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Nursing Care For Physical Mobility Disorders In Mrs. M With Osteoarthritis At Rojin Home Iryou Houjin Aiwakai Ikeda, En Japan

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Abstract

Knee osteoarthritis is a major cause of impaired physical mobility in the elderly, especially in facilities such as Japanese nursing homes, with a high prevalence due to aging and obesity. This study aims to describe nursing care for impaired physical mobility in Mrs. M (88 years old) through Range of Motion (ROM) exercises. Using a descriptive single case study design at Ruojin Home Iryou Houjin Aiwakai Ikeda En, Japan (July 2025), the elderly population with knee OA with a single purposive sample (Mrs. M). Instruments included Gordon sheet, NRS pain, MMT, goniometer, observation, and interviews; analysis through narrative nursing process and pre-post chart. The results showed a decrease in pain NRS 2-3 to mild, improvement in antalgic gait, and tolerance to walk 5m x3 without excessive rest after 3 days of passive ROM plus mobilization, although MMT remained 3/5. Conclusion: ROM intervention is effective in improving daily function but requires a longer duration for significant improvement.

Keywords: Mobility Impairment, Knee Osteoarthritis, Range of Motion, Case Study, Nursing Care.

INTRODUCTION

The increase in the elderly population worldwide is accompanied by a decline in physiological function, particularly bone and joint health, which often leads to knee osteoarthritis with symptoms of pain, stiffness, and impaired mobility that reduce the quality of life of the elderly (WHO, 2020; Syifa, 2022). Globally, osteoarthritis is the leading cause of disability in those over 45 years of age, while in Japan, cohort studies such as the Iwaki and ROAD studies show a high prevalence in the elderly, especially women with obesity and advanced age (Eji Sasaki et al., 2020; Sonobe et al., 2024). This condition is crucial in senior living facilities because it impairs walking ability, balance, and independence in ADLs, representing a significant public health burden (GBD, 2023; Toda et al., 2023).

The severity of knee osteoarthritis is not only determined by radiographs, but functional impacts such as slow Timed Up and Go, risk of falls, and decreased quality of life are more influenced by pain and psychological factors than structural damage (Sonobe et al., 2024; Yokota et al., 2023). Early Knee Osteoarthritis (EKOA) is prevalent in middle-aged women (15%), with risk factors including age (OR 1.1), obesity (OR 1.2), and knee injury (OR 21.7), emphasizing early detection to prevent progression (Eji Sasaki et al., 2020). In Japanese nursing homes such as Ruojin Home, 10% of residents (aged 65-84 years) experience OA, urging evidence-based nursing interventions to maintain mobility (authors' observations; LOHAS cohort, 2024).

Although knee OA is a leading cause of mobility impairment in older adults, a gap exists between the burden of disability and standard non-pharmacological interventions in senior living facilities, where patients rely on pharmacology/surgery rather than exercise and education (Ismunandar et al., 2021; Sinaga et al., 2024). Mobility limitations trigger decreased independence, risk of falls, anxiety, and depression, requiring comprehensive care but rarely optimally integrated into daily practice (Kumar et al., 2020; Mayo, 2023). Observations at Ruojin Home revealed that nearly all residents experience physical impairments, with OA predominant, but lack of non-operative rehabilitation to reduce pain and increase range of motion (PPNI, 2019).

Range of Motion (ROM) exercises are effective in maintaining joint flexibility, reducing stiffness, strengthening muscles, and improving function in knee OA, but integration into nursing care for the elderly is limited (Potter & Perry, 2021; Mo et al., 2023). Systematic reviews show that ROM

(AROM/PROM), mobilization with movement, and home-based exercise reduce pain and improve ROM/6MWT, although biomechanical changes do not always parallel clinical improvement (Luan et al., 2022; Xiang et al., 2024). In the Japanese context, Oka et al. (2020) confirmed that early ROM predicted long-term outcomes after TKA, but this study was contextualized in nursing homes with minimal fall risk (Oka et al., 2020).

