



## Application of Lemon Grass Compresses to Reduce Pain Scale in Older Age with Rheumatoid Arthritis in the Perumnas Health Center Working Area Lubuklinggau City 2023

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### ABSTRACT

One of the complementary treatments to reduce pain is lemongrass, which contains pharmacological and chemical effects and gives a spicy and warm effect, with bioactivity anti-bacterial and anti-inflammatory. The aim of the study is describing the results of the nursing implementation of warm lemon grass compresses for older adults with rheumatoid arthritis with chronic pain in the working area of the Perumnas Public Health Center, Lubuklinggau City, in 2023. This research used case study method with two subjects with rheumatoid arthritis. It found that warm lemongrass compresses for five straight days showed decreased pain intensity before and after the intervention. The decrease in the pain intensity of subjects I and II from the pain scale 6, with moderate pain category, decreased to pain scale 3, with mild pain intensity category. Warm lemongrass compresses can reduce pain intensity in older adults with rheumatoid arthritis.

## INTRODUCTION

Rheumatoid arthritis (rheumatoid arthritis) is an autoimmune disease and chronic inflammation (Pittara, 2022). Arthritis that worsens due to the inflammatory process of rheumatoid arthritis can lead to impaired joint function and changes in typical shape. Rheumatoid arthritis can also cause damage to body systems, including skin, eyes, lungs, heart and blood vessels (Wijaya & Putri, 2013). The rheumatoid arthritis population is more at risk of occurring in older adults due to the immune system decreasing with age through a process known as immunosenescence (Serhal et al., 2020). Women are three times more at risk of Rheumatoid arthritis (Margaret, 2022).

According to the World Health Organization (WHO), in 2019, rheumatoid arthritis is at 18 million sufferers, with 2.4 million rheumatoid arthritis sufferers having to live with disabilities (WHO, 2022). In Indonesia in 2018, the prevalence of rheumatoid arthritis based on a doctor's diagnosis was 7.30% (713,783) cases. In South Sumatra Province, there were 22,688 cases, with 644 patients coming from Lubuklinggau City in 2018 (RISKESDAS, 2018). Based on visiting data for the last three years at the Perumnas Health Center, the number of visits for people living with rheumatoid arthritis in 2019 was 242 cases, increased in 2020 to 306 patients, and in 2022 until November, there were 293 visits with RA (Perumnas Public Health Center, 2022).

Based on a preliminary study conducted by researchers on December 2, 2022, at the National Housing Center. There are data from 14 people who came to the Prumnas Health Center elderly polyclinic with a diagnosis of rheumatoid arthritis, complaining of rheumatoid arthritis pain with a moderate intensity of 71.42% (10 people), with a mild intensity of 28.58% (4 people). Based on the results of interviews with implementing nurses, the person living with average rheumatoid arthritis is an older adult with complaints of rheumatoid arthritis pain for more than three months in the joint areas of the hands and feet. The Prumnas Health Center has provided drug therapy (pharmacological) to treat the pain of patients with rheumatoid arthritis, while non-pharmacological therapy activities through diet education activities for patients with rheumatoid arthritis.

Complaints of pain in people living with rheumatoid arthritis are the main problem. They are most often encountered in people with rheumatoid arthritis, with increased pain intensity in the morning after active periods and a period of more than three months or more (Rufaridah et al., 2020). According to (Team Pokja SDKI DPP PPNI, 2017), chronic pain is a sensory and emotional experience related to actual or functional tissue damage, with sudden or slow symptoms.

Although there is no cure for rheumatoid arthritis, there are many different treatment options designed to relieve symptoms and prevent long-term joint damage from rheumatoid arthritis through the assistance of pharmacological treatments (drugs), lifestyle changes, or complementary treatments to reduce the risk of arthritis. pain (Vandever, 2019). Management of rheumatoid arthritis in elderly patients can be challenging because they need

attention to drug side effects and the increased risk of comorbidities in old age (Serhal et al., 2020).

Non-pharmacological interventions through complementary and alternative therapies that focus on holistic human nature through biopsychosocial and spiritual aspects can be an alternative solution to managing pain in patients with rheumatoid arthritis (Stuart, 2016). The primary intervention for clients with chronic pain diagnoses is pain management, comfort care, and relaxation therapy, one of the non-pharmacological techniques to reduce pain, namely with warm compresses (SIKI Pokja Team DPP PPNI, 2018).

