

Original Articles

THE APPLICATION OF WARM WATER COMPRESSES WITH GINGER AND LEMONGRASS ON PAIN INTENSITY IN PATIENTS WITH GOUT ARTHRITIS

Susanti Susanti^{1*}, Dwi Andrian², Difran Nobel Bistara³

^{1,2}College of Health Sciences Adi Husada, Surabaya, East Java, Indonesia

³Departement of Nursing, Faculty Nursing and Midwifery, Universitas Nahdlatul Ulama Surabaya
Surabaya, East Java, Indonesia

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Correspondence:

Susanti Susanti

College of Health Sciences Adi Husada, Surabaya, East Java, Indonesia

Email: susanti1303@gmail.com

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Abstract

Background: Arthritis Gout or Gout is also a category of chronic non-communicable disease (NCD). Gout is a metabolic disease caused by excess levels of uric compounds in the body. A Pharmacological approach that can be used is the administration of NSAID drugs. The non-pharmacological approach can be in the form of education, setting a low-purine diet and pain management guidelines using warm compresses to reduce pain gout sufferers and improve or maintain function and quality of life.

Objective: To determine the effect of warm water compresses application with pieces of ginger and lemongrass on pain intensity in patients with gout arthritis.

Methods: This was a pre-experimental study with one group using pre and post-test approach. The sample was patients with gout arthritis who experienced pain in the joints as many as 25 respondents were selected using *simple random sampling*. The data analysis was using *Wilcoxon Statistical Test*.

Result: This study was using respondents percentage for pre and post-test, the average respondent experienced moderate pain and after the intervention, the pain intensity decreased to relax and comfortable. Statistical test results showed *p-value* = $0.000 < \leq 0.05$, meaning that there was an effect of giving warm water compresses with pieces of ginger and lemongrass on the pain intensity of means that it had an impact on pain intensity in people with gout.

Conclusion: This result showed that the application of warm water compresses with pieces of ginger and lemongrass could lowering the pain intensity in people with gout.

INTRODUCTION

Gout arthritis (GA) is one of the most common joint diseases experienced by the elderly, but in recent years' gout arthritis is also experienced by many productive age groups. Gout arthritis disease is the only joint disease caused by food (Ekasari, 2018). Uncontrolled diet can cause metabolic disorders, one of which is gout arthritis which is characterized by increased levels of uric compounds in the body, either due to excess production, insufficient elimination, or increased intake of purines (Samsudin, R, Kundre, & Onibala, 2016). The phenomenon that is often caused by gout arthritis is pain, especially in the joint area. Until now, there is still many gout arthritis sufferers who do not understand how to control pain. If there is prolonged pain, it can reduce the

quality of life, especially in the elderly because the pain that arises is very disturbing daily activities (Putri, Rahmayanti, & Diani, 2017).

Data according to Ministry of Health of Republic of Indonesia (2018) shows that joint disease in Indonesia diagnosed by health workers (doctors) is 7.3% and based on the area with the highest doctor diagnosis or symptoms in Aceh (13.3%), followed by Bengkulu (11.15 %) and East Java (7.3%). Based on this prevalence, joint disease is currently dominated by productive age 15-64 years which is 30.9%, followed by 65-74 years (18.6%) and 75 years old (18.9%). After conducting a preliminary study in the Karang Gayam Wetan area, Mojo Village, Gubeng District, Surabaya, it was found that 4 out of 5 adult people who have uric acid levels > 7.0 mg/dl often experience pain in the leg area, especially in the joints, the pain comes and goes like being stabbed (sharp pain) with pain scale 3-4 to sometimes getting hardly to do activities like walking. The pain could last about \pm 1-2 minutes. When the pain occurs, the patient only takes allopurinol and pain relievers from the Public Health Center or a hospital.

