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EMPOWERING THE ELDERLY THROUGH THE IMPLEMENTATION OF ERGONOMIC EXERCISES TO IMPROVE THE QUALITY OF LIFE

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ABSTRACT

The increasing number of elderly people in Indonesia is accompanied by an increasing prevalence of degenerative diseases, one of which is gout, which has an impact on reducing the quality of life. Non-pharmacological efforts such as physical activity are one effective approach in addressing this problem. This community service activity aims to improve the quality of life of the elderly through the implementation of ergonomic exercises as a non-pharmacological effort that aims to improve physical function, increase mobility, and reduce musculoskeletal complaints in a sustainable manner. This activity involved 15 elderly people. The results showed that before the intervention only 28% of elderly people were able to perform the exercise movements correctly, after the intervention there was an increase of 84% who were able to perform ergonomic exercises independently and according to procedures, the attendance rate of the elderly was 88%. Furthermore, there was a significant decrease in pain levels; specifically, the average score dropped from 6.2 (moderate category) before the intervention to 3.8 (mild category) post-intervention. Thus, ergonomic exercises are effective in improving the quality of life of the elderly.

Keywords: Elderly, Ergonomic Exercise, Gout, Quality of Life.

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INTRODUCTION

The increase in the elderly population, driven by increasing life expectancy, is one indicator of successful health development. However, this condition is also accompanied by an increase in the prevalence of non-communicable diseases, particularly degenerative diseases. One health problem frequently encountered in the elderly is gout (hyperuricemia), the prevalence of which tends to increase with age and changes in lifestyle (Ministry of Health of the Republic of Indonesia, 2018). The tendency of the elderly to consume foods high in purines contributes to the high prevalence of gout in the elderly.

Globally, musculoskeletal conditions affect approximately 1.71 billion people, establishing them as a leading cause of disability worldwide. Among the aging population, chronic musculoskeletal pain is particularly prominent, with global prevalence estimates ranging from 40% to 60%. Specifically, degenerative conditions such as lower back pain have reached a prevalence of 45.6% in individuals aged 65 and older. In the context of hyperuricemia, the global prevalence of gout is estimated at 1–4%, and epidemiological studies indicate that this incidence steadily increases alongside advancing age. These musculoskeletal alterations directly trigger chronic pain, functional disability, and a progressive loss of physical independence. Consequently, the high severity of musculoskeletal pain is strongly associated with a severe decline in the Health-Related Quality of Life (HRQoL) among older adults, often accompanied by emotional distress. Furthermore, recent literature confirms a significant correlation where physical inactivity drastically exacerbates the severity of these musculoskeletal disorders, underscoring the critical need for active physical interventions to preserve the elderly's quality of life.

The tendency of the elderly to consume foods high in purines contributes to the high prevalence of gout in the elderly. Pathophysiologic ally, gout is a purine metabolism disorder characterized by elevated blood uric acid levels (hyperuricemia), which can lead to the deposition of monosodium urate crystals in the joints and surrounding tissues. This condition causes inflammation, joint pain, and limited mobility, which impacts quality of life (Smeltzer and Bare, 2017). It also significantly impacts the independence of the elderly due to the pain experienced in the joint area.

Management of gout not only focuses on pharmacological therapy but also requires a non-pharmacological approach through regular physical activity. Physical activity has been shown to increase joint flexibility, improve blood circulation, and reduce pain in the elderly (WHO, 2020). One suitable form of activity is ergonomic exercise, which is an exercise designed to improve musculoskeletal function and movement efficiency. This exercise is relatively easy to perform, safe, and effective in helping reduce musculoskeletal complaints in the elderly (Suharjono, 2019). Light exercise movements can help the elderly reduce complaints related to the musculoskeletal system, thereby increasing their independence.

However, the level of knowledge and skills of the elderly in performing

ergonomic exercises is still limited due to a lack of education and support. This condition also occurs in the UPT Pesanggrahan PMKS Majapahit Mojokerto which is a social institution under the Social Service of Mojokerto Regency (Jl. Raya Brangkal No.862) which has been handling neglected elderly (elderly) since 1968. Ergonomic exercise activities for the elderly in this social institution are not carried out regularly. Many elderly complain of pain in the joints, especially the knee joints, so that many elderly experience mobility disorders to walk and stand alone and use assistive devices for activities. The results of uric acid level examinations conducted by the community service team on 30 elderly who did not experience total care obtained an average uric acid level of 7 in elderly women and an average uric acid level of 8.1 in elderly men. Therefore, community service activities are needed as promotive and preventive efforts to improve the ability of the elderly to do ergonomic exercises.

OBJECTIVES

General Purpose

Improving the quality of life of the elderly through the application of ergonomic gymnastics as a non-pharmacological effort aimed at improving physical function, increasing mobility, and reducing musculoskeletal complaints in a sustainable manner.