This study describes nursing care for physical mobility impairment in Mrs. M (88 years old, knee OA) at Ruojin Home, Japan, focusing on non-pharmacological ROM through assessment-diagnosis-planning-implementation-evaluation (Sinaga et al., 2024; Ningrum, 2021). The urgency lies in the evidence of Japanese nursing home practice, where ROM reduces pain NRS 2-3, increases gait/MMT 3/5 in 3 days, prevents high disability (observation; Lowford et al., 2024). Novelty: In-depth case study combines clinical data with the latest evidence of ROM/home-based in a setting scarce in Indonesian literature, adding cross-cultural nursing references (PPNI, 2019; Chen, 2024).

RESEARCH METHODS

Types and Methods of Research

This study uses a descriptive design with a single case study approach to describe the nursing care process for physical mobility disorders in patients with knee osteoarthritis in depth and contextually, as defined by Sugiyono (2021), who emphasizes case studies as explorations of unique phenomena in natural settings through data triangulation (Sugiyono, 2021). This approach aligns with Creswell and Poth's (2021) recommendations for qualitative case studies that focus on holistic processes, from assessment to nursing evaluation, enabling a comprehensive understanding of the impact of ROM interventions on a single representative subject (Creswell & Poth, 2021). The descriptive-case study methodology was chosen because it is suitable for clinical nursing practice, where the primary objective is to describe the implementation of SLKI/SIKI planning step by step without variable manipulation, as outlined by Emzir (2022) in a descriptive qualitative research framework for medical cases (Emzir, 2022).

Data Analysis Instruments and Techniques

Data collection instruments included the Gordon Functional Health Pattern assessment sheet, ROM observation sheet (passive/active SOP), NRS pain scale, MMT muscle strength, ROM goniometer, and in-depth interviews with patients/nurses, supported by ethical photo/video documentation for triangulation (PPNI, 2019; Potter & Perry, 2021). Data analysis techniques followed the nursing process (assessment, SLKI/SIKI planning, implementation, evaluation) with a descriptive narrative approach, including pre-post intervention comparisons via tables and qualitative thematic analysis for the pain/mobility theme (Sudaryono, 2022). Instrument validity was maintained through goniometer calibration, reliability of repeated observations, and credibility through member checks, in accordance with nursing case study protocols that emphasize inductive content analysis for functional outcomes (Creswell & Poth, 2021; Herawati, 2024).

Population and Sample

The population was elderly with knee osteoarthritis and impaired physical mobility at Ruojin Home Iryou Houjin Aiwakai Ikeda En, Japan, during the internship in July 2025, with inclusion criteria: diagnosis of knee OA (chronic pain, limited ROM, MMT <4), age >65 years, tolerance of ROM intervention, and informed consent (Mrs. M, 88 years old, 69 kg, wheelchair-dependent). A single purposive sample was chosen because the nature of the case study explores in-depth representative cases, not generalizations, in accordance with Sugiyono (2021) for non-probability sampling in qualitative research of single cases (Sugiyono, 2021). This selection is supported by Emzir (2022) who recommends unit samples for descriptions of therapeutic processes such as nursing care, ensuring data saturation from daily observations and local collaboration (Emzir, 2022).

Research Procedures

The procedure begins with preparation (ethics clearance, informed consent, instrument calibration), baseline assessment (first 24 hours: observation of ADL, ROM, pain), diagnosis/planning (SDKI/SLKI), 3-day phased implementation (ROM once daily, standing/walking mobilization, education), daily/pre-post evaluation with comparison tables, and documentation (observation photos, guidance sheets), as scheduled July 14-16, 2025 (Potter & Perry, 2021). Ethics are maintained confidentiality, non-maleficence, and collaboration of Japanese rehabilitators, with source triangulation (observation, interviews, medical records) for trustworthiness (Sudaryono, 2022). This process is iterative, adaptive to patient tolerance, in line with Creswell's (2021) case study design which emphasizes temporal chronology and cultural context for transferability validity (Creswell & Poth, 2021; Herawati, 2024).

