

## ***Non-Pharmacological Pain Management in Patient With Gouty Arthritis: A Narrative Review***

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**Abstract:** Gouty arthritis is a condition characterized by joint inflammation due to the accumulation of monosodium urate crystals in the joint, resulting in severe pain, reduced musculoskeletal ability, and poor QoL. Therefore, this study aims to identify non-pharmacological pain management in gouty arthritis sufferers. This study is a narrative review including three databases such as ScienceDirect, Proquest, Pubmed, and the search engine Google Scholar. It was conducted using keywords such as gouty arthritis, non-pharmacology, and pain management. The article was sorted by cyclical criteria, and assessment was performed using JBI Critical Appraisal tools. The results showed that non-pharmacological interventions such as warm compresses using moringa leaves, lemongrass decoction water, ginger, cinnamon, soursop leaves, and CQBG (compound Qingbi granules) are effective in reducing gouty arthritis pain and have no side effects. Therefore, this study is expected to provide useful information and insights regarding pain management to health workers, nurses, sufferers, and the general public.

**Keywords:** gouty arthritis, pain, non-pharmacological management

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### **INTRODUCTION**

Gouty arthritis is a joint inflammation that results from the accumulated deposits of monosodium urate crystals due to high levels of uric acid in the blood (hyperuricemia) (Noor, 2016). According to the World Health Organisation (WHO) data from 2017, the prevalence of gouty arthritis was 34.2%, and often discovered in developed countries such as the United States, where it affects 26.3% of the total population (Angriani, Dewi, Novayelinda, 2018). Based on the Indonesian Basic Health Research report, the highest prevalence of this condition occurred in 3 provinces, ranging from 21.3% to 14.5% (Risksedas, 2017). Furthermore, the incidence of joint problems at the age of  $\geq 75$  reached 54.8% (Kemenkes, 2019).

Several factors, including disorders of inherited purine metabolism, genetics, age, sex, high purine-based foods, and obesity, cause hyperuricemia. Additionally, as individuals age, consuming a high-protein diet may result in the accumulation of purines in the blood (Untari, Sarifah, Sulastri, 2017), leading to difficulty removing the excess uric acid from the body and ultimately causing the formation of monosodium urate crystals (Angriani, Dewi, Novayelinda, 2018).

Individuals with elevated uric acid levels may experience excruciating pain, swelling, and joint deformities in the hands and feet. The swelling pain is caused by monosodium urate crystal deposition (Conant, Curiel, Pizzino, 2018). Joint pain can reduce musculoskeletal function, limiting light and heavy physical activities and decreasing quality of life (Seran, Bidjuni, Onibala, 2017). Furthermore, it can negatively impact mental health, leading to a lack of confidence, increased stress, and even depression due to the mental unpreparedness of sufferers in dealing with gouty arthritis (Bobaya, Bidjuni, Kallo, 2016).

Individuals experiencing pain may feel depressed or suffer while attempting to be relieved (Berkanis, Nubatonis, Lastari, 2020). Non-pharmacological pain management is generally an action performed without the use of drugs. It is a fairly effective way to reduce and even relieve pain,

especially in cases of a chronic state. Furthermore, non-pharmacological pain management is an affordable option without harmful or adverse side effects such as dependence and overdose when performed correctly, unlike its pharmacological counterpart (Suryadi, 2020). Herbal therapy, as a non-pharmacology therapy, is easy to obtain, the raw materials can be grown in the surrounding environment, and it is cost-effective (Ningsih, 2016). Non-pharmacological interventions will be very significant in helping nursing care so research related to types, methods of use, and their effects is urgently needed for the nursing profession. Non-pharmacological interventions can complement analgesic administration but are not intended as substitutes (Mayasari, 2016). Therefore, this literature review aims to identify non-pharmacological pain management that can be used or recommended for individuals with gouty arthritis.

## METHODS

This narrative review covers 4 databases, namely Scencedirect, Proquest, Pubmed, and Google Scholar. This search aims to identify articles that focus on non-pharmacological pain management in gouty arthritis sufferers. The search strategy used the PICO (Population/Problem/Patient, Intervention, Comparison, and Outcome) technique that consists of 4 components, where the population/problem/patient component was gouty arthritis sufferers. Furthermore, the intervention is non-pharmacological, and there is no comparison. The outcome is a decrease in gouty arthritis pain, and this technique also helped identify relevant keywords. The keywords for Scencedirect, Proquest and Pubmed were "pain management" AND "non-pharmacological" AND "gouty arthritis". The keyword for Google Scholar were "*manajemen nyeri*" DAN "*non farmakologi*" DAN "*gout artritis*".

The inclusion criteria in this study are original study using RCT and quasi-experimental methods, full text, articles discussing non-pharmacological management, samples that included gouty arthritis sufferers, and journals published between 2011 and 2021. After the initial analysis of the article based on inclusion criteria, the JBI critical appraisal tool was used to assess the quality. This study found 1,430 articles including 189 articles from Scencedirect, 264 articles from Proquest, and 977 articles from Google Scholar, and no article from Pubmed. Finally, 14 articles analyzed in this study.