Gout is a category of chronic non-communicable disease (NCD), characterized by hyperuricemia or increased levels of uric acid in the blood. Hyperuricemia occurs when serum uric acid levels are >5.7 mg/dl in women and 7.0 mg/dl in men. Gout was once called the *king of disease and disease of kings*. Ordinary people used to call uric acid. Gout is a metabolic disease caused by excess levels of urate compounds in the body, either due to excess production, insufficient elimination, or increased purine intake. Purines can be found in certain foods and beverages, such as steak, and seafood, and in beverages such as alcoholic beverages, especially beer, and drinks sweetened with fruit sugar or commonly called fructose (Samsudin, R et al., 2016). Uric acid is the end product of purine metabolism when it reaches the physiological limit, its solubility can turn into monosodium urate crystals in tissues and cause gout (Hastuti, Murbawani, & Wijayanti, 2018).

These crystal deposits will cause inflammation when triggered by several factors, including impact, cold temperatures and stress. The occurrence of uric acid crystallization reaches uric acid levels reaching 9-10 mg/dl, therefore maintaining normal uric acid levels is very important to prevent complications. The emergence of gout occurs due to an increase in uric acid that has been going on for years, if uric acid continues to increase, chronic gout will occur which is characterized by continuous pain attacks (Suirakka, 2012). The appearance of complaints in the joints begins with a feeling of stiffness or soreness in the morning then the pain arises in the joints at night the pain occurs continuously so that which is a very disturbing daily activity (Putri et al., 2017). Pain that is not treated immediately can also cause complications such as joint paralysis, deformity, kidney and heart disorders and even death (Rosaline & Anggraeni, 2019).

Management of gout sufferers can be done with pharmacological and non-pharmacological measures. Pharmacological measures can be used to prevent further disease severity such as administering NSAID drugs that can be used to prevent swelling in gout sufferers (Putri et al.,

2017). Non-pharmacological actions can be in the form of education, setting a low-purine diet and pain management guidelines by compressing warm water to reduce pain in gout sufferers and improve or maintain function and quality of life (Zahroh & Faiza, 2018). Warm compress therapy with ginger pieces used in this study because ginger contains gingerol and shogaol compounds, which are hot and spicy compounds found in ginger. Ginger has non-steroidal anti-inflammatory properties where ginger can suppress the synthesis of prostaglandin-1 and cyclooxygenase-2, so that when given a warm compress with ginger pieces, the spicy taste of compress will reduce inflammation, relieve pain, stiffness, and muscle spasms (Putri et al., 2017)

In addition to using a mixture of ginger compresses, the warm water will be combined with several lemongrass plants which contain essential oils that have chemical properties and pharmacological effects, namely a spicy and warm taste as an anti-inflammatory and analgesic pain relief. In addition, there is a cyclo-oxygenase enzyme that can reduce inflammation in the joints (Prasetyo, 2019). From this fact, it is necessary to strive for the use of these techniques to reduce inflammation, relieve pain in joints, and spasms in muscles.

METHODS

Study Design

This study used pre-experimental design with pre and post-test approach.

Settings

This Research was held on March 8, 2020 in the Mojo Health Center Area, Mojo Village, Gubeng District, Surabaya City

Research subject

The sample was patients with gout arthritis (GA) who experienced pain in the joints as many as 25 respondents (adult people) were selected using *simple random sampling*.

Instruments

Instruments in this study was the *Numerical Rating Scale (NRS)*. NRS was used to collect the data about pain intensity and *Standard Procedures Operating (SOP)* of warm water compresses with pieces of ginger and lemongrass.

Data collection

Respondents were given warm water compress therapy with pieces of ginger and lemongrass for 5 meetings within 2x20 minutes. The first meeting of researchers who taught how to give the compress namely before going to bed and before activities, after the fifth application warm water compress therapy with pieces of ginger and lemongrass then measuring the intensity of pain again using a *Pain Assessment Questionnaire Numerical Rating Scale (NRS)*, after the measurement results obtained have been collected, the researchers will analyze the data in the form of editing, coding, tabulating and analysis.

