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Education and Simulation of Range of Motion (ROM) for Caregivers to Improve the Quality of Life of Older People in the Community

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Abstract

The aging process has caused various health problems, including limited physical mobility due to muscle weakness, joint stiffness, and certain chronic disease conditions. Efforts to maintain the health of older people can be done through Range of Motion (ROM) exercises, with the family as caregivers having an essential role in doing so. This community service activity aims to improve the knowledge of elderly caregivers by providing education and simulations on ROM exercises for older people. A total of 41 caregivers from Melinggih Village, Gianyar Regency and Pedungan Village, Denpasar City were involved in this activity in March 2025. The activity was carried out using the education and simulation method, with stages using the PARE (Preparation, Action, Reflection, and Evaluation) approach. The results of the Wilcoxon statistical test obtained a p-value < 0.001 with Z = - 3.65, which showed a significant difference in the level of caregiver knowledge about ROM exercises in older people before and after the activity. Good knowledge increased from 63% to 100%, and poor knowledge decreased from 31.7% to 0%. This shows that community service activities with education and simulation methods have successfully increased caregivers' knowledge and practical abilities in performing ROM exercises for older people. ROM exercises can be an easy choice for caregivers as an effective way to maintain the health of older people in the community, support long-term care programs, and thus improve the quality of life for the older people in the community.

Keywords: Caregivers, Aged, Range of Motion, ROM.

Abstrak

Proses menua telah menimbulkan berbagai masalah kesehatan termasuk keterbatasan mobilitas fisik akibat kelemahan otot, kekakuan sendi, dan kondisi penyakit kronis tertentu. Upaya mempertahankan kesehatan lansia dapat dilakukan melalui latihan Range of Motion (ROM) dengan keluarga sebagai caregiver memiliki peran penting untuk melakukannya. Tujuan kegiatan pengabdian kepada masyarakat ini adalah mengedukasi dan mensimulasikan kepada caregiver tentang latihan ROM kepada lansia. Sebanyak 41 orang caregiver yang berasal dari Desa Melinggih Kabupeten Gianyar dan Desa Pedungan Kota Denpasar telah terlibat dalam kegiatan ini pada bulan Maret 2025. Kegiatan dilaksanakan dengan metode edukasi dan simulasi, dengan tahapan menggunakan pendekatan PARE (Preparation, Action, Reflection dan Evaluation). Hasil uji statistik wilcoxon diperoleh nilai p-value = 0,001 dengan Z = -3,65 yang menunjukan bahwa ada perbedaan yang signifikan tingkat pengetahuan caregiver tentang latihan ROM pada lansia sebelum dan setelah kegiatan. Pengetahuan baik meningkat dari 63% menjadi 100%, dan pengetahuan kurang dari 31,7% menjadi 0%. Hal ini menunjukkan bahwa kegiatan pengabdian kepada masyarakat dengan metode edukasi dan simulasi terbukti berhasil meningkatkan pengetahuan dan kemampuan praktis caregiver dalam melakukan latihan ROM kepada lansia. Kami menyarankan latihan ROM dapat menjadi pilihan yang mudah bagi caregiver sebagai salah satu cara yang efektif dalam menjaga kesehatan lansia dimasyarakat.

Kata Kunci: *Caregiver*, Lansia, *Range of Motion*, ROM.

A. INTRODUCTION

Aging leads to a variety of complex health problems, collectively referred to as geriatric syndromes (WHO, 2024). Older people are a group of people who are very vulnerable to decline in various physical, psychological, and social functions that have an impact on decreasing quality of life (Maresova et al., 2023). Common health problems in older people include limited movement or physical mobility due to muscle weakness, joint stiffness, and certain chronic disease conditions, such as stroke, osteoarthritis, etc (Asp et al., 2017; Maresova et al., 2023). Decreased physical mobility in older people affects their independence in daily life. Further, it increases the risk of complications of non-communicable diseases, such as pressure sores, infections, pneumonia, and depression (Khalishah & Salmiyati, 2022; Tomys-Składowska et al., 2023).

The quality of life of older people is described as a construct of self-efficacy and cognition, where the practice of physical activity is recommended as a contribution to a better quality of life and more positive health conditions in older people (Gomes et al., 2023). Most older people in the community live and are cared for by family members or informal caregivers. The role of the family as a caregiver is vital in providing rehabilitation care, such as Range of Motion exercises at home. Range of Motion (ROM) exercises are physical therapy movements designed to enhance flexibility and joint function which are beneficial for older people's physical and psychosocial health (Darussalam & Ferianto, 2025). Unfortunately, many caregivers in the community still do not have sufficient knowledge and skills about a range of motion exercises, such as Range of Motion (ROM), in caring for older people. This condition impacts less than optimal care for older people and decreases the quality of life of older people, increasing the risk of complications and social isolation.

