



The Effectiveness of Self-Help Groups in Enhancing Self-Efficacy Among Patients with Gout Arthritis in the Sangihe Islands Community, Indonesia

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Abstract

Community in island settings has limited access to healthcare facility as well as health information. Nevertheless, the strong kinship networks and social cohesion characteristic represent valuable sociocultural resources. This study aimed to evaluate the effectiveness of Self-Help Group (SHG) on self-efficacy among patients with gout arthritis living in the Sangihe Islands Regency, rural and remote archipelagic area located at the Indonesia-Philippines border. A quasi-experimental design with pretest-posttest control group was conducted on September-November 2025, involving 134 participants (74 intervention, 60 control). Self-efficacy was measured using the validated and reliable Indonesian version of the Arthritis Self-Efficacy Scale-8 (ASES-8). The intervention group received a single 45-60 minutes session (8 groups), Baseline groups were comparable in age, gender and employment, but differed in duration of illness and education level; both were controlled as covariates in analysis. The intervention group showed a significant increase in self-efficacy from pre-test (media=21.5) to post-test (median=68.5) (Wilcoxon test, $p=0.001$). Post-intervention self-efficacy was significantly higher in the intervention group (mean=67.61; median 68.5) compared to the control group (mean=41.18; median 39) (Mann-Whitney test, $p=0.001$). After adjusting for duration of illness and education level, the intervention effect remained highly significant (ANCOVA, $F=173.56$; $p<0.001$), with no significant covariate or interaction effects. These findings emphasize The SHG Method can increase self-efficacy among patients with gout arthritis. This low-cost, community-based method is recommended for integration into routine health education at community health centers to enhance chronic disease self-management in island and remote settings.

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Introduction

Gout arthritis is a long-standing non-communicable disease that affects the musculoskeletal system, particularly the joints. Its global prevalence is estimated at 1-2% of the population and continues to rise. The prevalence in Indonesia is relatively high compared to other Asian countries and is found not only among older adults but also in younger populations (Indonesia Rheumatology Association, 2018). The most recent survey indicated in 2018, the prevalence of joint inflammatory diseases such as gout arthritis in Indonesia reached 713,783 cases, or 7.3% of the population. The highest prevalence was reported in Aceh Province at 13.26%, while North Sulawesi ranked eighth with a prevalence of 8.3%, accounting for 6,827 (Ministry of Health, 2018).

The symptoms of gout arthritis include joint pain, fever, stiffness in the extremities, fatigue, the presence of tophi, and an increased risk of various complications such as renal failure, cardiovascular disease, and even death. Therefore, appropriate medical treatment combined with self-management through healthy lifestyle practices is essential to ensure the disease remains controlled and does not negatively affect the patient's quality of life (FitzGerald et al., 2020). A strong effort and commitment from the patients themselves are required to control uric acid levels and perform appropriate management during acute attacks, a concept known as self-efficacy defined as an individual's belief in, and ability to carry out, the actions necessary to achieve desired outcomes (Oroh et al., 2020). Self-efficacy in patients with gout arthritis encompasses several abilities: managing pain and joint stiffness, maintaining an appropriate diet, ensuring adequate fluid intake, avoiding alcohol, adhering to uric-acid-lowering medications, and regularly seeking medical consultation (Audina et al., 2024).

To develop strong understanding and confidence in the processes of care and recovery, structured learning efforts are required. The SHG method is a series of learning activities in which several patients are gathered into small groups to exchange information and experiences related to their conditions. This process facilitates the transformation of knowledge and personal experiences, thereby enhancing patients' confidence (Klaw & Luong, 2010). Although SHG has been shown to improve self-efficacy in gout patients in urban settings, as demonstrated in previous study (Januarti et al., 2024; Sandehang et al., 2023), no study has evaluated its effectiveness in border islands, geographically isolated areas, where access to healthcare and health literacy are limited. Therefore, this study was conducted to determine the effectiveness of SHG on self-efficacy among patients with gout arthritis in this unique rural context.

This rural setting presents unique characteristics, including limited access to healthcare services and lower educational attainment, which may influence patients' ability to manage their condition effectively. Consequently, community-based education interventions are needed to enhance patients' knowledge, strengthen their self-care capabilities, and promote sustained health-related behavioral changes. By evaluating SHG as a peer-based health education intervention, this study aims to address this evidence gap and provide empirical support for its effectiveness in improving self-efficacy among individuals with gout arthritis. The findings are expected to contribute to the development of evidence-based educational strategies and inform the integration of peer support programs into routine gout management in primary healthcare, ultimately promoting patient empowerment and reducing reliance on healthcare services for preventable disease exacerbations.