Data Analysis

Data analysis was using the statistical *Wilcoxon test* with the results of $P \text{ value} = 0.000 < P \text{ value} = (0.05)$.

Ethical Consideration

This research has been conducted ethics test research at STIKES Adi Husada.

RESULTS

Table 1 Frequency Distribution of Respondents' Characteristics in the Mojo Community Health Center, Mojo Village, Gubeng District, Surabaya

No	Data	Frequency	Precentage
1	Gender		
	Male	10	40%
	Female	15	60%
2	Age		
	30-40 y.o	3	12%
	41-50 y.o	20	80%
	51-60 y.o	1	4%
	>61 y.o	1	4%
3	Occupation		
	Jobless	13	52%
	Civil Servant	5	20%
	Private	3	12%
	Enterpreuner	4	16%
4	Duation of Gout		
	0-5 years	16	64%
	6-10 years	9	36%
5	Regular Consumption of Gout Drugs		
	Yes	12	48%
	No	13	52%
6	History of Comorbidities		
	Yes	17	68%
	No	8	39%
7	Taking Food High in Purin		
	Yes	25	100%
	No	0	0%
8	Consuming Alcohol		
	Yes	2	8%
	No	23	92%
9	Active in Sport		
	Yes	6	24%
	No	19	76%
10	Length of Pain Experienced		
	0-6 months	10	40%
	>6 months	15	60%

In table 1 shows that the most response characteristics are gender dominated by women as many as 15 people with a percentage of 60%, at the age of 33-64 years have the highest results as 20 people with a percentage of 80%, not working 13 people with a percentage of 52%, duration of gout 0-5 years as many as 16 people with a percentage of 64%, who regularly consume gout drugs

as many as 12 people with a presentation of 48%, have comorbidities as many as 17 people with a percentage of 68%, all respondents consume foods which is high in purines (offal, processed soybeans/tofu, tempeh, *seafood*, red meat) with a total of 25 people with a percentage of 100%, almost all respondents do not consume alcohol as many as 23 people with a percentage of 92 %, respondents who are not active in exercising as many as 19 people with a presentation of 76%, and the duration of pain felt so far is dominated by pain > 6 months as many as 15 people with a percentage of 60.

Table 2 Frequency Distribution of Characteristics of Respondents Based on Pain Intensity Before Warm Water Compresses with Ginger and Lemongrass Slices in the Mojo Community Health Center, Mojo Village, Gubeng District, Surabaya

No	Classification of Pain Intensity	Frequency	Percentage
1	Relaxes and comfortable (relaxed and comfortable)	0	0%
2	A little uncomfortable (mild discomfort)	8	32%
3	Pain moderate	17	68%
4	Very uncomfortable / severe pain (severe discomfort / pain)	0	0%
Total		25	100%

Based on table 2, it can be seen that most of the respondents in the Mojo Health Center area, Mojo Village, Gubeng District, before applying warm water compresses with pieces of ginger in the category, *moderate pain* amounted to 17 people with a percentage of 68%.

Table 3 Frequency Distribution of Characteristics of Respondents Based on Pain Intensity after Warm Water Compresses with Ginger and Lemongrass Slices in the Mojo Health Center Area, Mojo Village, Gubeng District, Surabaya.

No	Classification of Pain Intensity	Frequency	Percentage
1	Relaxes and comfortable (relaxed and comfortable)	9	36%
2	A little uncomfortable (mild discomfort)	16	64%
3	Pain moderate	0	0%
4	Very uncomfortable / severe pain (severe discomfort / pain)	0	0%
Total		25	100%

Based on table 3 can be seen that most respondents in Mojo Health Care Center, Mojo Village, Gubeng District after applying warm compresses with pieces of ginger in categories A little uncomfortable (*mild discomfort*) totalled 16 people with a percentage of 64%.

