

Empowering the Elderly Trough Active Independent ROM Training to Improve Activity of Daily Living (ADL) Independence

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Abstract:

The increasing elderly population is accompanied by a high risk of decreased functional capacity due to degenerative diseases. This community service activity aims to evaluate the impact of a health intervention program in increasing the level of independence in daily activities (ADL) in the elderly at partner locations. This program involved 60 elderly respondents who met the inclusion criteria, with the majority being in the 61–75 years age range (68.3%), male (56.6%), and having a junior high or high school education (89.7%). The main health complaints that dominated the partners were high blood pressure or hypertension (88.3%) and joint stiffness and muscle pain (81.6%). Evaluation of the level of independence was measured quantitatively before (pre-test) and after (post-test) the physical intervention program using the Barthel Index Score instrument. The evaluation results showed a significant positive shift in the functional capacity of the respondents. The Fully Independent elderly group increased from 28.3% to 31.7% and the Mildly Dependent group increased from 13.3% to 18.3%. Furthermore, there was a drastic decrease in the Moderate Dependency category, from 10% to just 1.7%. However, the Severe Dependency group remained stagnant at 48.3% post-intervention. The conclusions of this community service program demonstrate that the community intervention program is highly effective in providing immediate therapeutic impact for elderly with mild to moderate levels of dependency, but has limitations in the severe dependency group. It is recommended that further programs based on individual home care services and the integration of intensive care with local health facilities be developed to optimize the recovery of elderly with chronic severe dependency.

Keyword: Elderly, Barthel Index, Hypertension, ADL Independence, Community Service.

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Introduction

Old age is the final stage of the human life cycle, a natural and unavoidable process for every individual. According to the World Health Organization (WHO) and the Indonesian Ministry of Social Affairs, a person is categorized as elderly if they are 60 years of age or older. As they age, they experience a complex aging process. Various biological theories explain that aging occurs due to a decline in cellular function (such as the genetic clock and free radical theories), while psychosocial theories (such as activity theory) emphasize the importance of maintaining an active role for the elderly in society. These cumulative changes gradually cause a decline in the anatomical and physiological functions of the body's organs, one of which is deterioration of the musculoskeletal system (muscles and bones).

Deterioration of musculoskeletal function in the elderly often triggers various degenerative health problems, such as joint disorders, muscle stiffness, and decreased muscle mass strength. A further impact of these physical disorders is a decline in the elderly's functional ability to independently perform daily activities, known as Activities of Daily Living (ADL), such as bathing, dressing, eating, and transferring. These physical limitations often lead to new psychological problems such as anxiety and depression because the elderly feel like a burden on

their families due to their loss of independence. Therefore, a simple, inexpensive, and effective intervention is needed to maintain joint flexibility and muscle strength in the elderly.

One form of non-pharmacological physical exercise that is highly recommended to address these issues is active Range of Motion (ROM) exercises. Active ROM is a form of independent movement performed by individuals to move their joints through their full range of motion without external assistance. Through structured movements, active ROM can improve blood circulation, prevent joint stiffness (contractures), and maintain muscle tone. If muscle strength and physical mobility are well maintained in older adults, their capacity to independently fulfill ADL needs will significantly increase.

However, the reality in society shows that the understanding of the importance of independent physical mobility among older adults and their families remains very limited. Many older adults tend to be passive (following disengagement theory) and choose to limit physical activity due to fear of falling or perceive joint pain as a normal condition that does not require training. Based on these issues, this community service program is designed to empower older adults. Through education and training in active ROM, it is hoped that older adults will develop new awareness and physical skills to maintain their musculoskeletal health, ultimately improving their quality of life and ADL independence in old age.

Method

The method of implementing public service begins with a preparation stage through obtaining permits from partner communities (Posyandu Lansia/Panti Wreda), initial screening of the level of independence of the elderly's daily activities using the Barthel Index instrument (Pre-test), and the preparation of a safe Active Independent ROM movement guide module. Next, the intervention is carried out through counseling, demonstration, and direct practice assistance (redemonstration) of ROM movements from head to toe. The elderly are then directed to carry out scheduled independent exercises under the supervision of local health cadres to minimize the risk of injury. In the final stage, a final evaluation (Post-test) is carried out again using the Barthel Index to measure the effectiveness of increasing the independence of the elderly's ADL after the intervention. To maintain the sustainability of the program, the public service team handed over educational media and confirmed local health cadres as the main drivers so that this ROM exercise can be integrated into the community's routine health agenda independently..

Results and discussions

This community service activity was attended by 30 elderly people who met the inclusion criteria at partner locations. The evaluation data was grouped into two main sections: the general characteristics of the respondents (general data) and the level of functional independence of the elderly before and after the intervention (specific data).