Materials and Methods

Study Setting and population

This study employed a quasi – experimental post-test only control group design (non-equivalent control group). The study was conducted at the Kalasuge Community Health Centers in Sangihe Islands Regency, North Sulawesi, Indonesia, from September to November 2025. The TREND statement guided the reporting (Caetano, 2004).

The Intervention group comprised 74 participants recruited through total sampling from attendees of the posyandu program – a monthly community health post. The control group consisted of 60 participants recruited consecutively from gout patients seeking care at the same health center who did not attend posyandu.

Inclusion criteria: physician – diagnosed gout arthritis for ≥ 1 year, age ≥ 18 years, experiencing joint pain as primary complaint, able to communicate, and willing to participate. Exclusion criteria: acute gout flare, comorbid inflammatory/autoimmune joint disorders, severe psychiatric/cognitive conditions, or serious comorbidities interfering with participation.

Intervention and Procedures

Facilitators (community health centers nurses) received a 1-day training on SHG methods from the research team, using a standardized manual. To ensure the intervention fidelity, all facilitators used the same standardized module, educational materials, and session guide across all eight groups. Following the initial training, the research team first demonstrated the SHG session in the first of the eight groups as a model for the facilitators. Facilitators then delivered the sessions themselves in groups two through four under direct mentoring from the research team, with a briefing held after each session to evaluate the facilitator's performance and provide feedback. For group five through eight, facilitators conducted the session independently, and one research team member observed each session to ensure the quality and fidelity of intervention delivery to the protocol. Any deviations identified during mentoring or observation were discussed and corrected in brief debriefing meetings held during the intervention period.

The SHG intervention consisted of a single 45-60 minutes session per group, delivered to eight small groups (7-19 participants per group) between September 2 and November 7, 2025. Sessions were held in a room with circular seating. The facilitator began with an introduction and ice-breaking, then each participants shared their symptoms, challenges, and strategies (both successful and unsuccessful) for managing gout. The facilitator then provided educational material based on the Indonesian Rheumatology Association guidelines (2018). The control group received usual care, defined as individual medical consultations without structured group education.

Data collection and analysis

Self-efficacy was measured using the Indonesian version of the 8-item Arthritis Self-efficacy Scale (ASES-8), scored 1-10 per item (total 8-80). Translation followed forward-backward method (Granat et al., 2022), with pilot testing on 30 residents, yielding acceptable internal consistency (Cronbach's $\alpha = 0.782$) and item-total correlations (Pearson's correlation, $p < 0.05$ for all items). Data were collected by trained assistants blind to group allocation: the intervention group completed the questionnaire before (pretest) and after (posttest) the SHG session, while the control group completed it once (posttest only) at the same time point.

Normality was assessed using Kolmogorov-Smirnov test, which indicated a non-normal distribution in both groups ($p < 0.05$), non-parametric tests were therefore used for hypothesis testing. The Wilcoxon signed-rank test was used to compare pre- and post-test scores within the intervention group, and the Mann-Whitney U test was used to compare post-test scores between intervention and control groups.

Given baseline imbalance on duration of illness and education level ($p < 0.05$; see Results, Table 1), these two variables were entered as covariates in General Linear Model (ANCOVA) to control for potential confounding bias when testing the effectiveness of the intervention on self-efficacy. Statistical significance was set at $p < 0.05$. Analyses were performed using SPSS v31.

Research Ethics

The study received ethical approval from the Health Research Ethics Committee of Manado Health Polytechnic, Ministry of Health (approval no DP. 04.03/FXXX.28/329/2025 dated August 29, 2025). Permission was obtained from the community health center head. All participants provided written informed consent after receiving information about the study, including their right to withdraw at any time without consequences.

Results and Discussions

Result

The characteristics of the participants of control group and intervention group as presented in table 1.