World health data shows that by 2050, around 80% of older people will live in low- and middle-income countries (WHO, 2024). Indonesia is one of the countries entering this challenge for the health of older people. The Indonesian Central Statistics Agency stated that the number of older people increased from 18 million (7.6%) in 2010 to 27 million (10%) in 2020. This condition is expected to continue to grow until 2030 (Kemenkes RI, 2022). Prevention and control of elderly health problems require a multifaceted approach that combines active collaboration from various parties. Community and family-based geriatric health care programs are an inseparable concern (Shrivastava et al., 2013).

One of the efforts to maintain the health of older people and improve the quality of life of older people in the community is through Range of Motion (ROM) exercises, which is joint exercise movements that aim to maintain flexibility, prevent stiffness, and improve blood circulation to maintain the health of the older people (AR & Irfan, 2022; Supriadi et al., 2021). ROM is a joint movement exercise that aims to maintain or improve flexibility and joint function and prevent stiffness. Education and training for caregivers regarding ROM is an effective intervention option to support the physical condition of older people and improve their health and quality of life (Adawiyah et al., 2025). Priority services for older people include long-term care, family knowledge about elderly care, personal hygiene, competence of geriatric nurses, and nutrition in older people (Suyasa & Sutini, 2021). The family as a caregiver has an essential role for patients, including preventing recurrent disease attacks, motivating patients to meet their needs in treatment and care programs, and training patients to be independent in fulfilling daily living activities (Israfil, 2024).

This community service activity seeks to educate and guide caregivers about simple, safe, and home-based ROM techniques. Caregivers are expected to apply the knowledge provided routinely so that it can help improve the quality of life of older people, maintain their independence, and reduce their dependence on health services.

B. METHODS AND IMPLEMENTATION

This community service activity was carried out for A total 41 caregivers from Melinggih Village, Gianyar Regency and Pedungan Village, Denpasar City were involved in this activity in March 2025. The method used in this community service activity was education and simulation of Range of Motion (ROM) exercises. The activity was carried out using the PARE (Preparation, Action, Reflection, and Evaluation) approach (Doubeni et al., 2022), yaitu:

1. *Preparation*

The implementation team coordinates with the village head and elderly health cadres in the local area, identifies families who are elderly caregivers in the local community, and prepares tools, materials, and activity locations. At this stage, the implementation team also explains the intent and purpose of the activity and the benefits of family involvement, explains the instruments used to evaluate the activity, including how to fill them in, conveys the activity time, and asks for the willingness and agreement of all parties involved.

2. *Action*

The implementing team pre-tested participants' knowledge before the activity, conducted health education on range of motion exercises for older people, conducted a simulation on how to do range of motion exercises for older people, conducted a discussion and Q&A, and a redemonstration. In the simulation process, caregivers were divided into several small groups of 6-7 people to get a demonstration on how to do ROM exercises for older people. After receiving a demonstration from the community service team, each group of caregivers began role-playing, demonstrating what they had learned under the supervision of the community service team.

3. *Reflection*

The implementing team reflected on the participants feelings and expectations for the range of motion exercises for older people. Provided positive reinforcement to participants who had been actively involved, and provided confidence and support to participants for their ability to perform ROM range of motion exercises for older people that they had.

4. *Evaluation*

The implementing team evaluated with a post-test of participants' knowledge of ROM range of motion exercises. Provided feedback on the results of community service activities that had been carried out. Closed the activity and planned follow-up with the village head, cadres, and elderly caregivers.

C. RESULTS AND DISCUSSION

Table 1. Participant Characteristics (n=41).

Characteristics	**f**	**%**
Age		
19-44 years	18	43.9
45-59 years	17	41.5
≥60 years	6	14.6
Gender		
Male	6	14.6
Female	35	85.4
Education		
Elementary School	3	7.3
Junior High School	2	4.9
High School	25	61
Diploma	5	12.2
Bachelor's Degree	6	14.6
Occupation		
Housewife	19	46.3
Self-Employed	9	22
Employee	3	7.3
Others	10	24.4

Table 1 shows that the majority of participants in this activity were aged 19-44 years (43.9%), female (85.4%), had a high school education (61%), and worked as housewives (46.3%).

Table 2. Participants' knowledge categories at Pre and Post (n=41).

Category	Pre		Post	
	f	%	f	%
Good	26	63.4	41	100
Enough	2	4.9	0	0
Less	13	31.7	0	0

Table 2 shows that all participants (100%) have good knowledge after participating in community service activities organized by the implementing team. Table 3 describes the distribution of participants' knowledge about a range of motion exercises for older people.

Table 3. Frequency distribution of participants' knowledge about range of motion exercises for older people (n=41).

