EFFECTIVENESS OF A RHIZOME-BASED HERBAL DRINK WITH LIME IN REDUCING GOUT PAIN AMONG THE ELDERLY

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Abstract

Purpose: This study aimed to examine the effectiveness of a rhizome-based herbal drink combined with lime in reducing gout-related pain among elderly individuals. **Methodology:** This study employed a quantitative approach using a quasi-experimental design with a nonequivalent control group. A total of 20 elderly participants with chronic gout pain were selected through purposive sampling and divided into an intervention group (n = 10) and a control group (n = 10). Pain intensity was measured using the Numeric Rating Scale (0–10) before and after the intervention. Data were analyzed using descriptive statistics and the Wilcoxon Signed Rank Test with a significance level of $p < 0.05$. **Findings:** The results showed a significant reduction in pain scores in the intervention group, from 6.80 ± 0.79 to 3.80 ± 1.14 ($p = 0.004$). The control group also showed a reduction, from 6.50 ± 0.71 to 5.20 ± 1.32 ($p = 0.009$), but the magnitude of pain reduction was greater in the intervention group. **Practical/Social Implications:** These findings indicate that rhizome herbal drinks with lime can be applied as a safe, affordable, and easily implemented non-pharmacological therapy in community-based elderly care, particularly to reduce dependence on long-term pharmacological treatment**. Originality/Value**: This study provides empirical evidence on the effectiveness of a locally available herbal combination as a complementary therapy for gout-related pain among the elderly in a community setting, an area that remains underexplored in previous research.

Keywords: gout pain, elderly, herbal drink, rhizome, lime

1. INTRODUCTION

Pain caused by gout is one of the most common joint disorders among older adults worldwide and is a major contributor to limited mobility and decreased quality of life (World Health Organization, 2022). In Indonesia, the prevalence of gout increases with the growing elderly population, accompanied by a higher risk of long-term complications that require effective management (Kementerian Kesehatan Republik Indonesia, 2021).

Pharmacological therapy is commonly used to relieve pain; however, long-term use may lead to various adverse effects (Joyce L. Kee, 1996). Herbal therapies based on rhizomes, such as turmeric, have been reported to possess anti-inflammatory and analgesic properties in patients with chronic joint pain (Nugroho, A. E., 2021). In addition, the incorporation of lime, which is rich in vitamin C, is believed to enhance anti-inflammatory effects and contribute to pain reduction in joint disorders (Pratama, 2021).

Although rhizome-based herbal therapies have been widely studied, limited research has specifically evaluated the combination of rhizomes and lime in elderly patients with chronic gout-related pain, particularly within local community settings in Indonesia. Empirical evidence regarding the effectiveness of this herbal beverage in reducing pain among older adults remains scarce.

Addressing this research gap is important to provide a non-pharmacological alternative therapy that is safe, affordable, and easy to implement at the community level, thereby improving the quality of life of older adults without the long-term side effects associated with pharmacological treatment.

Based on this background, the present study aims to evaluate the effectiveness of a rhizome-based herbal drink combined with lime in reducing gout-related pain among older adults in Sukamukti Village, Katapang District, Bandung Regency.

2. METHODOLOGY

2.1 Research Design

This study employed a quasi-experimental design with a nonequivalent control group design to evaluate the effectiveness of a rhizome-based herbal drink supplemented with lime on gout-related pain among older adults. This design was selected because it allows for comparison between intervention and control groups without full randomization, making it appropriate for quantitatively assessing the effects of herbal therapy in community settings (Sugiyono., 2022).

2.2 Setting and Time

The study was conducted in Sukamukti Village, Katapang District, Bandung Regency. Data collection took place in July 2025. As several participants lived at considerable distances from the village center, data collection was carried out at each participant's home. For efficiency, participants were divided into small groups, and visit schedules were arranged based on prior agreement.

2.3 Population and Sample

The study population consisted of all older adults with chronic gout residing in RW 08 and RW 09 of Sukamukti Village, totaling 163 individuals (Sugiyono., 2022). The study sample was selected using purposive sampling, a non-probability sampling technique based on specific considerations, namely older adults experiencing joint pain due to chronic gout (Sugiyono., 2022)

Based on methodological considerations for experimental studies involving intervention and control groups, 10 participants were assigned to each group, resulting in a total sample of 20 respondents ((Sugiyono., 2022).

Sample Criteria
Inclusion criteria:

1. Aged 60–75 years
2. Diagnosed with chronic gout
3. Serum uric acid levels above normal laboratory reference values (men >7 mg/dL, women >6 mg/dL)
4. Experiencing joint pain related to gout within the past month
5. Willing to participate in and complete all study procedures

Exclusion criterion:

1. History of allergy to turmeric or lime

2.4 Instruments and Variables

1.4.1 Independent Variable

The independent variable was rhizome-based herbal drink therapy with lime, administered once daily before bedtime in accordance with the standard operating procedure (SOP).

1.4.2 Dependent Variable

The dependent variable was **pain intensity**, measured using the **Numeric Rating Scale (NRS) ranging from 0 to 10**, where:
0 = no pain,
1–3 = mild pain,
4–6 = moderate pain,
7–10 = severe pain.

1.4.3 Validity and Reliability

The Numeric Rating Scale (NRS) has been widely used and demonstrates high validity and reliability for measuring pain intensity in older adult populations.

2.5 Data Collection Procedure

Data collection was conducted in several stages. Participants were recruited based on the predetermined inclusion and exclusion criteria. Baseline pain intensity (pre-test) was assessed prior to the intervention. Participants in the intervention group then received a rhizome-based herbal drink combined with lime for seven consecutive days, administered as one glass before bedtime each night. After completion of the intervention period, pain intensity was reassessed (post-test). All collected data were systematically recorded and compiled for statistical analysis.