According to Hidayat (2020), "one of the recommended complementary therapies for warm compresses is to apply warm lemongrass compresses to reduce pain in the elderly with rheumatoid arthritis", conducted with Riranto & Kurniawan (2022), which concluded that warm lemongrass compresses can be a nursing intervention solution for patients with rheumatoid arthritis. The lemongrass plant is the primary raw material for citronella oil, also known as citronella oil, which is a type of essential oil for various purposes in the cosmetic and pharmaceutical industries (Agustina & Jamilah, 2021), so it is safe to use as a therapeutic option.

Giving warm lemongrass compresses using seven stalks of lemongrass, boiled with 1500 ml of water, for  $\pm$  limit up to 460C (Pebrianti & Sari, 2022), with the recommendation that a safe PH level for topical (skin) treatment is 4.5 to with 8 (Siskayanti et al., 2021). According to research by Hyulita (2014), "giving warm lemongrass compresses for 20 minutes to the elderly at the Guguk Panjang Health Center, Bukittinggi, proven to reduce the pain intensity of clients with rheumatoid arthritis. Giving warm lemongrass compresses is carried out for 1 x 20 minutes for five meetings (Susanti et al., 2021). warm lemongrass effectively reduces the pain intensity of clients with rheumatoid arthritis from moderate to mild pain (Bota et al., 2015). The content of citronellal, geraniol, and citronellol are the main ingredients of lemongrass as anti-bacterial and anti-inflammatory (Dewi & Hanifa, 2021).

Several studies have proven the efficacy of the lemongrass plant and its ingredients as a traditional medicine through pharmacological and chemical effects, which give a spicy and warm effect, with bioactivity properties as anti-bacterial, anti-inflammatory (anti-inflammatory) and reduce pain, and promote blood circulation, especially in the muscle area. And joints that feel pain (Sulaswatty & Adilina, 2019).

Based on the data above, the authors are interested in researching "Application of Warm Lemongrass Compresses on Pain Scale in Elderly Patients with Rheumatoid Arthritis in the Work Area of the Perumnas Health Center, Lubuklinggau City in 2023.

