



Implementation of Rheumatic Exercise to Manage Chronic Pain in a Patient with Rheumatoid Arthritis: A Family Nursing Case Study

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ABSTRACT

Introduction: Rheumatoid arthritis (RA) is a chronic autoimmune disease characterized by persistent joint inflammation, pain, stiffness, and decreased functional ability, significantly affecting patients' quality of life. Chronic pain is one of the primary nursing problems experienced by individuals with RA. Rheumatic exercise is a non-pharmacological intervention that can improve joint flexibility, muscle strength, and functional mobility while reducing pain intensity. Family involvement is essential in supporting the continuity of nursing interventions at home.

Objective: This case study aimed to describe the implementation of rheumatic exercise in managing chronic pain in a patient with rheumatoid arthritis through family nursing care.

Method: his descriptive case study applied the family nursing process, including assessment, nursing diagnosis, planning, implementation, and evaluation. The subject was a female patient diagnosed with rheumatoid arthritis who experienced chronic pain, joint stiffness, and limitations in daily activities. Rheumatic exercise was performed once daily for approximately 15 minutes over three consecutive days, accompanied by education and active family participation to encourage independent exercise practice at home.

Result: The patient's pain intensity gradually decreased from a Numeric Rating Scale (NRS) score of 5 before the intervention to 4 on the first day, 2 on the second day, and 0 on the third day. Improvements were also observed in joint mobility, physical function, and the patient's confidence in performing daily activities. Family members demonstrated adequate knowledge and skills to support the continuation of rheumatic exercise at home.

Conclusion: The implementation of rheumatic exercise within family nursing care effectively reduced chronic pain and improved functional mobility in a patient with rheumatoid arthritis. This intervention is simple, safe, cost-effective, and may serve as an effective complementary nursing strategy for chronic pain management in community and home care settings.

Keywords: rheumatoid arthritis; chronic pain; rheumatic exercise; family nursing care

Introduction

Rheumatoid arthritis (RA) is a chronic systemic autoimmune disease characterized by persistent synovial inflammation that progressively leads to cartilage destruction, bone erosion, joint deformity, and functional disability (Smolen et al., 2023). The disease commonly affects the small joints of the hands, wrists, feet, and knees and is accompanied by chronic pain, joint stiffness, and impaired physical function, all of which substantially reduce patients' quality of life (World Health Organization [WHO], 2023). Chronic pain is one of the most prevalent nursing problems in patients with RA because it limits daily activities, decreases physical mobility, and negatively affects psychological well-being. Therefore, comprehensive pain management remains a primary goal of nursing care.

Pain in rheumatoid arthritis results from persistent inflammatory processes involving the synovial membrane and surrounding tissues, leading to continuous nociceptor stimulation and progressive functional impairment (Smolen et al., 2023). Although pharmacological therapies, including disease-modifying antirheumatic drugs (DMARDs), corticosteroids, and nonsteroidal anti-inflammatory drugs (NSAIDs), are effective in controlling inflammation, they may not completely eliminate chronic pain and are associated with adverse effects during long-term use. Consequently, complementary non-pharmacological interventions have become an essential component of comprehensive pain management (England et al., 2023).

According to the World Health Organization (2023), approximately 18 million people worldwide are living with rheumatoid arthritis, with women accounting for nearly 70% of cases. Current international guidelines from the American College of Rheumatology (ACR) and the European Alliance of Associations for Rheumatology (EULAR) recommend regular therapeutic exercise as a core component of rheumatoid arthritis management because it improves pain, joint mobility, physical function, and overall quality of life (England et al., 2023; Smolen et al., 2023). These recommendations support the integration of structured exercise into multidisciplinary and nursing care for individuals with rheumatoid arthritis.

Rheumatic exercise is a structured therapeutic exercise program designed to maintain joint flexibility, improve muscle strength, enhance blood circulation, and reduce pain through controlled physical movements. In nursing practice, this intervention is considered safe, inexpensive, and feasible for home-based care because it can be performed independently after appropriate education and supervision. Furthermore, involving family members in the implementation of rheumatic exercise may improve patient adherence, reinforce self-management, and ensure the continuity of rehabilitation in community settings.

