

THE EFFECT OF FINGER HANDS RELAXATION THERAPY ON REDUCING PAIN INTENSITY IN GOUT ARTHRITIS PATIENTS IN THE WORKING AREA OF GAYAMAN PUBLIC HEALTH CENTER, MOJOKERTO REGENCY

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ABSTRACT

Gout arthritis is an inflammatory joint disease caused by monosodium urate crystal deposition, resulting in pain and impaired daily activities. Finger grip relaxation therapy is a non-pharmacological nursing intervention to reduce pain. This study aimed to analyze the effect of finger grip relaxation therapy on pain intensity among gout arthritis patients at the Gayaman Community Health Center, Mojokerto Regency. A pre-experimental one-group pretest-posttest design was used. The population consisted of 132 patients, with 32 respondents selected through consecutive sampling. Pain intensity was measured using the Numeric Rating Scale (NRS) and analyzed with the Wilcoxon Signed Rank Test. Before the intervention, most respondents experienced moderate pain (53.1%), while after therapy most reported mild pain (71.9%). The Wilcoxon test showed a significant reduction in pain intensity ($p < 0.05$). Finger grip relaxation therapy is an effective non-pharmacological nursing intervention for reducing pain intensity in patients with gout arthritis.

Keywords: *gout arthritis, pain, finger grip relaxation therapy*

INTRODUCTION

Gout arthritis is an inflammatory joint disorder triggered by the accumulation of monosodium urate crystals due to excessively high uric acid levels in the blood (hyperuricemia). Gout arthritis affects one or more joints, particularly those in the lower extremities, such as the toes, ankles, and knees (Ramadhani et al., 2022). This condition is characterized by joint pain, swelling, redness, and limited movement, disrupting mobility and daily activities (Zellina Putri Ramadhani et al., 2022).

Gout arthritis is a degenerative disease that remains a global health problem. According to the (Global Burden of Disease Study, 2020), there are approximately 55.8 million cases of gout arthritis worldwide, with a prevalence of 659.3 cases per 100,000 people, an increase of approximately 22.5%. Furthermore, the World Health Organization (WHO, 2022) reports that the incidence of gout arthritis reaches 4.75% of the total global population, indicating that this disease still requires attention in prevention and treatment efforts (Noviyanti et al., 2021). In Indonesia, the prevalence of gout arthritis is also relatively high. According to the 2018 Basic Health Research (Riskesdas, 2018), the prevalence of gout arthritis reached 11.9% based on diagnoses by health workers and 24.7% based on diagnoses and symptoms experienced by the public. The prevalence of this disease increases with age, with the highest rate in the age group ≥ 75 years old reaching 54.8% (Andriati et al., 2025). At the regional level, the 2024 Mojokerto Regency Health Profile shows that joint disorders are still one of the non-communicable diseases frequently found in health care facilities (Dinkes Kabupaten Mojokerto, 2024).

A preliminary study at the Gayaman Community Health Center (Puskesmas) showed 132 cases of joint pain due to gouty arthritis in the past three months, with the number of cases fluctuating each month. Initial measurements using the Numeric Rating Scale (NRS) on five respondents showed pain intensity ranging from 4–6 on the scale, with uric acid levels of 7.5–8.7 mg/dL. The pain was primarily felt in the knees, ankles, fingers, and big toes, and tended to increase during activity, at night, or after waking up. Furthermore, most respondents lacked knowledge or experience in implementing non-pharmacological interventions, such as finger-holding relaxation therapy, to reduce joint pain.

Gout arthritis occurs due to elevated uric acid levels above normal (hyperuricemia), which is influenced by various factors, including a high-purine diet, obesity, alcohol consumption, metabolic disease, genetics, and age (Young Ahn & Wook So, 2025). Elevated uric acid levels cause the formation of monosodium urate crystals, which deposit in joint tissue and trigger the release of inflammatory mediators, activating nociceptors and causing acute pain. If this condition persists without adequate treatment, the inflammation can develop into a chronic condition, causing joint damage, limited mobility, sleep disturbances, stress, and a reduced quality of life (Ramadhani et al., 2022).

Pain management in gout arthritis patients generally still relies on pharmacological therapy. However, continuous use of medication, especially without the supervision of a healthcare professional, has the potential to cause side effects and may not provide optimal pain management. Therefore, non-pharmacological interventions are an alternative in nursing practice to help reduce pain, increase comfort, and decrease dependence on medication (Jannah & Warsono, 2024). One such intervention is finger-holding relaxation therapy, a simple technique that combines finger-holding with deep breathing. This technique works by stimulating the parasympathetic nervous system, increasing relaxation, stimulating the release of endorphins, the body's natural analgesic, and reducing pain perception (Larasati & Hidayati, 2022).