No	Question	Pre		Post	
		Know f(%)	No/Not Yet Know f(%)	Know f(%)	No/Not Yet Know f(%)
1	Do you know about range of motion in older people?	33 (50.5)	8 (19.5)	41 (100)	0
2	Do you know the purpose and benefits of range of motion in older people?	31 (75.6)	10 (24.4)	41 (100)	0
3	Do you know the criteria for older people who receive range of motion training?	29 (70.7)	12 (29.3)	41 (100)	0
4	Do you know the preparation for older people who receive range of motion training?	29 (70.7)	12 (29.3)	41 (100)	0
5	Do you know the preparation of range of motion training companions for older people?	28 (68.3)	13 (31.7)	41 (100)	0
6	Do you know how to provide range of motion training for older people's shoulders?	30 (73.2)	11 (26.8)	41 (100)	0
7	Do you know how to provide range of motion training for older people's arms?	28 (68.3)	13 (31.7)	41 (100)	0
8	Do you know how to provide range of motion training for older people's hips?	27 (65.9)	14 (34.1)	41 (100)	0
9	Do you know how to provide range of motion training for older people's knees and legs?	29 (70.7)	12 (29.3)	41 (100)	0
10	Do you know how to provide range of motion training for older people's palms, feet, and fingers?	30 (73.4)	11 (26.8)	41 (100)	0

Table 4. Wicoxon test of differences in knowledge of Pre and Post participants

Knowledge	*Wilcoxon*						
	n	***Mean***	**SD**	**Min**	**Max**	**Z**	***p-value***
Pre-test	41	71.71	39.994	0	100	-(3.652)	0.001
Post-test	41	100	0	100	100		

Table 4 shows that the results of the Wilcoxon statistical test obtained a p-value < 0.001 with Z = -3.65. These results indicate a significant difference in participants' knowledge level about ROM range of motion exercises in older people before and after this community service activity was carried out.

Figure 1. Caregivers in a group are watching a simulation of how to do ROM exercises on older people.

DISCUSSION

The American Geriatrics Society and the British Geriatrics Society recommend that all adults over the age of 65 years be screened for a history of falls or balance disorders, and recommend multifactorial interventions for those who have experienced a fall or injury. Multifactorial interventions should include exercise, especially balance, muscle strength, range of motion, and gait, including vitamin D supplementation, effective management of postural hypotension, and muscle strength problems to reduce the risk of falls (Van Vost Moncada & Mire, 2017). Prevention and managing health problems in older adults require a multifaceted approach incorporating active collaboration between multiple stakeholders. Community-based and family-based geriatric health care programs are of integral concern (Shrivastava et al., 2013).

Education and simulation of ROM exercises for caregivers in this activity is the right choice of intervention given to caregivers to support the health of older people in the community. These results indicate a significant difference in participants' knowledge level about ROM range of motion exercises in older people before and after this community service activity was carried out. This activity aligns with previous studies' results, which found that education about ROM (Range of Motion) mobilization techniques for informal caregivers can improve caregivers' knowledge in performing ROM mobilization on patients to minimize disease recurrence and prevent further complications (Supriadi et al., 2021), Previous research has found that educational and simulation activities can significantly improve caregivers' ability to perform ROM exercises independently in the elderly (Pranata et al., 2021). This activity was successful because the caregivers' education level was adequate, making it easier to receive and understand the information provided. Training activities including education and simulations have proven effective in providing caregivers with a better understanding of the importance of ROM exercises to improve physical mobility (Adawiyah et al., 2025)

The long-term impact of implementing ROM education and simulation for caregivers that has been implemented is expected to improve the quality of life of older people as a whole, namely the physical aspect reduces joint stiffness and pain, psychological can increase interaction and enthusiasm for life, and social can build a more harmonious relationship between older people and

caregivers. Various research results that have been conducted show that older people who are cared for by caregivers who have received training show an increase in quality of life and cognitive abilities, as well as better maintenance of functional skills than those who are cared for by caregivers who have not received training. Caregiver training programs based on cognitive stimulation have been shown to benefit the quality of life of older people who are better cognitively, functionally, and in general health (Sanjuán et al., 2023). ROM range of motion exercises in older people carried out by caregivers after receiving this training will effectively improve healthy physical conditions, reduce pain complaints, and improve the quality of life of older people and caregivers (Llamas-Ramos et al., 2023).

CONCLUSION

Educational activities on Range of Motion (ROM) have successfully increased caregiver knowledge about ROM exercises for older people. Simulation activities have provided caregivers with practical skills experience in performing ROM exercises for older people correctly, safely, and effectively. This activity has successfully increased caregiver knowledge and practical experience about the importance of ROM exercises for older people to maintain a better quality of life and avoid complications due to immobility. We hope that caregivers will have better confidence in providing physical ROM exercise assistance to older people in the community. Furthermore, this activity can be given to all elderly caregivers in both urban and rural areas by taking into account the educational background of the caregiver, the type of educational method and media and the information simulation provided needs to be adjusted to the technological advances that the caregiver has.

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