Table 1. Participants Characteristics (N=134)

Participants Characteristics	Control (n=60)	Intervention (n=74)	p-value	Remarks	Statistic Test
Age (years)					
Mean SD	55 ± 15	57 ± 5	0.846	Homogeneous	Mann-Whitney
Duration of illness (years)					
Mean SD	4 ± 4	5 ± 2	0.001	Not homogeneous	Mann-Whitney
Gender					
Male	28 (47)	32 (43)	0.692	Homogeneous	Chi-square
Female	32 (53)	42 (57)			
Education					
Primary school	21 (35)	15 (20)	0.001	Not homogeneous	Chi-square
Secondary School	30 (50)	59 (80)			
Higher Education	9 (15)	0 (0)			
Employment					
Employed	43 (72)	54 (73)	0.866	Homogeneous	Chi-square
Unemployed	17 (28)	20 (27)			

Table 1 showed that the participants were 60 participants in the control group and 74 participants in the intervention group. In the control group, the mean age of participants was 55 ± 15 years and a mean disease duration and a mean disease duration of 4 ± 4 years, while the intervention group had a slightly higher mean age of 57 ± 5 years and a mean disease duration 5 ± 2 In both groups, the majority of participants were female (53% in the control group vs. 57% in the intervention group), employed (72% vs. 73%), and had a secondary level of education (50% vs. 80%).

The baseline homogeneity test confirmed that the control and intervention groups were comparable on age (p=0.846), gender (p=0.692), and employment status (p=0.866), strengthening the internal validity of the study by reducing the likelihood that these variables acted as confounders of the observed intervention effect. However, two variables showed significant baseline imbalance: duration of illness (p=0.001) and education level (p=0.001), with respondents holding higher education present only in the control group (15% vs. 0%). This baseline imbalance represents a

potential source of confounding bias that required statistical control in the subsequent effectiveness analysis (Table 4).

Table 2. Self-Efficacy Scores Before and After SHG Intervention (n=74)

Intervention Group	Median (Min-Max)	Median Difference	95% CI of the Difference		Effect Size	p- value*
			Lower	Upper		
Self-Efficacy Before SHG	21.5 (10-42)	47.000	45.000	48.000	0.87	0.001
Self-Efficacy After SHG	68.5 (50-80)					

As shown in Table 2, within the intervention group, self-efficacy improved markedly following the Self-Help Group (SHG) intervention, from a pre-intervention median of 21.5 (range 10-42) to a post intervention median of 68.5 (range 50-80), a median difference of 47.0 points (95% CI:45.5 – 48.0; p=0.001). The effect size of 0.87 indicates a large magnitude of effect by conventional interpretation criteria, suggesting that the SHG intervention produced a substantial, clinically meaningful improvement in self-efficacy, beyond mere statistical significance.

Table 3. Comparison of Post-Intervention Self-Efficacy Between Control (n=60) and Intervention Groups (n=74)

Group	Median (Min-Max)	Median Difference	95% CI of the Difference		Effect Size	p- value*
			Lower	Upper		
Self-Efficacy of Control Group	39 (12-67)	28.000	23.000	31.000	0.80	0.001
Self-Efficacy of Intervention Group	68.5 (50-80)					

Mann Whitney U test, p=0.001.

Table 3 shows that the intervention group achieved a substantially higher median score (68.5; range 50-80) than the control group (39; range 12-72), with a median difference of 28.0 points (95% CI:23.0 – 31.0; p=0.001) and a large effect size (0.80). This finding is consistent with the within – group results in Table 2, reinforcing the evidence that the improvement in self-efficacy in the intervention group was attributable to the SHG intervention rather than to time or maturation effects alone.

Table 4. Analysis of the Intervention Effect on Self-Efficacy Controlling for Duration of Illness and Education Level (N=134)

Source	df	MS	F	Sig
Group (Intervensi vs Control)	1	16856.52	173.56	<.001
Duration of illness	1	36.64	0.38	.540
Education Level	2	27.33	0.28	.755
Group x Education level	1	19.18	0.20	.658

Table 4 presents the results of the General Linear Model (ANCOVA), revealing important findings regarding the factors influencing participants' self-efficacy. A highly significant effect was found between the intervention and control groups ($F=173.56$; $p<.001$) after controlling for variation in duration of illness and education level.

Duration of illness did not have a significant direct effect on participants' self-efficacy ($F=0.38$; $p=.540>0.05$), and similarly, participants education level had no significant effect on self-efficacy ($F=0.28$; $p=.755>0.05$). No significant group x education interaction was found ($F=0.20$; $p=.658$).

>0.05), indicating that the effectiveness of the intervention in improving self-efficacy was consistent across educational levels. Taken together, these findings indicate that neither variable introduced meaningful bias into the study results despite the baseline non-homogeneity of the sample.