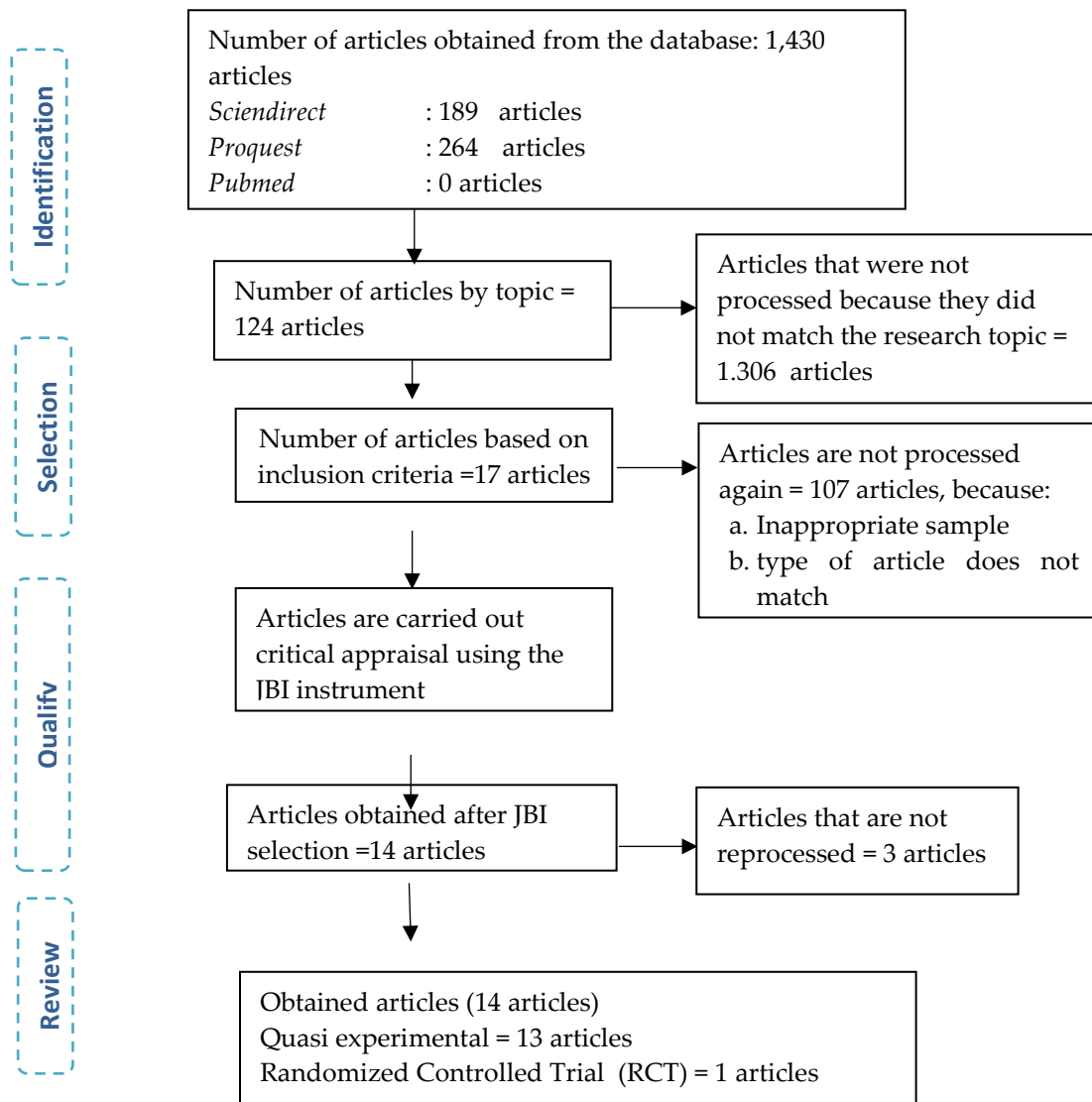


Figure 1. The PRISMA Flowchart Diagram

## RESULTS

The 14 articles analyzed can be categorized as follows:

### Characteristics of Respondents

The age range of respondents in the study was 40 to >60, and there were more men than women. Pain complaints were categorized from mild to severe using the Numerical Rating Scale.

### Study Country Origin and Setting

Of the 14 articles analyzed, 13 originated from Indonesia and 1 from China. In the aspect of setting, 9, 1, and 4 articles conducted study in primary health care, hospitals, and community, respectively.

### Sample

The sample size in the article ranged from 10 to 90 respondents. Quasi-experimental study was used by 13 articles, while 1 applied Randomized Controlled Trial (RCT) design.

### **Type of Intervention**

Interventions were examined across 14 articles, with a warm compress, lemongrass (*Cymbopogon nardus*), moringa leaves (*Moringa Oleifera*), cinnamon (*Cinnamomum zeylanicum*), ginger (*Zingiber officinale*), and soursop (*Annona muricata*) leaves, featuring in 3, 1, 1, 1, 5, and 2 articles, respectively. They were solely administered without the concomitant use of pharmacological therapy. Additionally, 1 article focused on the External application of Compound Qingbi Granules (CQBG), mainly composed of Cortex *Phellodendri* and Herba tuberculate *speranskia*. This intervention was combined with western medicine, including a low purine diet, drinking water of over 2000 mL/day, oral loxoprofen, and NAHCO<sub>3</sub>.

