Activity Daily Living Reducing Joint Pain in the Elderly

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Abstract: Joint pain is a major problem that will affect daily activities in the elderly. One of the ways to reduce joint pain in the elderly is to do joint motion physical exercises. Stiff joints, limited movement, slow acting time, unsteadiness when walking, poor balance, circulatory disorders, vision problems, hearing problems, touch problems, and joint pain lead to reduced activity in daily living ADL. This study aims to analyze the effect of daily activities on reducing joint pain. This research utilized a quasi-experimental with one group pretest– posttest design. Pain scale used the Visual Analog Scale (VAS). ADL was measured using the Katz S index. The population of this study was elderly aged 60-74 years. The samples were selected using a purposive sampling technique, totaling 26 people in the treatment group who met the inclusion criteria. The independent variable in this study was performing daily activities (ADL), and the dependent variable was the elderly with complaints of joint pain. Paired Simple T-test to assess significance in the pre-treatment and post-treatment groups. There were 24 elderly who experienced a decrease in joint pain. The results showed that there was a significant difference after carrying out the activity (p = 0.001). ADL is effective in reducing joint pain in the elderly.

1 INTRODUCTION

Increasing the degree of health and welfare of the population will impact increasing life expectancy. Older adults are prone to joint disorders. The degenerative joint disease primarily affects the articular cartilage. It is associated with aging and most likely affects joints under constant stress for years, including the knees, hips, fingers, and lower spine (Ko & Kim, 2020; Samison et al., 2017).

Decreased musculoskeletal abilities can reduce physical activity, affecting the elderly in daily activities. Exercise and physical activity in the elderly can maintain normal joint movement and muscle tone and reduce flexibility problems in the elderly with Range of Motion (ROM) exercises. Various health problems faced by the elderly are lack of movement (immobilization), severe senility (dementia), frequent urination or defecation (incontinence), inadequate food and drink intake, blisters, and ulcers on the body due to lying down too long (decubitus), broken bones, joint pain, and others (Narayani, 2008). Problems faced by the elderly, if not addressed immediately, will cause several consequences. The consequences can be grouped as follows: system disorders, disease onset, and decreased daily activities. ADL reduction is caused by stiff joints, limited movement, slow action time, unsteadiness when walking, poor balance, circulatory disturbances, visual impairment, hearing loss, touch disturbance, and joint pain (Takeda et al., 2019; Myers et al., 2016).

Although naturally experiencing physical decline, it does not rule out the possibility of aging and being able to carry out activities and fulfill daily needs independently. The elderly experiencing optimal aging will remain active and not experience shrinkage in everyday life. The kinds of daily activity are physical activity. Physical activity is the movement of limbs that causes energy expenditure, which is crucial for mental and physical health (Nepal et al., 2021) (Tony Wyss, 2016). ADL in the elderly allows it to help increase joint mobility so that muscles can better absorb impact and reduce pressure on bone and joint cartilage, reducing symptoms of joint pain (Anderson & Loeser, 2010; Matsuzaki et al., 2013). Therefore, the authors are interested in studying the problem of the influence of activities of daily living (ADL) on joint pain in the elderly.

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1 METHOD

This study used the quasi-experimental research method. The two groups of respondents did not use a random technique. This design used well-formed subject groups so that from the start, it could have been that the two subject groups had different characteristics. If, in the post-test, it turns out that the two groups are different, it is possible that the treatment does not cause the difference because the initial groups have been different from the start. In this design, the experimental group is given treatment while the control group is not. Both groups started with a pre-test, and after the treatment, they were again measured. This research was approved by the research ethics commission of the Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta (No. 274/EP-FKIK-UMY/VI).

2.1 Research subjects

The subjects of this study were the elderly who had complaints of joint pain. The treatment and control groups were divided based on the characteristics of mild, moderate, and severe pain levels. Subjects met the inclusion criteria, including elderly aged 60-74 years, female and experiencing menopause who can move with the Katz S index, and did not receive pain medication. Other inclusion criteria were that the elderly could perform activities of daily living (ADL) independently, experienced joint pain (mild, moderate, severe), and could communicate well. Meanwhile, the exclusion criteria from this study were the elderly experiencing fractures, suffering from heart disease (myocardial infarction, coronary heart), kidney failure, severe pain due to trauma, chronic joint swelling, and following routine exercise (active in seniors club).