## THEORETICAL REVIEW

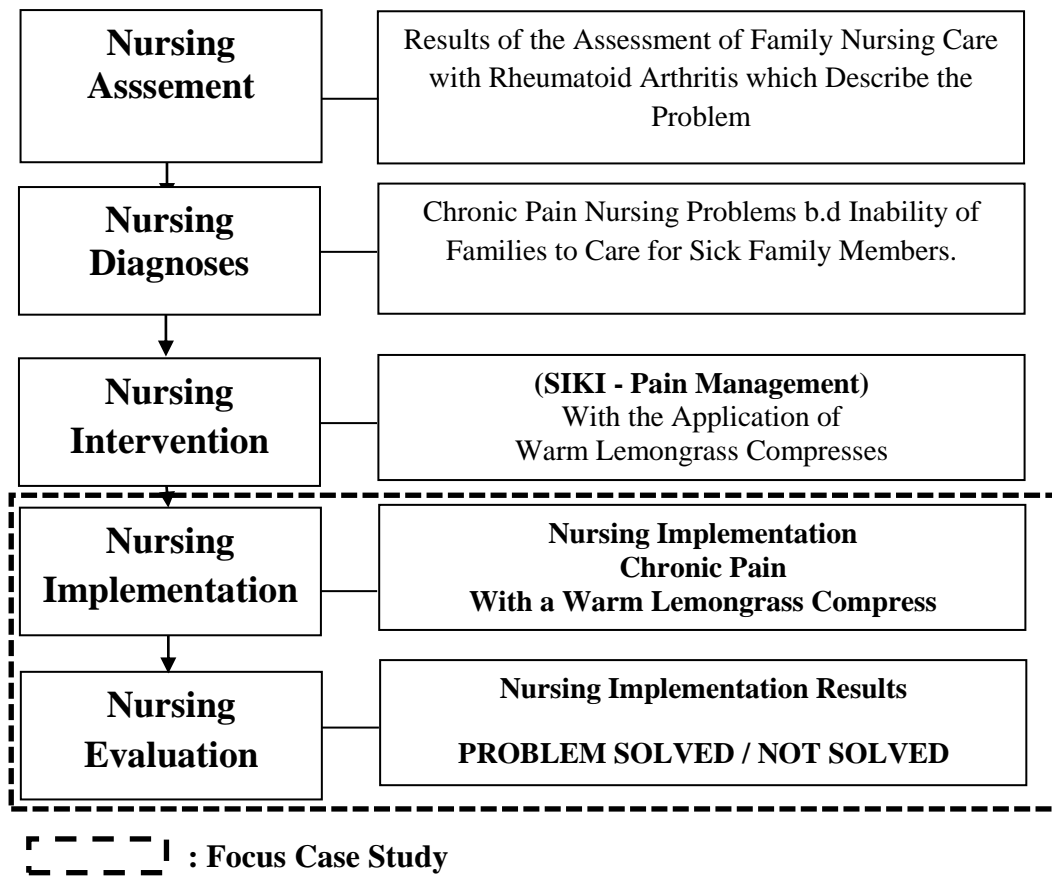


Figure 1. Conceptual Framework

## METHODOLOGY

Case study method with two subjects with rheumatoid arthritis. Warm lemongrass compresses were applied for five consecutive days, for  $\pm 10$  minutes at a temperature of  $46^{\circ}\text{C}$ , followed by applying compresses for 20 minutes. The subjects of this study were two patients who had the following criteria:

1. Inclusion criteria
  - Clients are willing to be research respondents
  - The client was diagnosed with rheumatoid arthritis in the working area of the Perumnas Health Center, Lubuklinggau City.
  - Clients who experience joint pain due to rheumatoid arthritis with a mild to moderate pain scale
  - Clients with complaints of rheumatoid arthritis pain for more than three months
  - Clients with an age range of 60 years and over
2. Exclusion criteria
  - The client is not willing to be a respondent
  - There is a traumatic injury with active bleeding
  - Have a risk of skin disorders that can cause irritation

## RESULTS

### 1. Nursing Assessment

Nursing assessment is the initial stage of the nursing process. It is a systematic process of collecting data from various data sources to evaluate and identify the health status of clients and families (Bakri, 2021).

Subject I, with the initials Mrs. R, 69 years old, female, Muslim, graduated high school, housekeeper, complained of pain in the right ankle, felt sluggish, and disturbed activities, especially in the morning. The pain felt like being stabbed, felt intermittent pain, and increased when carrying out activities. Pain is expressed on a scale of 6, with complaints felt since one year ago. Vital signs: Blood Pressure: 140/80 mmHg, Respiration: 18 x/minute, Pulse: 82 x/minute, temperature: 36,1<sup>o</sup>C.

Subject II, with the initials Mrs. A, is 69 years old, female, Muslim, graduated from elementary school, housewife, joint complaints of feeling pain like being stabbed in the right knee, which often comes and goes and makes it uncomfortable to the point of interfering with activities, pain scale is expressed in a scale 6, feels lost and appears, gets heavier when doing exercises. Complaints were handled since two years ago, with vital signs: Blood pressure: 120/70 mmHg, Respiration: 19 x/min, Pulse: 66 x/min, Temp: 36<sup>o</sup>C, felt intermittent; complaints of knee pain have been handled since being diagnosed with rheumatoid arthritis one year ago.

The main complaint of subjects I and II was pain in the joints; Subject I (Mrs. R) was in the right ankle area, while in Subject II, pain was felt in the right knee joint, a feeling of pain like being stabbed, with a moderate intensity pain scale (pain scale of both subjects 6), weight gain when doing activities, to the point of interfering with worship activities.

### 2. Nursing Diagnoses

Nursing diagnoses are clinical judgments about individual, family, and community responses to actual and potential health problems or life processes (Team Pokja SDKI DPP PPNI, 2017).

Theoretically, family nursing diagnoses that may appear in cases with rheumatoid arthritis are as follows (Nurarif & Kusuma, 2015) (Bakri, 2021);

- 1) Chronic pain related to the inability of the family to provide care for sick family members.
- 2) Impaired Physical Mobility related to the inability of the family to provide care for sick family members.
- 3) Knowledge deficit related to the family's inability to recognize care for sick family members.