A total of 3 articles reported warm compresses without a mixture of other ingredients, 5 used the compress method in combination with ginger plants, and 2 applied a mixture of soursop leaves. Others used a mixture of *moringa* leaf plants, lemongrass, and cinnamon

**Table 1. Characteristics of Respondents of Articles**

Type of Intervention	Characteristics of Respondents	Method	Compounds contained and the effects caused	Combination use of pharmacotherapy	Side effects
Warm compress	<ul style="list-style-type: none"> <li>• Respondents: gouty arthritis patients</li> <li>• Pain scale: moderate to severe, the majority experienced severe pain</li> </ul>		Vasodilating effect of blood vessels which increases blood flow.		
Ginger warm compress	<ul style="list-style-type: none"> <li>• Respondents: residents who experience joint pain due to gout</li> <li>• Age range: elderly 40-60 years</li> <li>• The majority of women have gouty arthritis</li> </ul>		Olerasin such as zingeron, gingerol and shogaol, essential oils. Anti-inflammatory, analgesic and antioxidant.		
Lemongrass warm compress	<ul style="list-style-type: none"> <li>• Respondents: residents who experience gout arthritis pain</li> <li>• Age range 36-&gt; 65 years. The majority are aged 56-65 years</li> <li>• The majority of men have gouty arthritis</li> </ul>	compressed	Kariofilen, citral, citronellal, essential oils, flavonoids, geraniol, mircen, polyphenols and nerol. The pharmacological effect gives a spicy, warm taste as an anti-inflammatory and relieves pain		
Soursop leaf warm compress	<ul style="list-style-type: none"> <li>• Respondents: Gouty arthritis patients with moderate and severe pain scale (scale 5-8)</li> <li>• Age: 60-80 years</li> </ul>		tannins, resins and crystallizable mangostine. Has a strong analgesic (pain reliever) function and is an antioxidant.	There is no combination pharmacotherapy	No side effects
Moringa leaves warm compresses	<ul style="list-style-type: none"> <li>• Respondents: elderly with gouty arthritis</li> <li>• Age : 60-77 years</li> <li>• The majority of men have gouty arthritis</li> <li>• The majority of pain experienced more than 1 year</li> </ul>		Phytochemical substances such as tannins, steroids, triterpenoids, flavonoids, saponins, anthraquinones and alkaloids. Antibiotic, anti-inflammatory, detoxifying and antibacterial.		

Cinnamon warm compress	<ul style="list-style-type: none"> <li>• Respondents: Gouty arthritis patients</li> <li>• Age range: 36-65 years. The majority are aged 46 -65 years</li> <li>• The majority of men have gouty arthritis</li> </ul>	<p>Essential oils, eugenol, safrole, cinnamaldehyde, tannins, calcium oxalate, resins and tanning agents vasodilate blood vessels, increase blood flow and relieve pain.</p>	
CQBG external application	<ul style="list-style-type: none"> <li>• Respondents: Gouty arthritis patients</li> <li>• Age: 18-70 years</li> <li>• In accordance with the diagnostic criteria of AGA and hyperuricemia</li> <li>• Diagnosis of humidity-heat syndrome;</li> <li>• Gouty arthritis attacked <math>\geq 1</math> year</li> <li>• Areas observed first metatarsophalangeal joint, dorsum pedis, ankle joint, knee joint, and so on, and only the most severely affected joint (target joint) were observed and recorded for each participant</li> <li>• VAS score (evaluation of pain assessment criteria) at the target joint, <math>\geq 3</math></li> <li>• &lt;72 hours between last treatment and attack</li> </ul>	<p>CQBG is formulated with Cortex Phellodendri and Speranskia tuberculata Herbs. Antibacterial, anti-inflammatory, analgesic, and anticoagulation effects on Acute Gouty Arthritis (AGA).</p>	<p>Combined with pharmacotherapy therapy (low purine diet, drinking water more than 2000 mL/day, oral loxoprofen and NAHCO<sub>3</sub>).</p>

**Table 2. The Analysis Result of Articles**

No	Title	Objective	Place	Method	Intervention	Results	Advantages and disadvantages
1.	The Effect of Warm Compresses on the Pain Scale in Gout Arthritis Patients in the Work Area of the Wara Health Center in Palopo City in 2017	To determine the effect of giving warm compresses to the pain scale of gout arthritis patients	In the working area of the Wara Health Center, Palopo City	Method: quasi-experimental design with one group pretest-posttest approach.  Population: 23 people  Sample: 23 people  Sampling technique: <i>Accidental sampling</i>	The intervention is in the form of warm compresses using a cloth soaked in warm water with a temperature of 400 c - 430 c for 5-10 minutes, given once a day, for two weeks.	The results obtained from the Paired Samples T Test showed that there were differences in the pain scale before and after giving warm compresses, with a correlation value = 0.763, mean = 2.304 and p-value = 0.000 (p < (0.05). The results of this study indicate that warm compresses have a significant effect on changes in the pain scale in patients with gout arthritis.	Excess: Methods of providing interventions are explained, the results of the research are clear.  Lack: Sample < 30 people, Respondent's age is not included in the article.
	Authors: Rezkiyah Hoesny, Zainal Alim, Rika Hartina						
	Year : 2018						
2.	The Effectiveness of Moringa Leaf Warm Compresses Against Gout Pain in the Elderly in Kenteng Village, Nogosari, Boyolali.	To determine the effectiveness of warm compresses of Moringa leaves against gout pain in the elderly	In the village of Kenteng, Nogosari, Boyolali	Method: quasi-experimental design with one group pretest - posttest approach.  Population: 40 people  Sample: 40 people Sampling technique:	The intervention given to the elderly was in the form of warm compresses on Moringa leaves which were given once a day in the morning for 20 minutes which were given 3 days in a row.	The results obtained were that the pain scale before the intervention averaged 5 and after the intervention the average was 1. The Wilcoxon test results obtained a p value of 0.000 < 0.05, which means that warm compresses on Moringa leaves are effective in reducing gout pain in the	Excess : The method of providing the intervention is explained, the sample is > 30 people, and the research results are clear.  Lack: -