RESULTS AND DISCUSSION

Based on the case management conducted according to the stages of the nursing process, from assessment to evaluation, several findings were obtained that require discussion. This discussion relates to the alignment between the theoretical review and the case, the determination of the nursing diagnosis, the planning and implementation of nursing interventions, and the client's response to the interventions.

Nursing care was provided to Mrs. M with knee osteoarthritis for three days. Based on the results of the assessment and evaluation, the author identified a major nursing problem, namely Impaired Physical Mobility related to decreased muscle strength.

Nursing Assessment

The results of the nursing assessment of Mrs. M compared with the theory are presented in Table 1 below:

Table 1. Comparison of Study Results

No	Theory	Case
Signs and Symptoms Associated with Nursing Problems: Impaired Physical Mobility		
1.	Pain during movement or activity causes decreased mobility ability	The patient complained of pain in the left knee when standing and walking (NRS 2–3)
2.	Limited/decreased joint range of motion (ROM)	Left knee ROM is limited: flexion ±80°, extension −20°
3.	Decreased Muscle Strength (MMT)	Lower extremity muscle strength MMT 3/5
4.	Inability to maintain body position while standing or walking	The patient is unstable standing, easily loses balance
5.	Dependence on mobility aids	The patient still uses a wheelchair for moving and mobilization.
6.	Activity intolerance: getting tired quickly when walking	The patient gets tired quickly, activity stops several times
7.	Decline in Activities of Daily Living (ADL)	Patients are not independent, changing positions, bathing, toileting is assisted by nurses
8.	Risk of falls increases due to weakness & instability	Gait is unstable, nurses must take care when walking
Signs and Symptoms Associated with the Underlying Disease (Osteoarthritis)		
1.	Joint pain that worsens with activity and improves with rest	Pain increases when walking, decreases when sitting
2.	Joint stiffness especially in the morning or after prolonged rest	The patient appears stiff when first trying to stand/walk.

No	Theory	Case
3.	Crepitus on joint movement (rough/crackling movement)	The patient complained of a "sore/dragging" sensation when bending the knee.
4.	Mild swelling may occur, but is not always present.	No swelling was found, only a red rash.
5.	Joint deformities may occur in chronic OA.	No obvious deformity was found, but the walking posture was slanted.
6.	Decreased knee joint function affects walking patterns	The patient walks with an antalgic gait (avoiding weight on the left knee)

The sources of assessment data were obtained through direct interviews with patients and families, observation of patient conditions, physical examinations, and review of medical records.

Based on the assessment results, data were obtained that patient Mrs. M is 88 years old, weighs 69 kg and is categorized as obese based on body mass index. The patient is undergoing treatment for impaired physical mobility related to osteoarthritis of the lower extremities. The patient's main complaint is the inability to maintain a standing position for long periods, especially in the left knee. The patient also complained of pain when walking and changing positions, and easily feels tired after doing activities.

Observations showed the patient appeared to have limited mobility, particularly in his left lower extremity. He had difficulty standing and walking without assistance and used a wheelchair as his primary means of mobility. Physical examination revealed limited range of motion (ROM) in his left knee, with flexion reaching 80° and extension reaching -20°, according to medical records. His left lower extremity muscle strength was at MMT 3/5, indicating muscle strength was limited to resisting gravity without additional resistance.

Furthermore, the patient exhibited an antalgic gait and complained of tenderness in the left knee without swelling or muscle spasms. This condition impacted the patient's ability to perform activities of daily living (ADLs), with some basic mobility tasks requiring assistance. According to family information, there was no history of similar illnesses or other musculoskeletal disorders in the patient's family.

Based on the results of the assessment that has been conducted, the data found in patient Mrs. M shows that there is a conformity with the theory of impaired physical mobility. According to the Indonesian Nursing Diagnosis Standards (SDKI, 2018), impaired physical mobility is defined as limitations in independent physical movement characterized by decreased muscle strength, limited range of motion, pain during movement, and the inability to perform functional activities. In patient Mrs. M, several of these characteristics were found, including pain in the knee joint, limited range of motion, decreased lower extremity muscle strength, and dependence on assistance in performing mobility activities.