Based on the findings of the case study results (interviews and physical examination), and data analysis on both subjects only showed nursing diagnoses:

- 1) Chronic pain related to the inability of the family to provide care for sick family members.
- 2) Impaired Physical Mobility related to the inability of the family to provide care for sick family members.

### 3. Nursing Intervention

In this stage of nursing intervention, the most essential thing is prioritizing problems. In determining the priority of this problem, the author scores nursing problems first so that a nursing diagnosis can be obtained with the highest total score. Based on (SIKI DPP PPNI Working Group Team, 2018), the primary pain management intervention is providing compresses. In this study, researchers intervened by adding lemongrass leaves in the compression process given to both subjects.

### 4. Nursing Implementation

Implementation of nursing carried out the actions that have been planned, carried out appropriately, safely, and following the client's condition. This nursing care is implemented according to the client's condition and situation and using the facilities available in the working area of the Perumnas Health Center in Lubuklinggau City.

Implementing a warm lemongrass compress starts with washing the lemongrass plants thoroughly with running water in a basin and draining until dry. Then, put seven large lemongrass stalks in a pot containing 1500 ml of water, boil until the water temperature is 460C, drain the lemongrass leaves, and boil the water. Lemongrass can be used for warm compresses, using a washcloth, compressed for about 20 minutes, with every 5 minutes evaluation to ensure the heat of the compress is stable.

Subject I (Mrs. R) of warm lemon grass compresses I was carried out from March 27 2023 to March 31 2023, while subject II (Mrs. A) was implemented from March 29 to April 02 2023. Both subjects received the primary implementation of warm lemongrass compresses and other nursing interventions the author has compiled.

### 5. Nursing Evaluation

Factors that need to be evaluated in family nursing include the cognitive/knowledge domain, the affective (emotional) domain, and the psychomotor domain. *Evaluation* is defined as a nursing care decision between the basis of the client's nursing goals that have been set and the client's behavioral response that appears (Bakri, 2021). Evaluations carried out by researchers are adjusted to the patient's condition and existing facilities so that action plans can be completed with SOAP, subjective, objective analysis, and planning (SIKI Pokja Team DPP PPNI, 2018).

The pain scale was evaluated using a numerical or numerical measurement method; in this study, the Subject chose a number that represented pain before and after implementation (Andarmoyo, 2013), after implementing nursing for five days, the author can state that the nursing problem is partially resolved because complaints of pain in both subjects are still felt but experience a decrease in the pain category from moderate to mild pain, with a pain scale of 6 to 3 in both subjects.

Evaluation after warm lemongrass compresses for five days with 20 minutes and collaboration with the administration of Allopurinol 2 x 100 mg

and Captopril 2 x 25 mg and education on knowledge about rheumatoid arthritis and treatment methods. Both of subjects on the first day did not showed a decrease in pain, both in terms of pain scale (scale 6) and in the category of pain (moderate pain, This is influenced by the gender factor because women cannot endure pain more than men, for both subjects with complaints of pain have not reduced, besides that the decrease in pain in both subjects is influenced by the position of the compress, the Subject's trust in the therapist because it is the first time it is done, and environmental factors that support calmness and pleasant feelings.

Table 1. Observation of Subject I Pain Scale Assessment Before and After Implementation

No	Date	SUBJECT I				KET
		Time	Pain Scale Before Implementation	Time	Pain Scale After Implementation	
1.	March 27, 2023	08.30 WIB	6	09.30 WIB	6	Steady
2	March 28, 2023	08.30 WIB	6	09.30 WIB	5	Decreasing
3.	March 29, 2023	08.00 WIB	5	09.00 WIB	4	Decreasing
4	March 30, 2023	08.00 WIB	5	09.00 WIB	4	Decreasing
5	March 31, 2023	08.30 WIB	4	09.00 WIB	3	Decreasing

Table 2. Observation of Subject II Pain Scale Assessment Before and After Implementation