- Hidayatullah, Joko  
Tri Atmojo, Ndaru  
Syukma Putra,  
Asruria Sani  
Fajriah.
- purposive  
sampling
- elderly in Kenteng Village  
, nogosari, boyolali.
- Year : 2020
3. Reducing Pain in Gouty Through Lemongrass Compresses of Boiled Water  
Knowing the effect of giving warm compresses of boiled water on reducing pain intensity in arthritis gout  
In Bintaro village
- Method: quasi-experimental design with one group pretest-posttest approach without control.
- The intervention given was a warm compress of boiled lemongrass water.
- Based on the results of the analysis showed that there was a difference in pain intensity before and after being given a warm compress of lemongrass boiled water, with a p value of 0.005. The results of this study indicate that there is a significant effect of warm compresses of lemongrass boiled water on reducing gout arthritis pain.
- Excess :  
The research results are clear.
- Lack:  
Sample < 30 people, method of giving intervention is not explained.
- Author: Dewi Siti Oktavianti, Siti Anzani
- Population: 20 people
- Sample: 20 people
- Year: 2021
4. The Effectiveness of Ginger Compresses on Decreasing the Scale of Joint Pain in Gout Sufferers in Tempurejo and Jumapolo Karanganyar Villages  
To analyze the effectiveness of ginger compresses on decreasing the joint pain scale in gout sufferers  
In the villages of Tempurejo and Jurug, Jumapolo District
- Method: quasi-experimental design with one group pretest-posttest approach.
- The intervention given was ginger compress.
- The results showed that there was a decrease in the average pain scale before and after ginger compresses were applied. The p value based on the paired t-test was p = 0.000, meaning that there was a significant difference in the decrease in the pain scale between
- Excess :  
The research results are clear.
- Lack :  
Sample < 30 people, method of giving intervention is not explained.
- Writer :  
Lilik Sriwiyati, Dwi
- Sampling



- Noviyanti. technique: total before and after giving  
sampling ginger compresses.
- Year : 2018
5. The Effect of Warm Compresses Using Red Ginger on Reducing Pain Scale in Patients with Gout Arthritis. Knowing the effect of warm compresses using red ginger on reducing the pain scale in gout arthritis sufferers. In the Lantora Village, the working area of the Massenga Health Center, Polewali District, Polewali Mandar Regency. Method: quasi-experimental design with pretest-posttest approach without control. The intervention given was red ginger compress. Statistical test results using the Wilcoxon test were obtained  $p\text{-value} = 0.000$ , and  $\alpha = 0.005$ , where  $p < \alpha$  means that it shows the effect of warm compresses using red ginger on reducing the pain scale in patients with gouty arthritis. Excess : The research results are clear. Lack : Sample < 30 people, method of giving intervention is not explained.
- Author: Ilham
- Year : 2020
6. The Effect of Compressing Red Ginger Powder on Pain in the Elderly with Gout Arthritis. Knowing the effect of giving red ginger powder compresses to pain in the elderly with gout arthritis. In the houses of residents who seek treatment in the working area of the Kumun Public Health Center, the city of the. Method: quasi-experimental design with pretest-posttest control group approach. The intervention given was giving ginger powder compresses which were carried out for 14 days every morning and evening. The way to compress it is to paste it. The results showed that there was a significant effect of giving red ginger powder on pain in the elderly with gout arthritis, with value ( $p\text{-value} = 0.000$ ). There was a decrease in the respondent's pain scale before and after being given ginger powder. Excess : Methods of providing interventions are explained, the results of the research are clear. Lack : Sample < 30 people.
- Authors: Ghea Indah Putri, Rahmiwati & Yulia Yesti.

Year : 2021		river is full		Sampling technique: purposive sampling		compresses.	
7.	The Effectiveness of Warm Compresses on the Pain Scale in Gout Patients	To determine the effectiveness of warm compresses on the pain scale in gout patients	In the working area of the Batang III Public Health Center, Batang Regency in 2013.	Methods: Quasi-experimental design with a two group pretest posttest approach  Population: 77 people.  Sample: 77 people	The intervention given is warm compresses	The results of the study showed that there was a change in the average pain scale after the intervention of warm compresses was a decrease in the pain scale in gout patients.	Excess: Sample > 30 people, the research results are clear.  Lack: The age of the respondent is not listed, and the method of giving the intervention is not explained.
Year 2013				Technique sample : purposive sampling technique			
8.	The Effect of Using Cinnamon Compresses on Reducing Pain Scale in Arthritis Sufferers	To determine the effect of using cinnamon compresses (cinnamomum burmannii) on reducing the pain scale	In the working area of the Batunadua Health Center	Method: quasi-experimental design with one group pretest-posttest approach.  Population: 28 people  Sample: 13 people	The intervention given was cinnamon compresses given for 1 week.  The way to make a compress is to boil cinnamon powder until it boils and then put it in a basin. Next, put the towel in and it's ready to be used for compresses when the water isn't too hot.	The results of the Wilcoxon statistical test analysis showed that there was an effect of using cinnamon compresses on reducing the pain scale in gout arthritis sufferers with a p value of $0.001 < \alpha (0.005)$ .	Pros: Giving interventions is explained and research results are clear.  Lack: Sample <30 people.