Furthermore, the clinical manifestations found also align with the theory of osteoarthritis in the elderly. According to Smeltzer and Bare (2020), osteoarthritis is characterized by joint pain that increases with activity and decreases with rest, joint stiffness, decreased joint function, and changes in gait patterns such as antalgic gait. The patient was found to have increased pain during walking and standing, limited knee joint function, and an antalgic gait pattern, demonstrating the congruence between the patient's clinical data and the existing theory.

Advanced age and obesity also play a role in exacerbating physical mobility impairments in patients. The World Health Organization (WHO, 2022) states that an increase in body mass index can increase the mechanical load on weight-bearing joints, particularly the knee joint, thereby accelerating cartilage damage and exacerbating pain and mobility limitations in osteoarthritis sufferers. This condition supports the findings in patient Mrs. M, who experienced rapid fatigue and limitations in activities of daily living (ADL).

Nursing Diagnosis

Based on the assessment results, the patient exhibited limited physical mobility, characterized by decreased muscle strength in the left lower extremity with a MMT score of 3/5, limited range of motion in the left knee joint, instability when standing and walking, and dependence on a wheelchair for mobility. The patient also appeared to require assistance in performing daily functional activities.

These subjective and objective data indicate a decline in the patient's ability to move and maintain posture independently, leading to a nursing problem of impaired physical mobility. This condition aligns with the diagnostic criteria for Impaired Physical Mobility according to the Indonesian Nursing Diagnosis Standards (SDKI), which is characterized by decreased muscle strength, limited range of motion, pain on movement, and an inability to perform functional activities independently (DPP PPNI, 2018).

To reinforce the theory, according to the North American Nursing Diagnosis Association (NANDA), impaired physical mobility is a condition where an individual experiences limitations in performing body movements independently due to factors such as decreased muscle strength, joint stiffness, impaired balance, and pain when moving. Based on the conformity between the patient assessment data and these criteria, the nursing diagnosis established for Mrs. M is Impaired Physical Mobility related to decreased muscle strength (D.0054).

Nursing Interventions

Nursing interventions provided to patients based on the diagnosis of Physical Mobility Impairment refer to the Indonesian Nursing Intervention Standards (SIKI), namely Mobilization Support (I.05173) and Muscle Strengthening Exercises (I.05184). These interventions aim to achieve the nursing outcome of Physical Mobility (L.05042) in accordance with the Indonesian Nursing Outcome Standards (SLKI).

The targets to be achieved after nursing actions for 3 x 24 hours include increasing extremity movement, increasing muscle strength, increasing joint range of motion (ROM), and reducing pain and limited movement in patients.

The intervention plan includes identifying pain levels before activity, identifying the patient's physical tolerance for exercise, and implementing mobilization and muscle strengthening exercises according to the patient's abilities. The interventions provided include passive range of motion (ROM) exercises, standing exercises, assisted walking exercises, and education on simple mobilization techniques and the importance of regular physical activity to maintain mobility.

The intervention was carried out once daily, in a structured manner, in the morning, after the patient received pain medication, taking into account the patient's condition and tolerance. Prior to the ROM and mobilization exercises, the researchers checked the patient's vital signs to assess their readiness for the activity. The examination results indicated that the patient's condition was stable, allowing the exercises to proceed as planned.

Before performing ROM exercises, the patient is positioned as comfortably as possible on the bed, then given a gentle light massage on the waist and left knee area as an effort to relax the muscles to reduce tension and increase patient comfort during the exercise.

Each session lasted approximately 45 minutes, including preparation time. This duration complied with the provisions and procedures of the rehabilitation unit and the service policies of the ward where the study was conducted. The intervention focused on the lower extremities, specifically the left knee joint. The intervention included ROM exercises, lower extremity muscle strengthening exercises, and mobilization exercises with the assistance of a nurse. Each session was evaluated based on patient response, pain level, activity tolerance, improvement in muscle strength, and functional mobility.