Table 4 Frequency Distribution of Characteristics of Respondents Based on the effect of giving warm compresses with pieces of ginger and lemongrass on the pain intensity of gout arthritis sufferers in the Mojo Health Center area, Mojo sub-district, Gubeng District, Surabaya

No	Pain Intensity	Mean	Std. Deviation	P.Value
1	Pre Pain Intensity	1.68	0.476	0.000
2	Post Pain Intensity	0.60	0.500	

In table 4 shows that before (PRE) warm water compresses were given with pieces of ginger and lemongrass. The pain intensity was dominated by the category *Moderate pain*) by 68% and after (POST) giving warm water compresses with pieces of ginger and lemongrass, the intensity of pain was dominated by the category of Slight discomfort (*mild discomfort*) by 64%. From the results of data analysis, the results showed that the intensity of pain before giving warm water compresses with pieces of ginger and lemongrass had a value *mean* or average of 1.68. Wilcoxon Statistical Test results obtained *p value* = .000. These results indicate that there is an influence on pain intensity before or after giving warm water compresses with pieces of ginger and lemongrass to patients with gout arthritis (GA) in the Mojo Community Health Center, Mojo Village, Gubeng District, City of Surabaya.

DISCUSSION

The previous study results (the *pretest*) were given warm water compresses with pieces of ginger and lemongrass. The results obtained are *relaxed and comfortable* (0%), *mild discomfort* (32%), *moderate pain* (68%), *very uncomfortable/severe pain* (0%). Then after (*post-test*) administration of warm water compresses with pieces of ginger and lemongrass decrease in pain intensity in the category *relaxes and comfortable* (*relaxed and comfortable*) (36%), *slightly uncomfortable* (*mild discomfort*) (64%), *moderate pain* (*moderate pain*) (0%), *very uncomfortable/severe pain* (*severe discomfort/pain*) (0%). compresses with pieces of ginger and lemongrass decrease in pain intensity in the category *relaxes and comfortable* (*relaxed and comfortable*) (36%), *slightly uncomfortable* (*mild discomfort*) (64%), *moderate pain* (*moderate pain*) (0%), *very uncomfortable/severe pain* (*severe discomfort/pain*) (0%). The data analysis results showed that the intensity of pain before giving warm water compresses with pieces of ginger and lemongrass had a value *Mean* or an average of 1.64 and after giving warm water compresses with pieces of ginger and lemongrass had a value *Mean* or an average of 0.60. The statistical *Wilcoxon test results* showed $p = 0.000$ ($\alpha = <0.05$) result *p value* is lower, then the hypothesis can be accepted. The research concludes that there is a difference in the results of pain intensity between before and after giving warm water compresses with pieces of ginger and lemongrass, so that there is a decrease in pain intensity for patients with gout arthritis at Mojo Health Center, Mojo Village, Surabaya City.

Gout is a disease in which there is an excessive buildup of uric acid in the body, either due to increased production, decreased excretion, or due to increased intake of purine-rich foods (Naga, 2014). Which is characterized by the presence of hyperuricemia or increased levels of uric acid in the blood. Hyperuricemia occurs when serum uric acid levels are >5.7 mg/dl in women and 7.0 mg/dl in men (Samsudin, R et al., 2016). According to (Suiraoaka, 2012) there are several signs and symptoms when experiencing gout arthritis, namely tingling and rheumatic pain, especially at night or in the morning when you wake up, joints affected by gout look swollen, red, hot and also there are many factors that trigger gout arthritis, namely age, hereditary factors with a history of gout, a diet high in protein and rich in purine compounds (such as red meat, goat, seza food, nuts). Purines are compounds that are metabolized in the body and produce end products, namely uric acid, excessive alcohol consumption, excess body weight (obesity). This is in accordance with research (Samsudin, R et al., 2016) which said that in the last few years, gout arthritis was also experienced by many productive age groups of 15-64 years (30.9%). Therefore, the importance of early treatment in patients with gout arthritis aims to prevent complications such as joint paralysis, deformity, kidney and heart disorders and even death (Rosaline & Anggraeni, 2019). Researchers argue that patients with gout arthritis will definitely experience pain in the joints, according to the data above, the pain caused can increase according to the response of each individual.