- Year : 2020
- 9 The Effect of Warm Compresses Using Grated Ginger on Reducing Gout Arthritis Pain Intensity in the Elderly in the Work Area of the Lubuk Begalung Health Center in 2017
- To determine the effect of warm compresses using grated ginger on the intensity of gout arthritis pain in the elderly
- In the working area of the Lubuk Begalung Padang Health Center
- Method: quasi-experimental design with one group pretest-posttest approach.
- Population: 52 people
- Sample: 10 people
- The intervention given was warm compresses using grated ginger
- The results showed that there was an effect of warm compresses using grated ginger on reducing the intensity of gout arthritis pain in the elderly in the working area of the Lubuk Begalung Padang Public Health Center in 2017 with a p value of 0.000 where  $p < \alpha 0.05$ .
- Excess : The research results are clear.
- Lack Intervention was not explained, sample <30 people.
- Author: Abri Madoni
- sampling technique: purposive sampling
- Year : 2018
- 10 The Effect of Ginger Solution Compress on Gout Pain in the Melati Elderly Posyandu, Candisari Village.
- To determine the effect of compressing ginger solution (zingiber officinale roscoe) on gout pain
- In the elderly Melati Posyandu, Candisari Village, Grobogan Regency.
- Method: quasi-experimental design with pretest-posttest approach with control group design.
- Population: 50 people
- Sample: 50 people
- The intervention given to the treatment group used ginger compresses and the control group used warm water compresses.
- The results of the paired t test in the treatment group showed that there was a difference in the average pain score before and after giving ginger solution compresses. The significance value of the difference was obtained  $p (0.0001) < \alpha (0.05)$ . The results of the independent t test obtained an average value of reducing gout pain in the ginger solution compress treatment group of 3.20.
- Excess : Sample > 30 people, the research results are clear.
- Lack : Intervention is not explained.
- Authors: Suryani, Sutiyono, Mingle A Pistanty.
- Year: 2021
- Sampling technique: nonprobability sampling with a

				total sampling approach		The results of the paired t test in the control group, obtained differences in the average pain score before and after giving warm water compresses. The significance value of the difference was obtained $p(0.0001) < \alpha(0.05)$ . The results of the independent t test obtained an average value of decreasing gout pain in the control group of 1.80. So it can be concluded that the results of this study found differences in the decrease in the average pain score in the treatment group and the control group.	
11	The Effect of Warm Compresses on Reducing Gout Arthritis Pain Intensity in the Elderly.  Author: Hasrul, Muas.  Year : 2018	To determine the effect of warm compresses on reducing the intensity of gout arthritis pain in the elderly	In the working area of the Lawawoi Health Center	Method: quasi-experimental design with one group pretest posttest approach  Population : $\pm 70$ people  Sample: 20 people  Sampling	The intervention was given using wet warm washcloths or towels soaked in warm water, and then doing warm compresses 1 time, warm compresses were given to the parts of the body that were attacked such as knees, hips and feet, but in this study	The results of the study found that there was a significant effect on warm compresses in reducing the intensity of gout arthritis pain in the elderly in the working area of the Lawawoi Public Health Center, Sidrap Regency in 2018 with a p-value significance level of 0.000.	Excess : The method of providing the intervention is explained, and the research results are clear.  Lack : sample <30 people.

12	Soursop Leaf Decoction On Reducing Pain Scale In Group Elderly With Gout Arthritis In Andalas Health Center	To determine soursop leaf decoction in reducing pain scale in elderly gouty arthritis	In the working area of the Andalas Health Center	Method: quasi-experimental design with one group pretest-posttest design  Population: 90 Orang  Sample: 10 people  Sampling technique: non-probability sampling (purposive sampling)	most respondents applied warm compresses on the knee.  The intervention given was soursop leaf decoction  The results showed that there was an effect of giving soursop leaf boiled water in reducing the pain scale of elderly people with gout arthritis (p-value = 0.000 , $\alpha$ = 0.05)	Excess : The research results are clear.  Lack : The method of giving the intervention was not explained, the sample was <30 people.
	Author: Khairul Andri					
	Year : 2017					
13	The Effect of Soursop Leaf Decoction (Annona Muricata L.) on Reducing Pain Intensity in Gout Sufferers in the Work Area of the Koto Lolo Health Center, Sungai Lilin City	To determine the effect of soursop leaf decoction on reducing pain intensity in patients with acid	In the working area of the Koto Lolo Health Center, the river city is full	Method: quasi-experimental design with a two group pretest-posttest design approach  Population: 47 people  Sample: 16 people  Sampling	The intervention given was soursop leaf decoction  The results showed that the average pain intensity before being given soursop leaf decoction was 4.63 while after was 2.38 while in the control group before without soursop leaf decoction treatment was 5.00 while after was 3.75. Based on statistical tests, it was found that p value = 0.014	Excess : The research results are clear.  Lack : The method of giving the intervention was not explained, the sample was <30 people.
	Authors: Helena					