Several studies have demonstrated the effectiveness of finger-holding relaxation therapy in reducing pain intensity. Research (Modesta Ferawati & Winarianti, 2022) showed that finger-holding relaxation therapy was more effective than warm compresses in reducing pain intensity in gout arthritis sufferers. Another study (Khoirunisa et al., 2022) also found that finger-holding relaxation therapy can increase physical and psychological relaxation, thereby helping reduce pain perception. Furthermore, (Ulfah Ayudytha Ezdha et al., 2023) explained that this therapy works by stimulating the parasympathetic nervous system, which increases the release of endorphins, the body's natural analgesic. These findings are supported by (Larasati & Hidayati, 2022), who stated that the combination of finger-holding and deep breathing exercises can reduce muscle tension, slow the heart rate, and improve patient comfort. However, research on the effectiveness of finger-holding relaxation therapy in gout arthritis sufferers in primary healthcare settings, particularly at the Gayaman Community Health Center (UPTD) in Mojokerto Regency, is still limited. Therefore, this research needs to be conducted to strengthen scientific evidence regarding the effectiveness of this therapy.

Based on the description, this study aims to analyze the effect of finger-holding relaxation therapy on reducing pain intensity in gout arthritis patients in the working area of the Gayaman Community Health Center UPTD, Mojokerto Regency. The results of this study are expected to strengthen scientific evidence regarding the effectiveness of finger-holding relaxation therapy as a non-pharmacological nursing intervention in pain

management in gout arthritis patients. In addition, this study is expected to be a basis for health workers in integrating finger-holding relaxation therapy into nursing services in primary health facilities and become a reference for further research in the development of non-pharmacological interventions for pain management in gout arthritis patients.

METHOD

This study employed a quantitative method with a pre-experimental design using a one-group pretest–posttest approach. This design was used to evaluate changes in pain intensity in gout arthritis patients before and after receiving finger-holding relaxation therapy (Kusuma, 2021).

The study population was all 132 gout arthritis patients in the Gayaman Community Health Center (UPTD) working area, Mojokerto Regency, within the last three months. A sample of 32 respondents was selected using consecutive sampling. Inclusion criteria included gout arthritis patients who were willing to participate, signed informed consent, were able to communicate effectively, and experienced pain due to gout arthritis. Exclusion criteria included respondents who did not participate in the entire intervention series, had cognitive impairments or conditions that hindered therapy implementation, and withdrew during the study process (Sugiyono, 2023).

The study was conducted from May to July 2026 in the Gayaman Community Health Center (UPTD) working area, Mojokerto Regency. Data collection began with an explanation of the purpose, benefits, and procedures of the study. Then, eligible respondents were asked to sign an informed consent. Next, initial pain intensity (pretest) was measured using the Numeric Rating Scale (NRS). Following the initial measurement, respondents received finger-holding relaxation therapy according to Standard Operating Procedures (SOP). This involved alternately holding each finger and performing deep breathing exercises. Each finger was held for approximately 3 minutes, resulting in a total intervention duration of approximately 15 minutes per session. After the intervention was completed, a posttest was conducted using the same instrument to determine changes in pain intensity.

The research instrument used the Numeric Rating Scale (NRS) to measure pain intensity, with a score range of 0–10, categorized as no pain (0), mild pain (1–3), moderate pain (4–6), severe pain (7–9), and very severe pain (10). All respondents received the intervention using the same procedure according to Standard Operating Procedures (SOP) to maintain consistency in the study's implementation.

Data were analyzed using IBM SPSS Statistics. Univariate analysis was used to describe respondent characteristics and the distribution of pain intensity before and after the intervention. Bivariate analysis was performed using the Wilcoxon Signed Rank Test because the pain intensity data were ordinal and not normally distributed. The statistical significance level was set at $p < 0.05$.

FINDING AND DISCUSSION

RESEARCH RESULT

1. Univariate analysis

Demographic Characteristics of Respondents

Univariate analysis in this study aims to describe the characteristics of respondents and the frequency distribution of pain levels in respondents.

Table 1. Demographic Characteristics of Respondents

Characteristic	Frequency	Percentage
Gender		
Male	14	44
Female	18	56
Age		
46-55 years	5	16
56-65 years	18	56
>65 years	9	28
Occupation		
Unemployed	15	47
Farmer	6	19
Laborer	6	19
Self-Employed	5	15
Education		
Primary School	14	44
Junior High School	13	41
High School	5	15
Total	32	100

Table 1 shows that of the 32 respondents, the majority were female (18 respondents) (56%). Based on age, the majority of respondents were in the 56–65 years age range (18 respondents) (56%). Based on occupation, almost half of the respondents were unemployed (15 respondents) (47%). Meanwhile, based on education level, almost half of the respondents had elementary school education (14 respondents) (44%).

