



The Application of Hydrotherapy (Warm Salt Water Soaking) to Reduce Pain in Patients with Gout Arthritis: A Case Study

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ABSTRACT

Gout arthritis is an inflammatory joint disease caused by the accumulation of monosodium urate crystals due to elevated uric acid levels in the blood. According to the World Health Organization (WHO) in 2023, the global prevalence of gout arthritis ranges from 5% to 30% and continues to increase, including in Indonesia. This case study aimed to determine the application of hydrotherapy (warm salt water soaking) in reducing pain intensity in a patient with gout arthritis in Pejeruk Hamlet, Pengadangan Village. This study employed a case study design using a nursing care approach on one patient with gout arthritis. The intervention consisted of hydrotherapy (warm salt water soaking) administered for 3 × 24 hours. After the warm salt water soaking intervention was administered for three consecutive days, the patient's pain level decreased, as indicated by reduced pain complaints, increased comfort, and improved ability to perform daily activities. The application of hydrotherapy (warm salt water soaking) was effective in reducing pain intensity in patients with gout arthritis and can be used as a non-pharmacological nursing intervention.

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I. INTRODUCTION

Gout arthritis, commonly referred to as gout, is a condition characterized by the formation of urate crystals in the joints due to elevated levels of uric acid in the blood. Uric acid is a metabolic waste product generated from the breakdown of purines released by dead body cells. Excess uric acid accumulates in the joints and forms monosodium urate crystals. The deposition of these crystals causes damage to the joint tissues, resulting in joint pain [1].

According to the World Health Organization (2023), the global prevalence of gout arthritis ranges from 5% to 30%, affecting approximately 55.8–335 million people worldwide. In recent years, the prevalence of gout arthritis has shown an increasing trend in several countries, including Indonesia [2][3].

In Indonesia, gout arthritis is the second most common form of arthritis after osteoarthritis. Its prevalence has increased to 11.9% based on medical diagnosis and 24.7% based on symptoms, with the highest regional prevalence reported in Bali Province at 19.3% [4][5].

The prevalence of gout in West Nusa Tenggara (NTB) is relatively high, reaching approximately 30%. In East Lombok Regency, the number of individuals diagnosed with gout was reported to be 30,046 [6].

Epidemiologically, gout arthritis is more common in men than in women. Individuals aged 70–79 years have a fivefold greater risk of developing gout arthritis compared to those younger than 50 years [7].

The most common clinical manifestations of gout arthritis include severe joint pain, redness, swelling, and a sensation of warmth in the affected joints. These symptoms most frequently involve the feet and knees and typically occur suddenly, especially at night [3].

Pain management in patients with gout arthritis can be achieved through both pharmacological and non-pharmacological approaches. However, pharmacological therapies, such as nonsteroidal anti-inflammatory drugs (NSAIDs), have limitations and may produce adverse effects, particularly in older adults with certain comorbid conditions [2].

Warm saltwater foot soaking therapy exerts its therapeutic effects through vasodilation and muscle relaxation. In addition, the sodium chloride (NaCl) contained in salt provides mild osmotic and anti-inflammatory effects, which help reduce pain and swelling [7].

Several previous studies have investigated the effectiveness of this therapy. Research conducted by [8] demonstrated that warm water foot soaking combined with salt significantly reduced pain intensity among older adults with arthritis compared with warm water soaking without salt.

Another case study also reported that soaking the feet in warm water with table salt significantly reduced pain intensity. This effect was attributed to the active components that produce hydrodynamic effects, where warm water improves blood circulation, while sodium

contained in table salt plays an important role in nerve impulse transmission and muscle function [4].

Based on a preliminary study conducted by the researchers through interviews with individuals suffering from rheumatic diseases since 2023, participants reported that they had previously been unaware of alternative therapies, such as warm water soaking, to relieve rheumatic pain. Instead, they generally relied solely on medications provided by the local community health center (Puskesmas)[9].

Referring to previous case studies demonstrating that warm saltwater soaking therapy can effectively reduce pain intensity in patients with gout, the researchers are interested in implementing this non-pharmacological intervention to reduce pain levels among older adults with gout arthritis[10].

II. RESEARCH METHODOLOGY

This study employed a case study design [11]. The study adopted a nursing care approach [12]. It describes the management of a patient case by implementing Evidence-Based Nursing Practice (EBNP) through the nursing process using warm saltwater foot soaking as the intervention. The case study was conducted on one patient with rheumatic disease living in Pejeruk Hamlet, Pengadangan Village. The study explored nursing care problems experienced by the patient with rheumatoid disease. Nursing care was provided over a one-week period, with the intervention implemented for 3×24 hours. The objective of this case study was to evaluate the use of warm saltwater soaking therapy in reducing pain intensity in a patient with rheumatic disease.

The nursing care process consisted of assessment, intervention planning, implementation, and evaluation. Data were collected through interviews using the Friedman Assessment Format to identify the patient's complaints and health problems. Nursing diagnoses and care plans were formulated based on the Indonesian Nursing Diagnosis Standards (SDKI), Indonesian Nursing Outcomes Standards (SLKI), and Indonesian Nursing Intervention Standards (SIKI).