	<p>Patricia, Niken, Widya Usmarini</p> <p>Year : 2020</p>			<p>technique: purposive sampling</p>		<p>&lt;0.05. It can be concluded that there is an effect of soursop leaf decoction on reducing pain intensity in gout sufferers.</p>	
<p>14</p>	<p>Effects of external application of compound Qingbi granules on acute gouty arthritis with dampness-heat syndrome: a randomized controlled trial</p> <p>Authors : Shuang Ren, Fanyan Meng, Yantong Liu, Yun Meng, Ning Tao, Ruoshi Liu and Jie Zhang.</p> <p>Year : 2020</p>	<p>To investigate the clinical efficacy and safety of external application of Qingbi granules (CQBG) in treating acute gouty arthritis (AGA), and provide evidence for designing safe, effective, and optimized protocols for the comprehensive treatment of AGA</p>	<p>In the TCM Department, First Affiliated Hospital of China Medical University</p>	<p>Method : Participants were randomized controlled trial</p> <p>Population: 90 people</p> <p>Sample: 90 people</p> <p>Sampling technique: <i>total sampling</i></p>	<p>Participants were randomly divided into control, T1, and T2 groups (30 in each group). All participants in the three groups all received basic Western treatment (low purine diet, drinking water more than 2000 mL/day, oral loxoprofen, and NAHCO<sub>3</sub>). In addition, group T1 received external application of diclofenac diethylamine emulgel, while group T2 received external application of CQBG. The participants in the control group received basic single-use Western medicine. With a 7-day treatment course and 7-day follow-up, the three groups were compared in terms of primary outcome indicators, including swelling,</p>	<p>The results showed that pre-treatment and post-treatment comparisons revealed a remarkable reduction in arthralgia visual analogue scale (VAS) scores and swelling scores in the three groups after treatment and the improvement in the T2 group was more significant than in the T1 and control groups.</p>	<p>Excess : Sample&gt; 30 people, the research results are clear.</p> <p>Lack : \Giving intervention is clear but not yet detailed.</p>

increased pain, and changes in pain duration and secondary outcome indicators, including serum C-reactive protein. (CRP), uric acid level (UA), and changes in the thickness of the inflammatory joint synovium under ultrasound.

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## DISCUSSION

The analysis of 14 articles indicates that non-pharmacological pain management for gouty arthritis offers various approaches (Table 2). Among the methods, 2 involved compresses and paste. Warm compress was the most commonly used in the 14 articles. It is a technique of maintaining body temperature using fluids or tools that generate warmth in the affected area, hence, it facilitates blood circulation and reduces pain (Hoesny, Alim, Hartina, 2018). This method can cause vasodilation of blood vessels, leading to increased blood flow, which reduces pain in people with gouty arthritis (Hoesny, Alim, Hartina, 2018).

CQBG is an external treatment developed based on syndrome differentiation and treatment principles in Traditional Chinese Medicine (TCM). It combines the advantages of external therapy and is used to treat moisture-heat syndrome in arthritis. CQBG was prepared following national production standards, ensuring its safety and efficacy. Furthermore, its main components are Cortex Phellodendri and Herba tuberculata speranskia. CQBG is an outside remedy, and the application process includes dissolving each packet (30g) in 80 mL of water and stirring until a paste is formed. The dosage is 1 cm outside pain area, local application thickness of 1-2 cm, and 3 times a day (Ren et al, 2020).

According to review, warm compress using moringa leaves have been discovered to be effective in reducing gouty arthritis pain due to various phytochemical substances such as tannins, steroids, triterpenoids, flavonoids, saponins, anthrax, and alkaloids. These substances act as antibiotics, anti-inflammatories, detoxifiers, and antibacterials. Flavonoid compounds, in particular, can inhibit the activity of xanthine oxidase, an enzyme that oxidizes hypoxanthine to xanthine. They serve as analgesics that impede the activity of cyclooxygenase and lipooxygenase enzymes to interfere with prostaglandin synthesis and reduce pain (Widiyanto, Pradana, Hidayatullah, Atmojo, Putra, Fajriah, 2020).

Another Warm Compress was lemongrass boiled water. Lemongrass contains chemical compounds, such as caryophylla, cyral, citronellal, essential oils, flavonoids, geraniol, mircens, polyphenols, and nerol, which are useful for the body. It can reduce pain intensity, act as an anti-inflammatory, and increase blood circulation. The warm and spicy nature of lemongrass opens the pores and helps absorb it through the skin, relieving pain. The warm effect will stimulate the receptor system and emit signals, resulting in peripheral vasodilatation, leading to increased blood flow to inflamed tissues and a subsequent decrease in joint pain (Oktavianti, Anzani, 2021).