Pain level before being given finger grip relaxation therapy

Table 2. Distribution of pain levels before finger-holding relaxation therapy

No.	<i>Pretest</i>	Frequency	Percentage
1.	Mild Pain	8	25
2.	Moderate Pain	17	53
3.	Severe Pain	7	22
	Total	32	100

Based on Table 2, it is known that of the 32 respondents, the majority, 17 (53%), experienced moderate pain. These results indicate that before receiving finger-holding relaxation therapy, the most common level of pain experienced by respondents was moderate.

Pain level after finger grip relaxation therapy

Table 3. Distribution of pain levels after finger-holding relaxation therapy

No.	<i>Posttest</i>	Frequency	Percentage
1.	Mild Pain	23	71.9
2.	Moderate Pain	9	28.1
3.	Severe Pain	0	0
	Total	32	100

Based on table 3, the frequency distribution of joint pain levels after being given finger grip relaxation therapy to gout arthritis sufferers in the Gayaman Community Health Center work area, it is known that after being given finger grip relaxation therapy (posttest), the majority of respondents experienced mild pain, as many as 23 respondents (71.9%).

2. Bivariate Analysis

Bivariate analysis to determine the effect of finger-holding relaxation therapy on reducing pain intensity in gout arthritis patients in the Gayaman Community Health Center, Mojokerto Regency. Using the Wilcoxon Signed Rank Test with a significance level of $\alpha=0.05$.

Analysis of the Effect of Finger-Handling Therapy on Patients with Gout Arthritis in the Gayaman Community Health Center Work Area

Table 4. Analysis of Changes in Pain Intensity Before and After Finger-Handling Therapy in Patients with Gout Arthritis in the Gayaman Community Health Center Work Area

Pain Level	<i>Pretest</i>		<i>Posttest</i>	
	n	%	n	%
Mild Pain	8	25	23	71.9
Moderate Pain	17	53	9	28.1
Severve Pain	7	22	0	0
Total	32	100	32	100
<i>P-Value=0,000</i>				
<i>r=0,829</i>				

Table 4 shows that in the pretest, most respondents were in the moderate pain category (53%). After the intervention (posttest), most respondents were in the mild pain category (71.9%). The Wilcoxon Signed Rank Test results showed a p-value of 0.000 ($p < 0.05$), indicating that finger-holding relaxation therapy had an effect on reducing pain intensity in gout arthritis sufferers. The effect size (r) value of 0.829 indicates that finger-holding relaxation therapy had a large effect in reducing pain intensity

DISCUSSION

1. Pain Levels Before Finger-Handling Relaxation Therapy in Gout Arthritis Patients

Based on the results of the study, pain levels before receiving finger-holding relaxation therapy in gout arthritis patients in the Gayaman Community Health Center (Puskesmas) showed that of the 32 respondents, the majority (17 respondents) experienced moderate pain, a small proportion (8 respondents) (25%), and a small proportion (7 respondents) experienced severe pain.

Gout arthritis is an inflammatory joint disease caused by the accumulation of monosodium urate crystals, which trigger nociceptor activation, causing pain. The results showed variations in pain levels among respondents, ranging from mild to severe. These

differences indicate that pain is subjective and influenced by perception, pain threshold, pain tolerance, as well as biological, psychological, and social factors. Most respondents (18 respondents) were aged 56–65 years, indicating that gout arthritis is more common in the elderly due to decreased physiological function, changes in the musculoskeletal system, and metabolic disorders that increase the risk of joint inflammation (Mullins et al., 2022). Women experience more moderate to severe pain than men, which is related to the influence of estrogen and progesterone hormones on pain sensitivity (Bartley & Fillingim, 2021). Furthermore, a large proportion of respondents (15 respondents (47%) were unemployed, indicating that low or excessive physical activity can affect joint condition and pain intensity (Umniyah et al., 2025). The education level of the respondents, mostly elementary school (14 respondents (44%)), may influence their knowledge and ability to manage pain (Ramadhana & Meitasari, 2023).

These study findings align with (Songgigilan & Kundra, 2019), who stated that gouty arthritis is common in the 55–65 age group due to decreased body metabolism. The findings regarding differences in pain based on gender also align with (Bartley & Fillingim, 2021), who explain that women have higher pain sensitivity due to the influence of reproductive hormones on the inflammatory response and pain perception. Research (Umniyah et al. 2025) also shows that physical activity is associated with pain levels in gout arthritis sufferers. Researchers believe that pain levels in gout arthritis sufferers are influenced not only by the inflammatory process caused by the disease but also by individual characteristics that influence perception and response to pain. The results of this study demonstrate the importance of providing nursing interventions that take patient characteristics into account through health education, physical activity management, and the implementation of non-pharmacological pain management to help reduce pain complaints in gout arthritis sufferers.