No	Date	SUBJECT I				KET
		Time	Pain Scale Before Implementation	Time	Pain Scale After Implementation	
1.	March 29, 2023	16.00 WIB	6	17.00 WIB	6	Steady
2	March 30, 2023	16.00 WIB	6	17.00 WIB	5	Decreasing
3.	March 31, 2023	16.00 WIB	5	17.00 WIB	4	Decreasing
4	April 01, 2023	08.00 WIB	4	08.30 WIB	3	Decreasing
5	April 02, 2023	08.00 WIB	4	08.30 WIB	3	Decreasing

## **DISCUSSION**

### **1. Nursing Assement**

The process of experiencing pain in the founders of rheumatoid arthritis begins with synovitis or inflammation of the synovial membrane, causing swelling in the joints and pain; inflammation occurs in the synovial tissue, joint cavity, and joint cartilage, which will slowly damage the cartilage and narrow the joints, causing damage to damaged cartilage and joint deformity, thus causing the experience or sensation of pain (Rufaridah et al., 2020).

According to (Untari and Sulastri, 2019), people with rheumatoid arthritis usually experience clinical symptoms and joint pain accompanied by stiffness, especially in the morning or during cold weather. It can cause stiffness lasting about 30 minutes and continue for hours a day; swelling appears, with a reddish color, to interfere with activities.

Based on RISKESDAS data, in 2018, the prevalence of diseases and complaints in muscles and joints suffered mainly by the elderly group (RISKESDAS, 2018), Subject I (Mrs. R), and Subject II (Mrs. A) were in the elderly age category, apart from According to (Hamijoyo et al., 2020) various observations have led to allegations that female gender is a 2x more significant risk factor for suffering from rheumatoid arthritis, a result of hormonal changes.

Both subjects are elderly and female, thus increasing the risk of rheumatoid arthritis. Both subjects stated that they experienced activity disturbances even when doing light activities, to the point of interfering with the worship process, due to complaints of pain, inflammation, and muscle stiffness. The case studies (Wakhidah et al., 2019) show that one of the main problems in nursing in patients due to rheumatoid arthritis is impaired physical mobility.

### **2. Nursing Diagnoses**

The deficit of knowledge cannot be raised for both subjects; this is closely related to the time the client suffers from the disease and the nursing process. According to Bertalina and Purnama (2016), the length of time a person is diagnosed with an illness and is exposed to the treatment process will affect the patient's knowledge of the disease.

The priority problem in both subjects is chronic pain related to the inability of the family to provide care for sick family members; this is closely associated with the significant signs and symptoms in clients with rheumatoid arthritis, namely complaints of pain (Team Pokja SDKI DPP PPNI, 2017).

### **3. Nursing Intervention**

According to Hidayat (2020), "One of the recommended complementary therapies for warm compresses is to apply warm lemongrass compresses, which effectively reduce pain in the elderly with rheumatoid arthritis. The intervention of giving warm lemongrass compresses was carried out using seven stalks of lemongrass boiled with 1500 ml of water for  $\pm$  10 minutes at a temperature of 46°C (Pebrianti & Sari, 2022).

Compressed for 20 minutes in older adults with rheumatoid arthritis. Conducted with research by Hyulita (2014), which gave warm lemon grass compresses for 20 minutes to older adults with rheumatoid arthritis at the Guguk Panjang Health Center, Bukittinggi, which was proven to reduce the pain intensity of clients with rheumatoid arthritis.

#### **4. Nursing Implementation**

In Subject I, on the first day, there was no change in the pain scale before and after implementation. On the second day, there was a decrease in the pain scale from a pain scale of 6 to a pain scale of 5. On the third and fourth days, there was a decrease in the pain scale from a pain scale of 5 to a pain scale of 4, and on the fifth day, there was a decrease in the pain scale from a pain scale of 4 to 3 and also decreased the pain category from moderate pain to mild pain.

In Subject II, on the first day, there was no change in the pain scale before and after implementation. On the second day, there was a decrease in the pain scale from a pain scale of 6 to a pain scale of 5. On the third day, there was a decrease in the pain scale from a pain scale of 5 to a pain scale of 4. On the fourth and fifth day, there was a decrease in the pain scale from a pain scale of 4 to 3 and decreased the pain category from moderate to mild pain.