Ginger (*Zingiber Officinale*) is one of the plants with roots used for culinary and medicinal purposes. In traditional Asian medicine, this herb alleviates various ailments, including coughs, diarrhea, and arthritis (Madoni, 2018). The pharmacological effects of ginger make it an effective relaxation technique to reduce pain, stiffness, muscle spasm, and vasodilatation of blood vessels. The maximum benefits will be achieved within 20 minutes after applying heat (Ilham, 2020). Ginger comes in different types, such as ginger sunti, ginger emprit, and elephant ginger. The study's results identified 2 articles that use red ginger (sunti) and 3 using white ginger (emprit). The compounds found in all types of ginger, including oleoresin, zingeron, gingerol, and shogaol, are characterized by their spicy, bitter, and aromatic properties. Olerasin has powerful anti-inflammatory, analgesic, and antioxidant potential. Furthermore, it works by inhibiting prostaglandin synthesis, reducing pain or inflammation. These substances also inhibit leukotrienes and prostaglandins, which are mediators of inflammation. Red ginger has a higher content of essential oils and aerosols than other types of ginger. For instance, the essential oil content of sunti (red ginger), elephant, and white gingers ranges from 2.58-2.72%, 0.82-1.68%, and 1.5-3.3%, respectively (Aryanta, 2019).

Cinnamon (*Cinnamomum Burmannii*) is a natural substance discovered to possess healing properties. Warm compresses of cinnamon have been shown to reduce pain in gouty arthritis sufferers due to the presence of essential oils, which range from 1-4%. The sticks pounded to smooth texture can be applied to areas affected by gouty arthritis. The essential oils contained in cinnamon consist of various compounds, such as eugenol, safrole, cinnamaldehyde, tannins, calcium oxalate, resin, and tannins. Other chemical components are ethyl sinamat, betakalofiler, methyl kavikol,



cinntenamol, benzyl, benzoate, felandren, and coumarin. Essential oils are characterized by their hot properties, which can dilate blood vessels, increasing blood flow to the affected area and reducing pain. Finally, the increased blood flow also helps to eliminate inflammatory products, such as bradykinin, histamine, and prostaglandins, that cause local pain (Antoni, Pebrianthy, Harahap, Suharto, Pratama, 2020).

The results stated that soursop leaf decoction (*Annona muricata* L.) could decrease pain intensity in people living with gouty arthritis. Soursop leaves contain various beneficial compounds, such as acetogenins, annocatin, annocatalin, anno exocin, annonacin, anomuricin, anomurine, ananol, cacourine, gentisic acid, gigantetronin, linoleic acid, and muricapentocin ananol. These compounds can improve endurance, treat cancer, suppress inflammation, relax muscles, and relieve joint pain associated with rheumatism and gouty arthritis (Hermawati, Ayu Gustia, 2018).

Tannins, resins, and crystallizable mangostine are the most essential compounds in soursop leaves, which can effectively alleviate joint pain in gouty arthritis. They possess potent analgesic and antioxidant properties. The antioxidant effect helps reduce the formation of uric acid by inhibiting the production of the enzyme xantin oxidase. Furthermore, the combination of analgesic (pain-reducing) and anti-inflammatory properties (anti-inflammatory) reduces gouty arthritis (Hermawati, Ayu Gustia, 2018).

CQBG is a formulation comprising Cortex Phellodendri and Herba tuberculata speranskia. The external application of these compounds have antibacterial, anti-inflammatory, analgesic, and anticoagulation effects against Acute Gouty Arthritis (AGA). Among other things, its anti-inflammatory function reduces the joints' swelling and prevents local infections. The analgesic effect relieves anxiety produced by pain. Meanwhile, the anticoagulant effects help in the remission of local swelling and pain while preventing thrombogenesis (Ren, et al, 2020).

A total of 13 articles reported that there was no combination of pharmacotherapy. This is because it was not mentioned that respondents received the drug. However, 1 article reported using CQBG external applications in combination with pharmacological therapies. The intervention involved a low purine diet, over 2000 mL of water daily, oral loxoprofen, and  $\text{NaHCO}_3$  (Ren, et al, 2020). CQBG was used as an external treatment and comprised Cortex Phellodendri, the bark of the Phellodendri tree, and Herba tuberculata speranskia, an herbal remedy.

The majority of gouty arthritis sufferers who participated in the discussed articles were aged 40->60 years, with men being the most common gender and mild-severe pain being the most common complaint. A total of 14 articles suggest non-pharmacological pain management, of which 13 from Indonesia use compress methods, others combine compresses with herbal plants, and 1 from abroad employed external applications of CQBG. These interventions have been shown to reduce pain in gouty arthritis sufferers without harmful or detrimental side effects. Furthermore, the raw materials are easy to obtain because they can be grown in the surrounding environment (Ningsih, 2016). In conducting nursing interventions, non-pharmacological pain management is an independent action of a nurse in addressing the client's response. Finally, health workers, particularly nurses, can provide these interventions as part of health services.

## CONCLUSION

This study showed that non-pharmacological pain management in gouty arthritis patient includes warm compresses using moringa leaves, lemongrass decoction water, white and red ginger, cinnamon, soursop leaves, and external applications of CQBG. These interventions are grouped based on the method, compounds contained, the effects they produce, and the combination with pharmacotherapy. The significant finding of this study was from various intervention only study with CQBG intervention had randomized controlled trial (RCT) design. Showed that it should, CQBG is the most effective intervention. Therefore, it was concluded that all the interventions could reduce pain in people with gouty arthritis and do not have any side effects.