Family nursing care recognizes the family as an essential partner in managing chronic illnesses. Through education, counseling, and empowerment, nurses help family members acquire the knowledge and skills needed to support patients in implementing therapeutic interventions at home. Within the Indonesian nursing framework, the nursing process is guided by the Standar Diagnosis Keperawatan Indonesia (SDKI), Standar Intervensi Keperawatan Indonesia (SIKI), and Standar Luaran Keperawatan Indonesia (SLKI), which provide standardized approaches for assessment, intervention, and evaluation of nursing outcomes (Indonesian National Nurses Association [PPNI], 2018, 2019).

To our knowledge, no previous case study has specifically described the implementation of rheumatic exercise through family nursing care using the Indonesian nursing standards (SDKI, SIKI, and SLKI). Most published studies have focused on evaluating the effectiveness of exercise interventions using quantitative or quasi-experimental designs, while detailed descriptions of the nursing process in family-centered care remain limited. This gap highlights the need for clinical evidence illustrating how standardized nursing care can be integrated with rheumatic exercise in real-world community practice.

Therefore, this case study aimed to describe the implementation of rheumatic exercise to manage chronic pain in a patient with rheumatoid arthritis through family nursing care using the Indonesian nursing standards (SDKI, SIKI, and SLKI). The findings are expected to provide practical evidence supporting the integration of standardized nursing care and rheumatic exercise as a complementary strategy for chronic pain management in patients with rheumatoid arthritis receiving family-based care.

Objective

To describe the implementation of rheumatic exercise to manage chronic pain in a patient with rheumatoid arthritis through family nursing care.

Method

This study employed a descriptive case study design following the principles of the CARE (CAsE REport) Guideline to describe the implementation of rheumatic exercise in managing chronic pain in a patient with rheumatoid arthritis through family nursing care. The nursing care process included comprehensive assessment, nursing diagnosis, planning, implementation, and evaluation based on the Indonesian Nursing Standards.

The subject was one female patient diagnosed with rheumatoid arthritis who experienced chronic pain, joint stiffness, and impaired physical mobility. The patient lived with her family, who actively participated throughout the nursing care process. The case was selected purposively based on the following criteria: (1) a confirmed diagnosis of rheumatoid arthritis, (2) chronic pain as the primary nursing problem, (3) willingness to participate in nursing care, and (4) family availability to support home-based interventions.

Data were collected through patient and family interviews, physical examination, pain assessment using the Numeric Rating Scale (NRS), direct observation, and review of the patient's medical records. Nursing diagnoses were formulated according to the Standar Diagnosis Keperawatan Indonesia (SDKI), while nursing interventions and expected outcomes were developed based on the Standar Intervensi Keperawatan Indonesia (SIKI) and Standar Luaran Keperawatan Indonesia (SLKI) issued by the Indonesian National Nurses Association (PPNI).

The primary intervention was rheumatic exercise, which was performed once daily for approximately 15 minutes over three consecutive days. Each session consisted of warm-up exercises, joint flexibility and range-of-motion exercises, strengthening movements, and cooling-down exercises. In addition to exercise therapy, health education was provided to both the patient and family regarding rheumatoid arthritis, chronic pain management, the

benefits of rheumatic exercise, and strategies for continuing the exercise independently at home.

Patient outcomes were evaluated daily by assessing pain intensity using the Numeric Rating Scale (NRS), joint mobility, physical function, and the patient's ability to perform daily activities. Family understanding and participation were also evaluated through return demonstrations of rheumatic exercise and observation of their ability to assist the patient during the intervention.

The patient and family received an explanation regarding the purpose and procedures of the nursing intervention before participation. Written informed consent was obtained, and patient confidentiality was maintained by anonymizing all identifying information throughout the case report.

Table 1. Timeline of the Case Management

Day	Activity
Day 1	Comprehensive nursing assessment, including patient interview, physical examination, pain assessment (Numeric Rating Scale), and family assessment
Day 1	Identification of nursing diagnosis based on SDKI: Chronic pain related to chronic musculoskeletal condition
Day 1	Nursing care planning based on SIKI and expected outcomes based on SLKI
Day 1	Health education provided to the patient and family regarding rheumatoid arthritis, chronic pain management, and rheumatic exercise
Day 1	First session of rheumatic exercise (approximately 15 minutes)
Day 2	Second session of rheumatic exercise and reassessment of pain intensity, joint mobility, and patient response
Day 3	Third session of rheumatic exercise, final evaluation of pain intensity, functional mobility, and family competence in performing the exercise independently
Day 3	Documentation of nursing outcomes and completion of the family nursing care process

Result

A family nursing assessment identified one female patient diagnosed with rheumatoid arthritis who presented with chronic pain as the primary nursing problem. During the initial assessment, the patient reported intermittent stabbing pain extending from the lower back to both lower extremities, accompanied by joint stiffness and limited mobility. The initial pain intensity was 5 on the Numeric Rating Scale (NRS). Based on the assessment findings, the nursing diagnosis was established as chronic pain related to joint tissue damage.