Cold and warm compresses can be used as a strategy to reduce pain that is effective in several conditions, cold and hot compress therapy works by stimulating pain receptors (non-nociceptors) in the same receptors as in injury. Application areas of warm and cold compresses can elicit a systemic response and a local response. This stimulation sends impulses from the periphery to the hypothalamus which then becomes the sensation of normal body temperature. At the time of administering this therapy, the nurse must understand the body's response to local temperature variations, and the integrity of the body parts. The client's ability to feel temperature sensations varies and this can affect the course of action properly. The human body can tolerate wide temperature variations. Normal skin surface temperature is 34°C , but the temperature of the recipient usually adapts quickly to local temperatures beyond this limit. The place to be applied depends on the location and during administration of compresses; the client's skin is examined after 5 minutes of administration, if it can be tolerated by the skin given for 20 minutes. However, giving this therapy is not recommended for clients who have cold or heat allergies (Zakiyah, 2015).

Researchers argue that giving warm water compresses with pieces of ginger and lemongrass in addition to reducing pain intensity can also increase comfort, the body feels more relaxed and can reduce complications that can be experienced due to gout arthritis pain such as reducing inflammation, relieving pain in joints, spasms in the joints, muscles, overcome the limitations of joint movement that have been felt by the respondent. The timing of the intervention must also be considered because interventions that are carried out regularly in a row carried out

2x20 minutes before going to bed and before doing activities within 5 days have the benefit of reducing pain intensity more than those who are not doing regularly. Before giving warm water compresses with ginger and lemongrass pieces, the respondents measured the intensity of pain, then warm water compresses with ginger and lemongrass pieces were given within 20 minutes (therapy was carried out 2x20 minutes regularly for 5 days) after giving warm water compresses with pieces of ginger and lemongrass, pain intensity measurements were carried out again to determine the effect on this therapy. Based on the analysis, theory and several previous studies that support this research, it can be concluded that giving warm water compresses with pieces of ginger and lemongrass can be an alternative treatment for someone suffering from gouty arthritis pain. This management can be done independently, easy to do, effective and efficient in reducing the intensity of pain that has been felt by respondents so far. The results of the study cannot be generalized to all patients with gouty arthritis because they cannot be generalized to all gouty arthritis sufferers who experience pain in the joints but only to the study population.

LIMITATION

The limitation in this study is the absence of control groups.

CONCLUSION

The intensity of patients with gout arthritis in Mojo Public Health Center, Mojo Village, Gubeng District, City of Surabaya before (*pretest*) administration of warm water compresses with pieces of ginger and lemongrass are in the category of moderate pain (*Moderate pain*) and after (*Post-test*) giving warm water compresses with pieces of ginger and lemongrass are in the category of slightly uncomfortable (*mild discomfort*). It was found that there was an effect of giving warm water compresses with pieces of ginger and lemongrass on the pain intensity of gout arthritis sufferers in the Mojo Community Health Center, Mojo Subdistrict, Gubeng Subdistrict, Surabaya, showing the *Wilcoxon test results* obtained a significant value with $p = 0.000$ ($\alpha = <0.05$). The result of *p value* is low, then the hypothesis is accepted, which means that there is an influence on this study.

AUTHOR CONTRIBUTION

Susanti : Conceptualization, methodology, writing-original draft, supervision,
Writing-review and editing

Dwi Andrian : Software, validation, formal analysis, Investigation, resources, and data
duration

Difran Nobel Bistara : Visualization, project administration and funding acquisition

ORCHIDSusanti : <https://orcid.org/0000-00003-1053-2361>Difran Nobel Bistara : <https://orcid.org/0000-0002-7995-5509>**CONFLICT OF INTEREST**

The authors have consented and no conflicting interests.

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