The intervention provided has been adjusted to the assessment results which show a decrease in MMT 3/5 muscle strength, limited left knee ROM, and limited physical mobility, so that this intervention is relevant and appropriate in supporting the improvement of the patient's functional abilities.

As reinforcement, mobilization support interventions and muscle strengthening exercises align with non-pharmacological management recommendations for osteoarthritis patients. According to Smeltzer and Bare (2020), ROM exercises and lower extremity muscle strengthening can increase joint flexibility, improve the strength of supporting muscles, and reduce stiffness and pain. WHO (2022) also states that gradual mobilization and controlled physical exercise in older adults play a crucial role in improving mobility function, reducing the risk of falls, and maintaining independence in daily activities.

Nursing Implementation

Based on the action plan at the nursing care stage, nursing interventions were provided to the patient for three consecutive days, namely on July 14–16, 2025. The interventions provided referred to the Indonesian Nursing Intervention Standards (SIKI), including Mobilization Support (I.05173) and Muscle Strengthening Exercises (I.05184).

Interventions are implemented consistently every day. However, patient conditions and responses vary between sessions, so implementation records are compiled and described separately per day. This approach aims to objectively monitor patient mobility progress, assess exercise tolerance, identify inhibiting factors, and evaluate the effectiveness of nursing interventions.Nursing implementation is carried out as follows:

First day, July 14, 2025

On the first day, before implementing nursing interventions, the author conducted an initial assessment by identifying the patient's pain level and physical complaints, as well as checking vital signs to assess the patient's readiness for activities. The assessment results indicated that the patient's condition was stable, allowing nursing interventions to be implemented as planned.

Passive Range of Motion (ROM) exercises were performed once daily by a medical rehabilitation professional, focusing on the lower extremities. The author acted as an observer during the ROM exercises, as he was not authorized to perform the rehabilitation activities independently. Passive ROM exercises were provided to help maintain joint range of motion and prevent stiffness in the patient's lower extremities.

In addition to ROM procedures, the author implemented nursing interventions in the form of mobilization support and lower extremity strengthening exercises according to the patient's tolerance. The author assisted the patient in position changes, assisted with 10 standing and sitting exercises, and accompanied the patient while walking under close supervision. Walking exercises were performed with the assistance of two people, with the author assisting the patient to maintain balance and safety. The patient was able to walk approximately 5 meters three times back and forth.

The author also assists patients with Activities of Daily Living (ADL), such as helping them transfer from their wheelchair to their bed, and assisting them with transfers from their wheelchair to the toilet and back. Furthermore, the author provides education on proper breathing techniques and simple mobilization exercises to improve patient comfort and tolerance for activity.

Subjectively, the patient reported slight pain in the lower back and itching in both legs. Objectively, the patient was seen sitting in a reclined position in a wheelchair and had a reddish rash on both lower legs. Lower extremity muscle strength was 3/5 with limited joint range of motion.

During the exercises and mobilization, the patient appeared cautious and occasionally complained of mild back pain. However, the patient was able to participate in all the exercises and activities with reasonable tolerance. There were no signs of shortness of breath or excessive fatigue during or after the nursing procedures.

Second day, July 15, 2025

On the second day, prior to implementing nursing interventions, the author conducted an initial assessment by identifying the patient's pain level and physical complaints, as well as assessing vital signs to assess her readiness for activities. The assessment indicated that the patient was stable, allowing nursing interventions to be implemented according to the established plan.

Passive range of motion (ROM) exercises on the lower extremities were performed once daily by a medical rehabilitation professional. The author acted as an observer during these procedures, as he was not authorized to perform rehabilitation activities independently. Passive ROM exercises aimed to maintain joint range of motion and prevent stiffness in the patient's lower extremities.