The nursing intervention focused on the implementation of rheumatic exercise as a complementary non-pharmacological therapy integrated into family nursing care. Rheumatic exercise was conducted once daily for approximately 15 minutes over three consecutive days. Each exercise session consisted of three phases: warming-up exercises, core joint mobility and

flexibility exercises, and cooling-down exercises. During the intervention, education was also provided to both the patient and family regarding the objectives, benefits, correct exercise techniques, and recommendations for continuing the exercise independently at home.

Table 2. Baseline Assessment Findings

Variable	Findings
Patient	One female patient with rheumatoid arthritis
Main complaint	Chronic pain from the lower back radiating to both legs
Pain characteristic	Intermittent, stabbing pain
Initial pain intensity	NRS = 5
Additional symptoms	Joint stiffness and limited physical mobility
Nursing diagnosis	Chronic pain related to joint tissue damage

The patient's clinical response was evaluated daily using pain intensity, joint mobility, physical comfort, and ability to perform activities. Progressive improvement was observed throughout the intervention period.

Table 3. Daily Evaluation of Rheumatic Exercise

Day	Nursing Intervention	Pain Scale (NRS)	Clinical Response
Day 1	Rheumatic exercise (15 minutes) and family education	5 → 4	Pain decreased slightly; patient became more relaxed and was able to follow the exercise.
Day 2	Rheumatic exercise (15 minutes)	4 → 2	Joint stiffness decreased, mobility improved, and the patient reported greater comfort during movement.
Day 3	Rheumatic exercise (15 minutes)	2 → 0	Pain resolved, joint movement improved, no additional complaints, and the patient performed activities more comfortably.

Overall, pain intensity showed a progressive decline throughout the intervention period, decreasing from an initial NRS score of 5 before treatment to 4 after the first session, 2 after the second session, and 0 after the third session. The reduction in pain was accompanied by improvements in joint flexibility, decreased stiffness, enhanced physical mobility, and greater comfort during daily activities. No adverse events or additional complaints were observed during the intervention period.

In addition to patient outcomes, family participation improved during the nursing process. Following education and demonstration by the nurse, family members were able to understand the purpose and procedure of rheumatic exercise, assist the patient during exercise sessions, and demonstrate the exercise independently. Family involvement was considered an important factor in supporting treatment adherence and ensuring the continuity of home-based rehabilitation.

Table 4. Summary of Nursing Outcomes

Outcome Indicator	Before Intervention	After Three Days
Pain intensity	NRS 5	NRS 0
Joint stiffness	Present	Reduced
Physical mobility	Limited	Improved
Comfort during activity	Poor	Improved
Family knowledge of rheumatic exercise	Limited	Able to demonstrate the exercise independently
Adverse events	Not applicable	None observed

The findings indicate that the implementation of rheumatic exercise within a family nursing care approach was associated with progressive pain reduction and functional improvement. The patient demonstrated complete pain relief by the end of the intervention period, while the family acquired the knowledge and practical skills necessary to continue the exercise program independently at home.

Discussion

The present case study demonstrated that the implementation of rheumatic exercise through family nursing care was associated with a progressive reduction in chronic pain in a patient with rheumatoid arthritis. The patient's pain intensity decreased from 5 on the Numeric Rating Scale (NRS) before the intervention to 4 on the first day, 2 on the second day, and 0 on the third day. In addition to pain reduction, improvements were observed in joint flexibility, physical mobility, and the patient's ability to perform daily activities. These findings indicate that rheumatic exercise can be successfully incorporated into family nursing care as a complementary intervention for chronic pain management.

The reduction in pain intensity observed in this case is consistent with previous studies reporting that therapeutic exercise significantly decreases pain and improves physical function in patients with rheumatoid arthritis. England et al. (2023) reported that structured exercise is strongly recommended as part of comprehensive rheumatoid arthritis management because it improves pain, muscle strength, joint mobility, and overall functional capacity. Likewise, Smolen et al. (2023) emphasized that exercise should accompany pharmacological therapy to optimize long-term clinical outcomes. Physiologically, regular joint movement stimulates synovial fluid circulation, enhances muscle flexibility, improves blood flow, and promotes endorphin release, thereby reducing pain perception and joint stiffness. From a nursing perspective, these findings support the inclusion of rheumatic exercise as an evidence-based independent nursing intervention for patients experiencing chronic pain.