#### **5. Nursing Evaluation**

Based on Arif et al. (2023), who did case study research by applying warm lemongrass compresses to reduce arthritis pain, the result was that pain reduction occurred after the third day of the intervention, which was influenced by gender, compress position, and environment. which supports.

In the final evaluation on the Subject I on March 31, 2023, Mrs. R said the pain came from her right ankle, due to which the pain began to feel less and was able to enable her to carry out light activities with a pain scale (scale of 3), as well as in the category of pain (aching pain).

Evaluation after doing warm lemongrass compresses for five days for 20 minutes and collaboration with the administration of the drug Allopurinol 2 x 100 mg and being given education on knowledge about rheumatoid arthritis and methods of handling it. Subject II (Mrs.A) on the first day also did not show a decrease in pain, both in the pain scale (scale 6) and in the pain category (moderate pain). During the final evaluation on Subject II on April 2, 2023, Mrs. A said the pain came from the right knee, had decreased, and was able to carry out light activities and worship activities with a pain scale (scale 3), as well as in the category of pain (aching pain).

These results are in line with research conducted (Olviani et al., 2020), which conducted a study on the effect of warm compressed boiled lemongrass water on reducing rheumatoid arthritis pain in older adults at the Tresna Werdha Budi Sejatera Social Institution, Banjar Baru, South Kalimantan with statistically proven results can reduce pain in older adults with rheumatoid arthritis.

Other studies have also shown results in reducing pain in patients with rheumatoid arthritis in older adults at the Tresna Werdha Budi Luhur Social

Institution, Jambi City (Nurfutriani & Fatmawati, 2020). Serei plants contain essential oils that have chemical properties and pharmacological effects, namely a spicy taste and are warm as an anti-inflammatory (Ridha Hidayat, 2020).

The decrease in intensity, category, pain scale, and increase in physical embolism in both subjects as a result of giving warm lemongrass compresses was an effect of the citronellal, geraniol, and citronellol contents, which are the main ingredients of lemongrass as anti-bacterial and anti-inflammatory (Dewi & Hanifa, 2021). The pharmacological and chemical effects of lemongrass leaves give a spicy and warm sensation, with bioactivity properties such as anti-bacterial, anti-inflammatory and reduce pain, and improve blood circulation, especially in the area of muscles and joints that feel pain (Sulaswatty & Adelina, 2019).

Lemongrass leaves' bioactivity and chemical properties stimulate thermoreceptors in the skin to send signals to the brain to lower pain thresholds (Andari, 2021; Hyulita, 2014; Sinaga, 2020). The hypothalamus in the brain will react and produce a response called vasodilation when the vasodilation of blood vessels will widen so that blood will flow smoothly and the temperature increase will occur more quickly. As a result, heat can relax muscles, and the brain will also lower the pain threshold (Rufaridah et al., 2020).

Both subjects experienced a moderate decrease in pain intensity (with a pain scale of 6), which decreased after implementing warm lemongrass compresses for five days. However, the reduction in pain scale was supported by the use of purine-reducing drugs consumed by both subjects.

This case study, in line with research (Hidayat, 2020), researched the effectiveness of warm lemon grass compresses in reducing the rheumatoid arthritis pain scale in older adults in Naumbai Village, the working area of the Kampar Health Center. Based on this study, combining warm lemongrass compresses, diet processing, and consumption of purine-lowering drugs effectively reduces pain intensity levels in older adults with rheumatoid arthritis.

Besides being given warm lemongrass compress therapy, the Subject in this case study also took medicines prescribed by the health center. Both subjects were also educated about rheumatoid arthritis and treatment methods so that the decrease in pain intensity of the two subjects resulted from a combination of giving lemongrass compresses: warmth, diet processing, drug use, and family support.

## **CONCLUSIONS AND RECOMMENDATIONS**

Warm lemongrass compresses can reduce pain intensity in older adults with rheumatoid arthritis. Warm lemongrass compresses are recommended to become a non-pharmacology therapy choice for chronic pain in older adults with rheumatoid arthritis.

## **FURTHER STUDY**

Limitations of research in this study: researchers only carried out implementation on a few subjects, namely only two subjects and in 5 days.

Monitoring implementation independently by subjects and families cannot be controlled and monitored by researchers, so repetition of implementation independently by subjects and families affects the results of this study.

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