Discussions

The results indicate that the SHG method significantly improved self-efficacy among patients with gout. Although baseline imbalance existed in duration of illness and education level between groups, ANCOVA confirmed that the intervention effect on self-efficacy remained robust and statistically independent of these variables, with neither covariate nor their interaction with group showing a significant effect. This finding strengthens confidence that the observed improvement in self-efficacy was attributable to the SHG intervention itself, rather than to pre-existing differences between groups. Furthermore, the magnitude of change was substantial rather than merely statistically significant: the within-group improvement and the between group difference both reflect large effects, suggesting that even a brief structured SHG session can produce meaningful, clinically relevant gains in patients' confidence to manage their condition.

The SHG method consists of a series of activities that allow participants to share experiences and information with others facing similar problems. This process enhances knowledge, as each participant seeks out new information relevant to their needs, leading to a better understanding of their condition (Fields & Batterman, 2018). SHGs are small groups of individuals similar backgrounds, aiming to solve common problems through self-help and mutual help (Manvar et al., 2019).

These findings are consistent with a study that demonstrated SHG interventions can improve self-efficacy in patients with gout (Sandehang et al., 2023). Similarly, a quasi-experimental study on SHG programs for hypertension and diabetes mellitus also reported significant improvements in self-efficacy (Kim et al., 2017).

Self-efficacy refers to an individual's confidence in their ability to perform specific tasks and achieve desired outcomes. Patients with higher self-efficacy are more likely to adhere to self-management practices (Chen et al., 2023). However, improving self-efficacy often requires structured guidance through health education interventions delivered by healthcare professionals.

Self-management of gout arthritis is crucial, including maintaining normal uric acid levels, medication adherence, and preparedness for managing pain (van der Ven et al., 2025). Pain in gout results from monosodium urate crystal deposition in joints, triggering inflammation. Accumulated deposits may form tophi – nodular masses that interfere with daily activities (Neogi et al., 2015; Weaver et al., 2022).

During SHG sessions, respondents reported difficulties in maintaining normal uric acid levels, frequent consumption of purine-rich foods due to lack of awareness, medication non-adherence, and limited knowledge of non-pharmacological pain management strategies. To address these challenges, some participants shared their experiences, such as applying cold compresses during acute attacks and warm compresses to relieve post-attack stiffness. These approaches are supported by evidence on non-pharmacological gout management (Abhishek & Doherty, 2018).

The present study demonstrated that participation in a SHG intervention significantly improved self-efficacy among patients, indicating that even brief, structured peer-support intervention can produce meaningful improvements in patients' confidence to manage their condition. This finding is consistent with previous studies showing that SHGs enhance Self-Efficacy by creating opportunities for experiential learning, reciprocal encouragement and shared problem-solving among individuals facing similar health challenges (Dose et al., 2024; Eze et al., 2025; Kulsum et al., 2021; Mehrmann & Gerlach, 2024; Rohloff et al., 2024). Beyond their health-related benefits, SHGs contribute to social empowerment by enhancing participants' public speaking, negotiation and communication skills, while strengthening their confidence in coping with daily life challenges and

making informed health-related decisions (Farahimanesh et al., 2023; Mahato & Jha, 2024; Melisse et al., 2023).

During SHG sessions, participants also provided emotional support to one another. The sharing segment allowed them to discuss feelings, recurrent problems, unresolved challenges, and successful strategies. Consistent with other studies, SHG fosters adaptive coping mechanisms that extend beyond family support to include group support (Sulistyowati & Sulistyowati, 2019). Similar benefits have been reported for mental health outcomes in vulnerable populations, where SHG reduces isolation and improves knowledge and skills (Chingono et al., 2022).

Self-Help Groups (SHGs) as a form of Peer group intervention, have been successfully utilized in rural communities (Zhong et al., 2023) through disease-specific support groups (Xu et al., 2025). A similar approach is found in Japan through Hans Kai, a community model that integrates health education and social support (Cameranesi et al., 2023). As gout is a lifelong condition that requires ongoing self-management, interacting with peers who have similar experiences enables individuals to exchange knowledge, provide mutual support, and better cope with the challenges of the disease (Wu et al., 2025). This shared experience may contribute to improved health outcomes, greater self-efficacy in self-care, enhanced social connectedness, reduced social isolation (Manning et al., 2025), and increased engagement with primary healthcare services (Heisler et al., 2024).

