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Empowerment of the Elderly With Joint Pain Through Exercise Relaxation Progressive Muscles in UPT PSTW Jember

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A B S T R A C T

Background: The elderly are a vulnerable age who experience various problems, especially the problem of physical dissatisfaction which results in disturbances in musculoskeletal function. Disorders that often arise are joint pain that makes the elderly experience disruption of daily activities. Osteoarthritis (OA) is a degenerative disease that causes chronic inflammation due to friction between the ends of the bones that make up the joints. Therapy that can be used to reduce joint pain is progressive muscle relaxation therapy. Progressive muscle relaxation is a relaxation technique that combines deep breathing exercises and several contraction and relaxation techniques of certain muscles. Study aims to determine the effect of progressive muscle relaxation therapy on reducing joint pain in the elderly at Wisma Dahlia UPT PSTW Jember.

Method: Experimental study with a quasi-experimental research design with a pretest and posttest one group design approach where in this study compares the pretest and posttest values of the elderly pain scale after giving progressive muscle relaxation therapy at Wisma Dahlia UPT PSTW Jember. **Results and Discussion:** Almost all the elderly at Wisma Dahlia have complaints, namely joint pain with a percentage of 86.4% with a pain scale of 4-6 before being given therapy. After 3 sessions of progressive muscle relaxation exercise there was a decrease in the level of pain before and after progressive muscle relaxation exercise from moderate pain (4-6) from 61.5% to 15.3% pain. In addition, there was an increase in the number of mild pain (1-3) from 38.5% to 84.7%. The p-value is 0.018 < 0.05, which means that there are differences in the level of pain in the elderly before and after the progressive muscle relaxation intervention. The decrease in pain scale in the elderly shows that progressive muscle relaxation therapy is able to effectively reduce pain by increasing endorphins in the body to inhibit the transmission of painful stimuli. **Conclusion:** The elderly at Wisma Dahlia UPT PSTW Jember after participating in the empowerment of progressive muscle relaxation exercises for 1 week, their joint pain complaints decreased. Progressive muscle relaxation needs to be included in the PSTW exercise program that can be done routinely so that it can reduce joint pain experienced by the elderly.

INTRODUCTION

The elderly (elderly) are residents over 60 years old, are one of the risk groups that require special treatment (Menteri Kesehatan, 2019; Prastica et al., 2021; Susanto, 2012). Entering old age, someone will experience changes in structure and function biologically, psychologically, and socially (Prastica et al., 2021; Susanto, 2012). The cumulative change experienced by elderly often once accompanied by complaints about various problems, especially on the issue of dissatisfaction and inability physical activity that causes disturbances in musculoskeletal function et al. Disorders that often arise are joint pain that makes the elderly experience disruption of daily activities (Afnuhazi, 2018).

Joint pain is an inflammation of the joints characterized by joint swelling, redness, heat, pain and movement disorders. Joint pain occurs because the thickened cartilage begins to thin progressively, the cartilage serves as a cushion between bones and joints. The thinning cartilage causes continuous friction between the ends of the bones that make up the joints, this repeated friction causes joint inflammation, causing a sensation of pain in the joints (Zurairahya et al., 2020). The increase in pain is accompanied by a progressive loss of the ability to move. Diseases of the joints cause painful symptoms as a result of degeneration or damage to the joint surfaces of bones that are commonly found in the elderly. In this situation the elderly are very disturbed, if more than one joint is affected. Some abnormalities due to joint changes that occur in the elderly include; osteoarthritis, rheumatoid arthritis and gout. This disorder can cause disturbances in the form of pain, swelling, joint stiffness, limited joint range of motion, impaired walking and other daily activities (Handono & Selvia, 2013; Heiwer Matongka et al., 2021). Osteoarthritis (OA) is a degenerative disease that causes chronic inflammation due to friction between the ends of the bones that make up the joints. Osteoarthritis if not treated can cause 80% of the elderly to have difficulty walking, bending, or standing, while 20% of the elderly do not even carry out their daily activities. This causes a decrease in the quality of life of the elderly (Zurairahya et al., 2020).

Treatment of knee OA can be handled pharmacologically and non-pharmacologically. Drugs such as opioids and non-steroidal anti-inflammatory drugs (NSAIDs) in the short term can provide benefits, but there are some side effects that need to be considered when taking pain medication too often, for example, the risk of stomach ulcers and kidney insufficiency. Progressive muscle relaxation therapy is a therapy that focuses on maintaining a state of deep relaxation that involves contraction and relaxation of various muscle groups starting from the feet up or from the head down, in this way it will be realized where the muscles will be and in this case will increase awareness of muscle response (Heiwer Matongka et al., 2021; Zurairahya et al., 2020). Progressive muscle relaxation therapy can reduce pain, anxiety and depression, improve sleep quality, reduce fatigue and reduce pain (Kobayashi & Koitabashi, 2016). So this therapy is one of the complementary therapies that can be given to help control and reduce pain (Wijaya & Nurhidayati, 2020).

The high incidence and factor joint pain risk in the elderly shows that need for treatment, namely empowerment carried out on the elderly. Empowerment on elderly could in the form of gift therapy nonpharmacologic. Therapy Non-pharmacology is always an option because the cost is very minimal, easy conducted, and seldom even no effect side. Therapy that can be used to reduce joint pain is relaxation therapy progressive muscle. Progressive muscle relaxation is a relaxation technique that combines deep breathing exercises and several contraction and relaxation techniques muscles certain (Rahayu et al., 2018).