In addition to ROM exercises, the author implemented nursing interventions in the form of mobilization support and lower extremity strengthening exercises according to the patient's tolerance. The author assisted the patient in position changes, assisted with 10 standing and sitting exercises, and assisted with walking exercises under close supervision. Walking exercises were performed with the assistance of two people, with the author playing a role in maintaining the patient's balance and safety. The patient was able to walk approximately 5 meters three times back and forth.

The author also assists patients with Activities of Daily Living (ADL), such as assisting with transfers from the wheelchair to the bed and assisting with transfers from the wheelchair to the toilet and back. Furthermore, the author provides education on simple breathing and mobilization techniques during exercise to improve patient comfort and tolerance for activity.

Subjectively, the patient continued to report mild pain in the lower back and itching in both legs. Objectively, the patient appeared to be sitting in a reclined position in a wheelchair and had a reddish rash on both lower legs. Lower extremity muscle strength remained at MMT 3/5, with limited joint range of motion that had not significantly improved.

During the exercises and mobilization, the patient appeared more cooperative and cautious than the previous day. He was able to perform the entire exercise series with reasonable tolerance, although he occasionally complained of mild back pain. There were no signs of shortness of breath or excessive fatigue during or after the nursing procedures.

The third day, July 16, 2025

On the third day, prior to implementing nursing interventions, the author conducted an initial assessment by identifying the patient's physical complaints and checking vital signs to assess her readiness for activities. The assessment results indicated that the patient's condition was stable, allowing nursing interventions to proceed as planned.

Passive Range of Motion (ROM) exercises were performed once daily by a medical rehabilitation professional, focusing on the lower extremities. The author acted as an observer during the procedure. Passive ROM exercises were performed to maintain joint range of motion and prevent stiffness in the patient's lower extremities.

In addition to ROM measures, the author implemented nursing interventions in the form of mobilization support and lower extremity strengthening exercises as tolerated by the patient. The author assisted the patient in standing and sitting back up 10 times and walking exercises with assistance and close supervision. The patient was able to walk approximately 5 meters three times back and forth without requiring additional rest compared to the previous day.

Subjectively, the patient reported feeling sleepy and slightly tired, but did not complain of severe pain during the exercises. Objectively, the patient's gait still exhibited an antalgic gait, but appeared lighter than the previous day. The left knee joint range of motion appeared functionally smoother, and lower extremity muscle strength remained at MMT 3/5.

During the intervention, the patient appeared more confident in performing walking exercises, although supervision was still required. The patient's response indicated improved exercise tolerance, minimal complaints, and no signs of shortness of breath or excessive fatigue were observed during or after the nursing intervention.

Nursing Evaluation

The results of the evaluation of nursing care for physical mobility disorders provided to Mrs. M with osteoarthritis from July 14 to 16, 2025 can be seen below:

First day, July 14, 2025

On the first day of the intervention, the patient responded quite well to the mobilization support and passive ROM exercises provided. Subjectively, the patient complained of slight pain in the lower back and itching in both legs.

Objectively, the patient was seen sitting in a reclined position in a wheelchair and had a reddish rash on both lower legs. Lower extremity muscle strength remained at MMT 3/5. The left knee joint range of motion remained limited, with approximately 80° of flexion and −20° of extension, according to the assessment.

The patient was able to follow the walking exercise for ±5 meters three times back and forth under close supervision, but appeared cautious and occasionally complained of mild pain with an NRS scale of 2. The patient's tolerance to the exercise was assessed as quite good, indicated by the absence of complaints of shortness of breath or excessive fatigue during and after the exercise.

However, the patient's mobility is still dependent on a wheelchair and requires assistance with mobility activities. Based on the results of the first day's evaluation, the patient's physical mobility issues were assessed.not resolved and nursing interventions need to be continued.

Second day, July 15, 2025

On the second day of nursing intervention, the patient continued to exhibit limitations in physical mobility. Subjectively, the patient complained of pain in the left knee, particularly when standing and initially walking.

Objectively, the patient walked with an antalgic gait and appeared less stable when changing positions. His movements appeared slower and more cautious than the previous day. Lower extremity muscle strength remained at MMT 3/5 and showed no improvement.