Barriers face-to-face meetings, including limited physical mobility and geographical inaccessibility, do not preclude the implementation of SHGs. These groups can be effectively delivered through digital communication platforms, such as telephone-based support (Dose et al., 2024) and videoconferencing, such has been shown to successfully replicate essential group processes while fostering emotional connectedness and group cohesion (Constantini et al., 2023). Digital platforms also provide opportunities for self-reflection and facilitate the development of coping strategies to manage difficult situations (Micklitz et al., 2023). However, structured facilitation of digital interactions remains essential to enhance participants' self-efficacy, motivation, and adherence to SHG programs (Dose et al., 2024).

SHGs also provide a supportive environment that promotes self-reflection and reduces social isolation ((Micklitz et al., 2023). Strong identification with the group has been shown to indirectly enhance well-being by providing access to social resources, emotional support, and health literacy, all of which contribute to a more positive self-concept among participants (Eze et al., 2025). Through the exchange of information, emotional support, and shared lived experiences, SHGs strengthen individuals' internal resources and foster greater self-resilience in managing their health and everyday lives (Mahato & Jha, 2024).

The benefits of peer interaction and mutual support observed in SHG are consistent with the findings of the present study, which demonstrated the effectiveness of the SHG interventions in enhancing self-efficacy among patients with gout arthritis, empowering them to perform self-care and manage symptoms independently at home. This low-cost, community-based approach is particularly relevant in island and rural settings where access to healthcare services, health information, and healthcare professionals is limited. Through peer support and shared experiences, SHGs promote patient engagement and chronic disease self-management, while nurses serve as facilitators to ensure that discussions and information remain evidence-based. This approach has the potential to reduce dependence on healthcare services and can be adapted to support chronic disease management in geographically isolated communities worldwide.

This study has several limitations. First, the quasi-experimental design used a post-test only control group without a pretest for the control group, limiting our ability to establish baseline equivalence between groups. Second, there were baseline differences in duration of illness and education level between groups; although these were statistically controlled through ANCOVA and

shown not to confound the intervention effect, the absence of a pretest for the control group precludes fully establishing baseline equivalence on unmeasured variables that were not statistically adjusted for. Third, the SHG intervention consisted of only a single 45–60-minute session; the long-term sustainability of the self-efficacy improvement remains unknown. Fourth, the study was conducted in a single rural area with predominantly older participants (mean age >55 years), which may limit generalizability to urban or younger populations. Additionally, the participants' age and limited technological literacy prevented the integration of digital tools that could have enhanced the intervention. Future research should employ a randomized controlled design, include pretest measurements for both groups, evaluate multiple SHG sessions, and explore technology-assisted SHG models.

Conclusion

This study demonstrates that a single, brief Self-Help Group (SHG) session procedures a large and clinically meaningful improvement in self-efficacy among patients with gout arthritis, with the magnitudes of change both within the intervention group and relative to the control group – reflecting a large effect, underscoring the practical, not merely statistical, significance of this low-intensity intervention. This improvement remained robust even after accounting for baseline imbalance in illness duration and education level, confirming that the improvement is attributable to the intervention itself rather than to pre-existing differences between groups.

Compared to previous SHG studies, which have largely been conducted in urban or mainland rural settings and often involved multiple sessions or digital delivery platforms, this study contributes novel evidence that comparable, large-magnitude improvements in self-efficacy can be achieved through a single, low-resource, nurse-facilitated session delivered without digital infrastructure, in a geographically isolated archipelagic and border setting where such conditions have rarely been studied. This distinguishes the present findings from prior work and extends the evidence base for SHG effectiveness to a population and context that conventional chronic disease management models have largely overlooked.

These findings carry direct policy implications. Given its low cost, minimal infrastructure requirements, and reliance on existing community health center personnel rather than additional specialist. SHG is a readily scalable strategy that local health authorities can integrate into routine primary care services in island and remote regions without substantial new investment. Incorporating structured SHG sessions into national and regional chronic disease management guidelines – particularly for non-communicable diseases requiring long-term self-management, such as gout – would provide concrete evidence-based pathway for strengthening community-based care in areas where facility-based access remains constrained by geography.

Taken together, this study provides a scientific contribution toward the development of chronic disease self-management programs in archipelagic and border regions, where conventional facility-based approaches are often limited by geographic isolation and constrained healthcare access. By leveraging existing sociocultural resources – strong kinship networks and community cohesion – the SHG model offers a practical, low-cost, and scalable strategy for community health centers to strengthen chronic disease self-management in island settings, with potential adaptability to other geographically isolated communities.

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