2. Pain Levels After Finger-Handling Relaxation Therapy in Gout Arthritis Patients

The study revealed that after receiving finger-handling relaxation therapy, gout arthritis patients in the Gayaman Community Health Center experienced mild pain, with 23 respondents (71.9%), while nearly half (9 respondents) experienced mild pain, and none experienced severe pain.

The reduction in pain levels after receiving finger-handling relaxation therapy aligns with Potter and Perry's theory, which states that pain is a sensory and emotional experience influenced by an individual's response to painful stimuli. Gate control theory explains that tactile stimulation and relaxation can inhibit the transmission of pain impulses to the brain by closing the "pain gate," thereby reducing pain perception (Suwondo et al., 2020). Finger-handling relaxation works by stimulating the fingers, which helps the body relax, reduces muscle tension, increases comfort, and helps individuals control their response to pain. Furthermore, the finger-holding technique combined with deep breathing can promote physical and psychological relaxation, thereby increasing pain tolerance (Siauta et al., 2020; Ferawati, 2022). Researchers believe that the reduction in pain in gouty arthritis sufferers after receiving finger-holding relaxation therapy occurs due to its relaxing effect, which helps reduce tension, improves the body's response to stress, and decreases pain perception. Therefore, finger-holding relaxation therapy can be an effective non-pharmacological nursing intervention to help reduce pain in gouty arthritis sufferers.

3. Analysis The Effect of Finger-Hand Relaxation Therapy on Reducing Pain Intensity in Patients with Gout Arthritis

Based on the study results, before receiving finger-hand relaxation therapy (pretest), most respondents experienced moderate pain 17 respondents (53%), while after receiving the therapy (posttest), most respondents experienced mild pain (23 respondents (71.9%). The Wilcoxon Signed Rank Test results showed that 22 respondents experienced a decrease in pain scores (negative ranks), 10 respondents experienced no change in pain category (ties), and no respondents experienced an increase in pain (positive ranks). A p-value of 0.000 ($p < 0.05$) indicates that finger-hand relaxation therapy significantly reduced pain intensity in patients with gout arthritis. Furthermore, the effect size (r) of 0.829 indicates a large effect, indicating that this therapy has a strong effect on pain reduction.

Pain in gout arthritis occurs due to the accumulation of monosodium urate crystals, which trigger inflammation and the release of pain mediators, activating nociceptors and increasing the transmission of pain impulses to the central nervous system. The reduction in pain after administering finger-hold relaxation therapy can be explained by Gate Control Theory, which states that touch and pressure stimulation on the fingers can activate large-diameter nerve fibers, thereby inhibiting the transmission of pain impulses to the brain. Furthermore, this therapy provides a relaxing effect that can decrease sympathetic nerve activity, reduce muscle tension, increase comfort, and stimulate the release of endorphins, the body's natural analgesic (Suwondo et al., 2020; Veranika et al., 2025).

The fact that 10 respondents remained in the same pain category does not indicate that finger-holding relaxation therapy is ineffective. Six respondents experienced a decrease in pain scores, but this decrease was not significant enough to change their pain category, while four respondents experienced no change in either their pain score or category. This condition can be influenced by differences in individual responses, the level of active joint inflammation, the duration of gouty arthritis, psychological conditions, pain thresholds, and the respondents' ability to perform relaxation techniques optimally. Researchers believe that the effectiveness of finger-holding relaxation therapy is influenced by each individuals condition. In respondents still experiencing active inflammation, pain stimulation due to the accumulation of monosodium urate crystals may still be ongoing, so the therapy's effects are not able to significantly reduce pain intensity. However, the absence of respondents experiencing increased pain indicates that finger-holding relaxation therapy is safe to apply and does not worsen pain in gouty arthritis sufferers. These study results align with Idris and Astarani (2020) and Ferawati (2020) who stated that finger-holding relaxation therapy is effective in helping reduce pain through relaxation and distraction effects. Thus, finger grip relaxation therapy can be an effective non-pharmacological nursing intervention to help reduce pain in gout arthritis sufferers.

CONCLUSION

Based on the results of the study, it can be concluded that finger grip relaxation therapy has a significant effect on reducing the intensity of joint pain in gout arthritis sufferers in the Gayaman Community Health Center work area. Before being given therapy, most respondents experienced moderate pain, while after being given therapy some respondents experienced a decrease in pain levels to mild pain. The results of the Wilcoxon Signed Rank Test showed a p value = 0.000 ($p < 0.05$), which indicates a significant difference in pain intensity before and after being given finger grip relaxation therapy. In addition, the results of the effect size analysis showed a value of $r = 0.829$ which is included in the large effect category. Finger grip relaxation therapy can help reduce pain through relaxation mechanisms and nerve stimulation that increase the release of endorphins and inhibit the transmission of pain impulses. Therefore, this therapy can be used as an effective non-pharmacological nursing intervention in gout arthritis sufferers.

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