2.6 Data Analysis

1. Data were analyzed using SPSS version 23.
2. Data normality was assessed using the Shapiro–Wilk test. As the data were not normally distributed, the Wilcoxon Signed-Rank Test was used to examine differences in pre-test and post-test pain scores within each group.
3. Statistical significance was set at $p < 0.05$.
4. Results were analyzed using descriptive statistics (mean ± standard deviation) and inferential statistics (Wilcoxon test).

2.7 Ethical Approval

This study received ethical approval from the Institute for Research and Community Service (LPPM), Universitas Bale Bandung, with approval number 10/LPPM-UNIBBA/III/2025. All participants were provided with complete information regarding the study objectives, procedures, potential benefits, and possible risks, and written informed consent was obtained prior to participation. The study was conducted in accordance with ethical principles for human research, including confidentiality of data and participant safety.

3. RESULTS AND DISCUSSION

3.1 Results

1.1.1 Respondent Characteristics

Table 1 presents the demographic characteristics of the respondents, including gender, age, educational attainment, and employment status, across the intervention and control groups

Table 1. *Respondent Characteristics by Group*

Characteristics	Intervention (n = 10)	Control (n = 10)	Total (n = 20)
Gender			
Female	7 (70%)	8 (80%)	15 (75%)
Male	3 (30%)	2 (20%)	5 (25%)
Age (years)			
60–65	4 (40%)	5 (50%)	9 (45%)
66–70	6 (60%)	5 (50%)	11 (55%)
Education			
Elementary school	5 (50%)	7 (70%)	12 (60%)
Junior/Senior high school	5 (50%)	3 (30%)	8 (40%)
Employment status			

Unemployed	6 (60%)	6 (60%)	12 (60%)
Employed	4 (40%)	4 (40%)	8 (40%)

Narrative:

Table 1 shows that the majority of respondents in both the intervention and control groups were female, aged 66–70 years, had an elementary school education, and were unemployed.

1.1.2 Changes in Gout Pain Scores Before and After the Intervention

Table 2 presents a comparison of pre-test and post-test gout pain scores in the intervention and control groups following the intervention.

***Table 2**. Changes in Gout Pain Scores Before and After the Intervention*

Group	Pre-test (Mean ± SD)	Post-test (Mean ± SD)	p-value
Intervention (n = 10)	6.80 ± 0.79	3.80 ± 1.14	0.004
Control (n = 10)	6.50 ± 0.71	5.20 ± 1.32	0.009

Narrative:

Table 2 shows that pain scores in the intervention group decreased from 6.80 ± 0.79 to 3.80 ± 1.14 after the administration of the rhizome herbal drink with lime, with a statistically significant reduction (Wilcoxon Signed Rank Test, $p = 0.004$).

In the control group, pain scores also decreased from 6.50 ± 0.71 to 5.20 ± 1.32 ($p = 0.009$); however, the magnitude of reduction was smaller compared to the intervention group. These findings indicate that the rhizome herbal drink combined with lime is effective in reducing gout-related pain among older adults.

Statistical analysis was performed using the Wilcoxon Signed Rank Test due to non-normally distributed data, as indicated by the Shapiro–Wilk normality test ($p < 0.05$). Pain intensity was measured using the Numeric Rating Scale (NRS) ranging from 0 to 10, where 0 indicates no pain, 1–3 mild pain, 4–6 moderate pain, and 7–10 severe pain.

3.2 Discussion

Gout-related pain is a significant health problem among older adults, as it can limit mobility and reduce quality of life (World Health Organization, 2022). This study is important because it evaluates the effectiveness of a rhizome-based herbal drink combined with lime as a safe, low-cost, and easily applicable non-pharmacological alternative therapy in community settings.

The results of this study indicate that the administration of the rhizome herbal drink with lime significantly reduced pain scores in the intervention group compared to the control group ($p = 0.004$). Although a reduction in pain scores was also observed in the control group ($p = 0.009$), the magnitude of the decrease was smaller. This reduction may have been influenced by factors such as researcher attention, natural symptom fluctuation, or individual variations in pain perception.

These findings support the research hypothesis that rhizome herbal therapy combined with lime is effective in reducing gout pain among older adults. The results are consistent with previous studies by Nugroho et al. (2021), which reported that curcumin in turmeric has anti-inflammatory and analgesic effects, as well as findings by Pratama (2021), suggesting that the addition of lime enhances the effectiveness of herbal therapy in managing chronic joint pain.

Despite the observed reduction in pain in the control group, the findings demonstrate the superior effect of the herbal intervention compared to the control condition. This provides practical implications that the rhizome herbal drink with lime may be used as a complementary intervention in older adult communities to reduce dependence on long-term pharmacological treatment and to improve quality of life.

This study also provides a foundation for future research by recommending:

1. Involving larger sample sizes to improve the generalizability of the findings.

2. Extending the duration of the intervention to evaluate its long-term effects on pain reduction.
3. Exploring other herbal combinations or different dosage regimens to identify the optimal approach for managing chronic joint pain in older adults.

4. CONCLUSIONS

This study concludes that the rhizome-based herbal drink combined with lime is effective in reducing gout-related pain among older adults. A significant decrease in pain scores was observed in the intervention group after the administration of the herbal drink, with a greater magnitude of reduction compared to the control group.

These findings indicate that rhizome herbal therapy with lime can serve as a safe, affordable, and practical non-pharmacological intervention for managing gout pain in community-dwelling older adults. The results support the potential use of this herbal drink as a complementary therapy to improve pain management and quality of life among the elderly population.

Future studies are recommended to involve larger sample sizes, extend the duration of intervention, and explore different herbal combinations or dosages to further strengthen the evidence and optimize pain management strategies for gout in older adults.

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