## REFERENCES

- Angriani E, Dewi AP, Novayelinda R. (2018). Factors Related To The Event Of Gout Arthritis In The Malay Community. *Jom Fkp*. <https://doi.org/10.33085/jkg.v3i1.4582>
- Antoni A, Pebrianty L, Harahap DM, Suharto S, Pratama MY. (2020). Effect of Cinnamon Compress Use on Pain Scale Reduction in Gout Arthritis Patients in the Batunadua Health Center Work Area. *Jurnal Kesehatan Global*. 2020;3(1):26.
- Aryanta IWR. (2019). Benefits of ginger for health. *Widya Kesehatan*. 2019;1(2):39–43. <https://doi.org/10.32795/widyakesehatan.v1i2.463>
- Berkanis, Nubatonis, Lastari. (2020). Effect of Early Mobilization on Pain Intensity in Patients. *CHM-K Applied Scientifics Journal*. 2020;3(1):6–13.
- Bobaya P, Bidjuni H, Kallo V. (2016). The Relationship between Stress Levels and the Incidence of Gout in Tobelo Health Center, Tobelo District, North Halmahera Regency. *Jurnal Keperawatan UNSRAT*. 2016;4(1):111504.
- Conant A, Curiel J, Pizzino A, Sabetrasekh P, Murphy J, Bloom M, et al. (2018). Absence of Axoglial Paranodal Junctions in a Child With CNTNAP1 Mutations, Hypomyelination, and Arthrogryposis. *Journal of Child Neurology*. 2018;33(10):642–50. <https://doi.org/10.1177/0883073818776157>
- Hermawati, N. Ayu Gustia YD. (2018). The Effect of Soursop Leaf (*Annona Muricata* L.) Decoction On Reducing Pain Intensity In Gout Patients In The Work Area Of Koto Lolo Public Health Center, FULL RIVER CITY. *Jurnal Kesehatan Saintika Meditory*. 2018;1(August):79–88
- Hoesny R, Alim Z, Hartina R. (2018). The Effect of Warm Compresses on Pain Scale in Gout Arthritis Patients in the Wara Public Health Center, Palopo City in 2017. *Jurnal Fenomena Kesehatan*. 2018;1(1):38–43.
- Ilham. (2020). The Effect Of Warm Compress Using Red Ginger Towards Reducing Pain Scale In Patients Of Gout Arthritis. *Bina Generasi;Jurnal Kesehatan*. 2020;2(2):14–9.
- Kemendes. Kementerian Kesehatan Republik Indonesia. Kementerian Kesehatan RI. 2019;1(1):1.
- Kementerian Kesehatan Republik Indonesia. (2017). RISKESDAS 2017 National Report.
- Madoni A. The Effect of Warm Compress Using Grated Ginger on Reducing Gout Arthritis Pain Intensity in the Elderly in the Work Area of the Lubuk Begalung Health Center in 2017. (2018). XII Jilid III. 2018;XII(79):1–7.
- Mayasari CD. (2016). The Importance of Understanding Non-Pharmacological Pain Management for a Nurse. *Jurnal Wawasan Kesehatan*. 2016;1(1):35–42.
- Ningsih IY. Ethnopharmaceutical Study on the Use of Medicinal Plants by the Tengger Tribe in Lumajang and Malang Regencies, East Java. (2016). *Journal Pharmacy*. 2016;13(01):10–20.
- Noor Z. (2016). *Textbook of Musculoskeletal Disorders*.
- Oktavianti DS, Anzani S. (2021). Reducing Pain in Gouty Arthritis Through Warm Compresses of Lemongrass Boiled Water. *Madago Nursing Journal*. 2021;2(1):1–8. <https://doi.org/10.33860/mnj.v2i1.439>
- Ren S, Meng F, Liu Y, Meng Y, Tao N, Liu R, et al. (2020). Effects of external application of compound Qingbi granules on acute gouty arthritis with dampness-heat syndrome: a randomized controlled trial. *Chinese Medicine (United Kingdom)*. 2020;15(1):1–14. <https://doi.org/10.1186/s13020-020-00398-8>
- Seran R, Bidjuni H, Onibala F. (2016). *The Relationship Between Gout Arthritis Pain and Elderly Independence at the East Towuntu Health Center, Pasan District, Southeast Minahasa Regency*. Hubungan Antara Nyeri Gout Arthritis Dengan Kemandirian Lansia Di Puskesmas Towuntu Timur Kecamatan Pasan Kabupaten Minahasa Tenggara. *Jurnal Keperawatan UNSRAT*. 2016;4(1):107451.

- Suryadi MS. (2020). The Effect of Hypnotherapy on Reducing Pain Scale in Elderly Patients with Gout Arthritis at the Elderly Posyandu at Pademawu Health Center Pamekasan. *Wiraraja Medika : Jurnal Kesehatan*. 2020;10(1):10–6. <https://doi.org/10.24929/fik.v10i1.937>
- Untari I, S. Sarifah, Sulastri. (2017). The Relationship of Gout with Gender and Age in the Elderly. *The 6th University Research Colloquium 2017*. 2017;267–72.
- Widiyanto A, Pradana KA, Hidayatullah F, Atmojo JT, Putra NS, Fajriah AS. Effectiveness of Moringa Leaf Warm Compress Against Gout Pain in the Elderly in Kenteng Village, Nogosari, Boyolali. (2020). *Avicenna : Journal of Health Research*. 2020;3(2). <https://doi.org/10.36419/avicenna.v3i2.404>