General Data

Characteristics	Frekuensi	Persentase
Age Category (WHO)		
Pre-Elderly/Middle Age (44-60 years)	13	21.7%
Elderly (61-75 years)	41	68.3%
Old Age (76-90 years)	6	10%
Gender		
Male	34	56.6%
Female	26	43.3%
Last Education Level		
No School/Elementary School	6	10%
Junior High School	26	43%

High School	28	46.7%
Bachelor's/Master's Degree	0	0%
Main Health Complaint		
Joint Stiffness and Muscle Pain	49	81.6%
High Blood Pressure (Hypertension)	53	88.3%
Vision/Hearing Impairment	28	46.7%
Other	12	20%

Frequency of ADL Independence (Pre-Post) in the Elderly

ADL Independence Level	Score indeks Barthel	Pre		Post	
		f	%	f	%
Fully Independent	20	17	28.3%	19	31.7%
Light Dependence	12-19	8	13.3%	11	18.3%
Moderate Dependence	9-11	6	10%	1	1.7%
Severe Dependence	5-8	29	48.4%	29	48.3%
Number		60	100%	60	100%

The demographic characteristics of 60 elderly respondents at partner locations indicate that the majority were in the elderly age group (61–75 years old) (68.3%, 41 individuals), predominantly male (56.6%, 34 individuals), and had a high school education (46.7%) or junior high school (43%). Based on health sociology theory, secondary education levels correlate directly with health literacy levels. People with secondary education tend to be more open and cooperative in accepting new information and clinical instructions than those with lower education levels. This characteristic is a crucial factor in supporting the smooth running of the program, as elderly individuals in this age range are still cognitively highly adaptive, facilitating the transfer of knowledge and training during the community service intervention.

Regarding physical conditions, data findings indicate that the most common health complaints experienced by partners were high blood pressure (hypertension) at 88.3% (53 individuals) and joint stiffness/muscle pain at 81.6% (49 individuals). Pathophysiologically, the aging process naturally causes a decrease in blood vessel elasticity (arteriosclerosis), which triggers increased blood pressure, accompanied by a decrease in synovial fluid and thinning of cartilage, which trigger musculoskeletal complaints. The number of complaints, reaching more than 80%, indicates a sedentary lifestyle and a lack of low-salt diet management and regular physical activity in the community. This high number of physical complaints has the potential to become a major barrier for older adults to engage in independent activities, so interventions such as light physical exercise (such as elderly gymnastics) and self-management of pain are urgently needed to be implemented sustainably.

Evaluation of the level of independence in daily activities using the Barthel Index Score showed a positive shift post-intervention (post-test). The Fully Independent group of elderly increased from 28.3% to 31.7%, the Mildly Dependent group increased from 13.3% to 18.3%, and the Moderately Dependent group drastically reduced from 10% to just 1.7%. This successful improvement in physical function aligns with the concept of neuromuscular plasticity, where regular motor stimulation and education have been shown to instantly improve body coordination and muscle strength in older adults. The drastic decrease in the Moderately

Dependent category demonstrates the intervention program's highly effective therapeutic impact on elderly individuals with remaining functional capacity.

On the other hand, data show that the Severely Dependent group remained stagnant at 48.3% (29 individuals) both before and after the intervention. In theory, severe dependency is usually associated with chronic degenerative diseases or permanent disabilities, such as those following a severe stroke or advanced osteoarthritis, which cannot be reversed through short-term community intervention alone. This phenomenon demonstrates the limitations of conventional, mass-based community service programs. This group of people with severe dependency no longer suffices with general education; instead, they require an individualized home-based approach, specialized training for family caregivers, and more comprehensive and sustainable clinical medical interventions from community health centers or local health facilities.

Conclusion

The implementation of this community service activity successfully answered the hypothesis and achieved the program's goal of improving the functional capacity and independence of elderly people in partner locations. Key findings indicate that the intervention program provided an immediate, positive therapeutic impact for elderly people with moderate dependency, successfully motivating them to achieve greater levels of independence. Post-intervention evaluation results using the Barthel Index Score demonstrated an increase in the Full Independence group (from 28.3% to 31.7%) and the Mild Dependency group (from 13.3% to 18.3%), as well as a drastic decrease in the Moderate Dependency group to only 1.7%. However, the program identified critical limitations in the Severe Dependency group, which remained stagnant at 48.3%. This indicates that conventional short-term community interventions are not yet robust enough to rehabilitate elderly people with chronic degenerative pathologies, who essentially require specialized clinical treatment and long-term care management. Recommendations

Based on the evaluation results and limitations identified during the activity, several strategic actions are recommended as sustainable ideas for the program or further research:

Implementation of Individual Home Care Services: The next program should shift from general mass education to specialized home care and rehabilitation services directly targeting the highly dependent elderly (48.3%).

Empowerment of Family Caregivers: Provide technical training and structured support for family members or non-professional caregivers at home to enable them to safely assist with activities of daily living (ADL) for high-risk elderly.

Integration with Local Health Facilities: Establish formal and sustainable partnerships with community health centers (Puskesmas) or village health workers to conduct routine medical examinations, regular physical therapy, and intensive hypertension management.

Development of a Digital-Based Monitoring System: Future researchers can develop a simple mobile phone-based health monitoring application to directly track the progress of Barthel Index Scores, medication adherence, and blood pressure fluctuations in elderly individuals through village health workers.

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