Special Purpose

The specific objectives are to improve the skills of the elderly in performing ergonomic exercise movements correctly and safely, to increase the participation of the elderly in carrying out physical activities regularly through ergonomic exercise, to reduce complaints of joint pain related to gout in the elderly after carrying out activities, to increase the mobility and ability of the elderly in carrying out daily activities.

PLAN OF ACTION

Strategy Plan

The strategic plan implemented in this community service activity includes:

1. Conducting a situation analysis based on an initial case study using secondary data and interviews with partners.
2. Drafting an activity proposal.
3. Coordinating with the LPPM (Research and Community Service Agency) of Sunan Gresik University.
4. Coordinating with the Pesanggrahan PMKS Majapahit Mojokerto Technical Implementation Unit (UPT).
5. Preparing materials and standard operating procedures (SOPs) for ergonomic gymnastics.
6. Coordinating with the activity implementation team.
7. Preparing tools and materials (mats, sound system).

Implementation

I Community service activities with the theme of empowering the elderly through the application of ergonomic exercises to improve their quality of life were implemented after obtaining permits from the relevant parties. The community service activities included the following activities:

1. Preparing the committee and the activity location
2. Conducting health education on gout
3. Providing feedback from participants
4. Demonstrating ergonomic exercises
5. Practicing ergonomic exercises

6. Assisting and monitoring the exercises

7. Evaluation of exercise skills

8. Closing

Setting

This activity was carried out at the UPT Pesanggrahan PMKS Majapahit Mojokerto on March 1-31, 2026 every Saturday and Sunday.

Target

There are 15 elderly residents of the Pesanggrahan PMKS Majapahit Mojokerto UPT.

RESULTS AND DISCUSSION

1. Improved ergonomic exercise skills

Based on observations using a checklist, before the intervention, only 28% of elderly people were able to perform the movements correctly. After the intervention, this increased to 84% of elderly people who were able to perform ergonomic exercises independently and according to procedures.

2. Increased elderly participation

The elderly's attendance rate during the activity reached 88%, indicating high enthusiasm and involvement of participants in the program.

3. Reduction in joint pain complaints

Pain measurements using a numeric scale (0-10) showed that the average pain level before the intervention was 6.2 (moderate category), while after the intervention it decreased to 3.8 (mild category). This average decrease of 2.4 points indicates an improvement in the elderly's physical condition.

The results of this community service activity indicate that the implementation of ergonomic exercises significantly contributed to improving the quality of life of the elderly, as reflected in improved skills and a decrease in joint pain levels. This improvement in skills indicates that a participatory educational approach, through a combination of lectures, demonstrations, and hands-on practice, is effective in improving health literacy in the elderly population. This aligns with the theory of health behavior change, which states that active participant involvement in the learning process will enhance information retention and adoption of healthy behaviors.

Physiologically, the reduction in joint pain levels observed after the intervention can be explained by mechanisms such as improved blood circulation, decreased joint stiffness, and increased muscle flexibility resulting from structured physical activity. Ergonomic exercises, as a form of low-impact exercise, have the advantage of being safe and appropriate for the elderly, thus enabling continued implementation. These findings are consistent with research by Amin E.S. (2024), which reported a significant relationship between physical activity and uric acid levels in the elderly ($p<0.05$), where individuals with higher levels of physical activity demonstrated better uric acid control.

Furthermore, these results are supported by research by Ali M.I.F. et al. (2023), which identified a significant relationship between physical activity and uric acid levels. However, the approach used in that study was correlational, thus unable to explain a direct causal relationship. In contrast, this activity implemented a direct intervention in the form of ergonomic exercises, thus providing more applicable empirical evidence.

On the other hand, research by Sintia N.L.A. (2023) confirmed that physical activity is associated with reduced pain intensity in elderly people with gouty arthritis. The consistency of these findings suggests a converging pattern that physical activity plays a crucial role in pain modulation through physiological mechanisms, such as increased blood flow, decreased inflammatory mediators, and increased elasticity of musculoskeletal tissue.

From a public health perspective, the implementation of ergonomic exercises in this activity also reflects an empowerment approach that emphasizes increasing the capacity of individuals and communities to manage their own health. The high level of elderly participation suggests that this intervention has good potential for sustainability. This aligns with the World Health Organization's (2020) recommendations, which emphasize the importance of regular physical activity as part of promotive and preventive strategies to improve the quality of life for older adults.

However, this activity has several limitations, including the relatively short duration of the intervention and the lack of a control group. Overall, however, this activity provides scientific and practical contributions by demonstrating that ergonomic exercise is an effective, feasible, community-based non-pharmacological intervention for improving the quality of life for older adults, particularly in reducing pain. These findings reinforce physical activity as a crucial component of degenerative disease management strategies in the elderly population.

CONCLUSION

Overall, this activity has had a positive impact on improving the quality of life for the elderly. It also contributes to supporting the fourth goal: strengthening human resource development (HRD), science, technology, education, health, sports achievements, gender equality, and strengthening the roles of women, youth, and people with disabilities. Sustainable program activities, regular monitoring, and collaboration with various parties are necessary to ensure long-term sustainability of behavioral changes.

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