The implementation phase involved carrying out the nursing interventions that had been planned and tailored to the patient's condition. The prescribed interventions were applied directly to the patient in accordance with the established nursing care plan. The evaluation phase employed the SOAP (Subjective, Objective, Assessment, and Plan) method to assess the patient's response to the intervention, determine changes in health status, and evaluate improvements in the patient's overall condition. The final stage was documentation, during which all observed changes in the patient's health status and pain level throughout the nursing care process were systematically recorded.

III. RESEARCH RESULTS

1. Assessment

The patient, Mrs. I, was a 65-year-old woman who had been diagnosed with gout arthritis at the age of 62. Prior to the intervention, the patient reported that pain occurred after prolonged walking. The pain was described as a stabbing sensation, primarily affecting the knees and the soles of the feet. The patient rated the pain intensity as 6 on the Numeric Rating Scale (NRS), with an intermittent pattern[13].

2. Nursing Diagnosis

The nursing diagnosis established was Chronic Pain related to a physiological injury agent (inflammatory process secondary to gout arthritis).

Subjective Data (PQRST Assessment):

- P (Provocation): Pain occurred after prolonged walking.
- Q (Quality): The pain was described as stabbing.
- R (Region): The pain was mainly localized in the knees and the soles of the feet.
- S (Severity): Pain intensity was rated as 6/10.
- T (Timing): The pain was intermittent.

Objective Data:

- The patient appeared to grimace due to pain.
- Walking ability was impaired.
- The patient walked slowly.

3. Nursing Intervention

The expected nursing outcome, based on the Indonesian Nursing Outcomes Standards (SLKI), was Reduced Pain (L.08066) (SLKI, 2018). Following nursing interventions for 3×24 hours, the patient's pain intensity decreased. The nursing intervention implemented was Pain Management (I.08238) according to the Indonesian Nursing Intervention Standards (SIKI). One of the primary interventions provided was warm saltwater foot soaking therapy as a non-pharmacological approach to pain management.

4. Implementation

The nursing interventions included identifying the causes, characteristics, and frequency of pain, followed by the administration of warm saltwater foot soaking therapy.

The researcher and the patient mutually agreed on a schedule to perform the therapy once daily for three consecutive days. Throughout the educational and intervention sessions, the patient was cooperative and was able to perform the warm saltwater soaking therapy independently. No barriers or difficulties were encountered during the implementation of the intervention.

5. Evaluation

The final evaluation demonstrated that the patient's gout arthritis pain had significantly decreased following three

consecutive days of warm saltwater foot soaking therapy. The patient reported noticeable pain relief after completing the intervention.

For follow-up nursing care, the patient was advised to obtain adequate rest, continue performing warm saltwater foot soaking whenever pain recurs, and adhere to the prescribed medication regimen to support the recovery process.

IV. DISCUSSION

Based on the nursing care provided over a one-week period, the findings indicated that the application of hydrotherapy in the form of warm saltwater foot soaking effectively reduced pain intensity in the patient with gout arthritis. The reduction in pain was evidenced by decreased joint pain complaints, improved comfort, and enhanced ability to perform activities of daily living. These findings are consistent with those reported by [14], who concluded that warm water and salt foot soaking therapy is effective in reducing pain intensity among patients with gout arthritis.

According to [15] gout arthritis is an inflammatory joint disease caused by the deposition of monosodium urate crystals resulting from elevated serum uric acid levels. Crystal deposition triggers an inflammatory response characterized by severe pain, swelling, erythema, and restricted joint mobility. Persistent pain can interfere with daily activities, impair sleep quality, and reduce patients' overall quality of life.

Warm saltwater hydrotherapy may alleviate pain through several physiological mechanisms. The warm temperature promotes vasodilation, resulting in increased blood circulation, reduced muscle tension, and enhanced tissue metabolism. Furthermore, the addition of salt to the soaking water may produce mild relaxation and anti-inflammatory effects, thereby helping to relieve discomfort in inflamed joints. The combined effects of warmth and relaxation contribute to a reduction in pain perception experienced by the patient [16].

The authors assume that the reduction in pain intensity observed in this case study was primarily associated with the physiological effects of hydrotherapy, including improved blood flow to inflamed tissues, decreased muscle spasm and stiffness, and enhanced comfort and relaxation during the soaking process. These physiological responses likely reduced nociceptive stimulation in the affected joints, resulting in gradual pain relief and improvement in the patient's overall condition.

V. CONCLUSION

Nursing care provided to a patient with arthritis-related pain demonstrated that warm saltwater soaking therapy administered over a period of 3×24 hours effectively reduced pain intensity and improved the patient's quality of life. Based on these findings, it can be concluded that warm saltwater soaking is an effective non-pharmacological nursing intervention for alleviating pain associated with gout arthritis.

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