it can be beneficial in treating symptoms associated with RA.

With further research, the expanding pool of evidence indicates that Traditional Thai Compress shows po-

tential for improving the quality of life for individuals diagnosed with RA. The comprehensive methodology employed by this conventional therapy, which encompasses both the physiological and psychological dimensions of the ailment, is consistent with the increasing inclination towards integrative and complementary interventions in contemporary healthcare. However, further research is required to comprehensively note the mechanisms through which Traditional Thai Compress functions, ascertain its long-term advantages, and determine the most effective treatment schedules for its application in RA.

Conflict of Interests

There is no conflict of interest in this study.

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