An important finding in this case was the gradual improvement in the patient's physical mobility after three consecutive days of rheumatic exercise. Initially, the patient experienced joint stiffness and difficulty performing daily activities, whereas after the intervention the patient reported greater comfort during movement and demonstrated improved joint mobility. Similar findings have been reported by Baillet et al. (2022), who concluded that therapeutic exercise

enhances joint flexibility, muscle strength, and physical function in individuals with inflammatory arthritis. Improved mobility may be explained by increased joint lubrication, reduced periarticular muscle tension, and enhanced neuromuscular coordination resulting from repeated low-impact movements. Clinically, improved mobility enables patients to perform activities of daily living more independently and may reduce the risk of long-term disability.

Another important observation was the active participation of family members throughout the nursing care process. Family members attended health education sessions, observed each exercise session, and were able to demonstrate the rheumatic exercise independently at the end of the intervention. This finding is consistent with the EULAR recommendations on self-management, which emphasize that patient education and family support contribute to better adherence to long-term therapeutic interventions (Marques et al., 2021). Family involvement likely improved the patient's motivation, confidence, and willingness to continue exercising regularly at home. Therefore, incorporating family members into nursing interventions may enhance adherence and sustainability of rehabilitation programs beyond the clinical setting.

This case also demonstrates the practical application of the Indonesian Nursing Standards, including the Standar Diagnosis Keperawatan Indonesia (SDKI), Standar Intervensi Keperawatan Indonesia (SIKI), and Standar Luaran Keperawatan Indonesia (SLKI). The use of these standardized nursing frameworks facilitated systematic assessment, identification of chronic pain as the primary nursing diagnosis, implementation of rheumatic exercise as an independent nursing intervention, and evaluation of patient outcomes. Although previous studies have primarily evaluated exercise effectiveness using experimental designs (England et al., 2023; Smolen et al., 2023), this case provides practical evidence that standardized Indonesian nursing care can be integrated successfully with evidence-based non-pharmacological interventions in family and community settings. This integration strengthens the role of nurses in delivering holistic, patient-centered care while promoting continuity of care after discharge.

Although the patient's clinical outcomes were favorable, this case study has several limitations. The findings were derived from a single patient and therefore cannot be generalized to all individuals with rheumatoid arthritis. Furthermore, the intervention was conducted over only three consecutive days, limiting evaluation of long-term adherence and sustained pain reduction. Pain assessment relied primarily on the Numeric Rating Scale without evaluating disease activity, quality of life, or functional disability using standardized instruments. Future case series and longitudinal studies involving larger samples and longer follow-up periods are recommended to confirm the clinical benefits of rheumatic exercise within family nursing care.

Overall, this case study demonstrates that rheumatic exercise, when implemented through a family nursing approach, may contribute to meaningful reductions in chronic pain, improvements in joint mobility, and greater patient independence. The active involvement of family members and the use of standardized Indonesian nursing guidelines support the feasibility of integrating rheumatic exercise into routine nursing practice. These findings provide practical clinical evidence that may assist nurses in implementing low-cost, safe, and sustainable non-pharmacological interventions for patients with rheumatoid arthritis in community and home-care settings..

Conclusion

The implementation of rheumatic exercise through family nursing care was associated with a reduction in chronic pain and improvements in joint mobility and physical function in a patient with rheumatoid arthritis. The progressive decrease in pain intensity observed during the three-day intervention indicates that rheumatic exercise can serve as an effective complementary non-pharmacological nursing intervention for chronic pain management. Active family involvement also contributed to the successful implementation of the intervention by enhancing patient adherence and supporting the continuation of exercise at home.

This case study highlights the importance of integrating rheumatic exercise into comprehensive family nursing care for patients with rheumatoid arthritis. Nurses should consider incorporating this intervention into individualized nursing care plans to promote pain control, functional independence, and patient self-management in community and home-care settings. Further studies involving larger samples and longer follow-up periods are recommended to strengthen the evidence regarding the long-term effectiveness of rheumatic exercise in family nursing practice.

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