2.2 Research variable

The independent variable used in this study was activity of daily living (ADL) exercises and dependent variable in this study was complaints of joint pain in the elderly.

2.3 Research Instruments

Data collection in this study used instruments in the form of observation sheets and questionnaires. Pain scale used the Visual Analog Scale (VAS). ADL was measured using the Katz S index.

2.4 Data analysis

The collected data were analyzed by statistical tests using the Shapiro-Wilk test to determine normality. Statistical analysis of the results of the answers to the questionnaire was carried out by comparing the values between pre-treatment and post-treatment using a Paired t-test.

3 RESULT

3.1 Characteristics of Research Subjects

Respondents who participated in this study were aged 60-74 years. In the treatment group, most respondents were aged 60-65 years, namely 84% (22 people). Furthermore, apart from that, the respondents aged 66-70 years, namely as many as 15% (4 people). It showed that the majority of respondents who suffered from joint pain were aged 60-65 years (Table 1).

Table 1. Subject Age Characteristics

No	Aged	n	Percentage
1	60 -65	22	84.6 %
2	66 - 74	4	15.4 %
Total		**26**	**100 %**

Table 2 showed that most of the respondent never did sport activities, as many as 84% (22 people) in the treatment group. Meanwhile, the rest in the treatment group, as much 15% (4 people) of respondents, had walking sport activities. Thus, it can be said that the majority of respondent in the treatment group never did sports activities.

Table 2. Frequency of sports activity

No	Sports activity	n	Percentage
1	Waking	4	15.4 %
2	None	22	84. 6 %
Total		**26**	**100 %**

Table 3 shows that most respondents had no history of diet, namely 40% (12 people), and the remaing 5% (13 people) had a history of dieting offal and mlinjo nuts.

Table 3. Diet History

No	Diet	n	Percentage
1	No offal and Mlinjo nuts	12	46.2 %
2	Offal and Mlinjo nuts	14	53.8 %
Total		**26**	**100 %**

The paires t-test analysis showed statistically significant differences in joint pain scales before and after ADL (p=0.001), leading to reduced joint pain.

4 DISCUSSION

Joint pain is also caused by several factors, namely the age factor. The results of this study indicated most frequent joint pain at the age of 60 - 65 years is musculoskeletal (Muscle) Physiological Changes. Elderly Aging is a natural process that every individual will experience. It is characterized by a decrease in the body's ability to adapt to age-related changes. These changes include physical, mental, social, and spiritual changes that will affect all aspects of life at the age of over 60 years. One of the physical changes caused by age is changes in the muscles of the elderly (Imbert, 2014) (Zdzieblik et al., 2021).

Age influences the elderly in every trial. It is supported by activity theory, which states that the relationship between social systems and individuals remains stable when individuals move from middle to old age. It requires compensation for loss, such as retirement from social roles due to aging. Furthermore, age has a very significant influence on the fulfillment of health services because the elderly experience changes or setbacks in various aspects of their lives, both physically and psychologically (Ko & Kim, 2020).

Moreover, sports activities also affect the health of the elderly. Rare exercise activities can also cause muscle and joint stiffness. It will exacerbate joint pain due to mechanical stress, triggering pain receptors to be released and perceived in the brain as pain (Kim et al., 2014).

ADL can reduce joint pain in the elderly. Physical activity or exercise will train the body to move to increase the production of synovial joint fluid, which functions as a lubricant and prevents joint blisters. Furthermore, activity will also activate the immune system and prevent inflammation of the joints, which is one of the signs and symptoms of joint pain (X. Xu et al., 2019) (T. Xu et al., 2021).

In addition, ADLs were performed 42 times in 6 weeks. The descriptive study of Iversen et al. explained that light-intensity exercise can be done daily to reduce joint pain. Elderly who experience effective joint pain will have decreased pain after doing elderly exercise within 15-45 minutes for six consecutive days. Exercises that reduce osteoarthritis pain will be effective if done for a long time, namely for two months. Wang et al. also added that with 40 respondents, the exercise activity in the form of Tai Chi within 60 minutes was effective for two times in 12 weeks (Fong et al., 2011) (Matsuzaki et al., 2013) (Kim et al., 2014). This study's results indicated a significant influence of Activity Daily Living (ADL) on reducing joint pain in the elderly.

5 CONCLUSION

Based on the result of this study, it can be concluded that ADL could reduce joint pain in the elderly.

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