The patient was able to complete the approximately 5-meter walking exercise three times back and forth, but appeared to tire more quickly than on the first day and required short rest breaks during the exercise. Pain during walking was rated at NRS 3.

The patient's response indicated that he was still able to complete the entire exercise series, but tended to slow down to avoid pain. Activity tolerance was assessed as slightly decreased compared to the previous day, but the exercises could still be completed with assistance and supervision. The patient's daily mobility still required nursing assistance.

Based on the results of the second day's evaluation, the patient's physical mobility problems were deemed unresolved and nursing interventions needed to be continued.

The third day, July 16, 2025

On the third day of nursing intervention, the patient subjectively stated that he felt sleepy and somewhat tired, but did not complain of severe pain when carrying out activities.

Objectively, the patient's gait still exhibited an antalgic gait, but appeared more stable than the previous day. Knee range of motion appeared slightly smoother, and the patient was able to complete three round-trip walking exercises of approximately 5 meters without requiring additional rest. This indicates improved activity tolerance compared to the second day.

However, lower extremity muscle strength remains at MMT 3/5, and the patient is unable to optimally support body weight without assistance. During mobilization activities, the patient still requires supervision to maintain balance and safety.

The patient's response indicated increased confidence in movement and relatively good exercise tolerance. However, overall mobility function did not show significant improvement. Based on the third-day evaluation, the patient's physical mobility issues were deemed unresolved, but showed positive progress compared to the previous day.

Based on the evaluation of the nursing care provided over three days, it can be concluded that the patient's Physical Mobility Impairment problem has not been fully resolved. Although there was slight improvement on the third day in the form of increased movement fluency and activity tolerance, lower extremity muscle strength remained at MMT 3/5, and the patient still required assistance with mobility and daily activities.

Research Limitations

In this case study research, there are several limitations that affect the research process and results, including:

1. The limitations of this study lie in the limited supporting data, where not all patient clinical information could be obtained completely during the data collection period, so that several aspects of analysis and discussion could not be carried out optimally.
2. Limitations in this study relate to communication and language barriers between patients and researchers, preventing optimal exploration of subjective data. This situation limited some of the subjective information obtained.
3. This research was conducted within the context of student clinical practice, so some nursing interventions were implemented through collaboration and supervision by authorized healthcare professionals, such as ward nurses and medical rehabilitation staff. This situation limited the researcher's autonomy in carrying out all procedures independently, particularly the implementation of Range of Motion (ROM) exercises, thus not having full control over the interventions.

CONCLUSION

This case study concludes that nursing care for physical mobility impairment in Mrs. M with knee osteoarthritis at Ruojin Home Iryou Houjin Aiwakai Ikeda En, Japan, through the implementation of passive Range of Motion (ROM) exercises and mobilization support for three days successfully reduced subjective pain intensity from NRS 2-3 to mild, increased functional smoothness of antalgic gait patterns, and improved activity tolerance such as walking 5 meters back and forth without excessive rest, although muscle strength (MMT 3/5) and joint range of motion remained limited. These findings confirm the effectiveness of the non-pharmacological intervention SLKI/SIKI (PPNI, 2019) in optimizing daily mobility in the elderly, in line with evidence that ROM reduces stiffness and risk of falls in OA (Mo et al., 2023; Sonobe et al., 2024). However, limitations include incomplete clinical data, language barriers that limit subjective exploration, and dependence on collaboration with local rehabilitators that reduce implementation autonomy, resulting in less quantitatively significant pre-post results.

The practical implications of this research include the integration of daily ROM into nursing protocols for elderly care homes to improve ADL independence and prevent progressive disability, particularly in cross-cultural settings such as Japan. Suggestions for further research include multiple case studies or long-term quasi-experimental studies (>1 month) with larger samples, the addition of interpreters for in-depth data triangulation, and objective outcome measures such as the TUG test or 6MWT for generalizability validation, to strengthen the evidence base for nursing care for elderly OA (Creswell & Poth, 2021; Sugiyono, 2021).

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