Based on the results of the study conducted by Nursing Profession Students at the Faculty of Nursing, University of Jember on June 13, 2022 at Wisma Dahlia, UPT PSTW, Jember Regency, data was obtained that most of the elderly at Wisma Dahlia experiencing joint pain. The elderly in the guesthouse too no knowing related relaxation muscle progressive and not doing the therapy. Therefore, it is necessary to practice therapy relaxation muscle progressive as a decrease in the level of joint pain in the elderly at Wisma Dahlia UPT PSTW Jember. So empowerment this conducted for knowing influence therapy relaxation muscle progressive on reducing joint pain elderly at Wisma Dahlia UPT PSTW Jember.

METHOD

This study is an experimental study with a quasi-experimental research design uses the pretest and posttest one group design, primarily the purpose of comparing the pretest and posttest values of the elderly pain scale after giving progressive muscle relaxation therapy at Wisma Dahlia UPT PSTW Jember.

Population in this study were all the elderly living in Wisma Dahlia UPT PSTW Jember, totaling 15 people. The sampling used in this study was purposive sampling with inclusion criteria. The inclusion criteria for this study were clients who were cooperative, experienced joint pain, and were willing to become participants. Of the 15 elderly, only 13 elderly met the criteria in the study. This study was conducted from 13 June 2022 to 18 June 2022 at Wisma Dahlia UPT PSTW Jember.

Data were collected by measuring the pain scale using the Numeric Rating Scale (NRS). Progressive muscle relaxation exercises are carried out 3 times a week with a duration of 15-20 minutes. After 3 sessions of progressive muscle relaxation exercise, pain scale measures were carried out to determine the difference in pain scale before and after progressive muscle relaxation. All data collected and processed using SPSS 23 with Shapiro Wilk normality test ($p > 0.05$) then data analysis using Mann Whitney statistical test.

RESULT AND DISCUSSION

1. Characteristics of the Elderly

Table 1. Distribution of the elderly by age, gender, blood pressure, and complaints at UPT PSTW Jember (n=13)

Variable	Category	Frequency	Percentage (%)
Age	60-70 years	7	53,8
	70-100 years	6	46,2
Total		13	100

Gender	Male	0	0
	Female	13	100
Total		13	100
Blood Pressure	< 120	3	23,1
	120-139	3	23,1
	140-159	6	46,2
	> 160	1	7,7
Total		13	100
Complaint	Itchy and joint pain	1	7,7
	Headache and joint		
	pain	1	7,7
	Joint pain	11	86,4
Total		13	100

Source: Primary data 13 June 2022

Table 1 explained that most of the elderly at Wisma Dahlia are in the age of 60-70 years (late elderly) with a percentage of 53.8%, all elderly are female with a percentage of 100%. The blood pressure of the elderly is almost half 140-159 mmHg with a percentage of 6%. Almost all the elderly at Wisma Dahlia have complaints, namely joint pain with a percentage of 86.4%.

2. Elderly Pain Level

Table 2. The results of measuring the level of pain using NRS (Numeric Rating Scale) before and after progressive muscle relaxation at Wisma Dahlia UPT PSTW Jember

No.	Pain level	Pretest		Posttest	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Light (1-3)	5	38,5	11	84,7
2.	Medium (4-6)	8	61,5	2	15,3
3.	Heavy (7-10)	0	0	0	0
Total		13	100	13	100

Source: Primary data 13 June 2022

Table 2 showed changes in pain levels in the elderly at Wisma Dahlia. There was a decrease in the level of pain before and after progressive muscle relaxation exercise from moderate pain (4-6) from 61.5% to 15.3% pain. In addition, there was an increase in the number of mild pain (1-3) from 38.5% to 84.7%.

3. Differences in Pain Levels in the Elderly Before and After Progressive Muscle Relaxation

Table 3. Mann-Whitney statistical test results of pain levels before and after intervention at Wisma Dahlia

UPT PSTW Jember				
Variabel	N	Mean Rank	Sum of Rank	P-Value
Pretest	13	16,5	214,5	0,018
Posttest	13	10,5	136,5	
Total	26			

Source: Primary data 13 June 2022

Based on table 3, it is known that the p-value is $0.018 < 0.05$, which means that there are differences in the level of pain in the elderly before and after the progressive muscle relaxation intervention.

Relaxation therapy is useful for reducing anxiety and reducing muscle tension (Taufandas et al., 2018). Progressive muscle relaxation therapy is one of the complementary therapies that can also be used as a treatment for clients with complaints of pain. Especially joint pain experienced by the elderly. The elderly are a group of people who experience a degenerative or aging process. Physical and psychological changes in the elderly can cause the elderly to be susceptible to disease (Prastica et al., 2021). One of the changes in the immune system is rheumatism and will make them prone to joint pain. Complaints of pain in the elderly that are not handled properly can cause a decrease in the quality of life. For this reason, complementary therapies are given that are able to reduce or manage the pain so that it can be reduced and the elderly can live in their old age with more comfort and quality (Wijaya & Nurhidayati, 2020).

Management of progressive muscle relaxation therapy in 13 elderly women who experienced joint pain with EBNP (Evidence Based Nursing Practice) showed that progressive muscle relaxation therapy was able to reduce the scale of joint pain levels in the elderly. The results of this observation have been carried out for 1 week. The elderly are given therapy in groups where the time it takes is about 15-20 minutes. In a week the elderly are given therapy 3 times with the time according to the agreement of the elderly and students. The results showed that the effect of progressive muscle relaxation therapy was able to reduce the pain scale in the elderly who experienced joint pain, from which most of them complained of moderate pain after being given therapy to mild pain. The effect of giving therapy is in line with the research of Wijaya and Nurhidayati (2020) there is a decrease in joint pain after being given a progressive muscle relaxation therapy intervention for 20 minutes within 3 days with a pain scale of 4 (moderate) decreasing to a pain scale of 3 (mild).

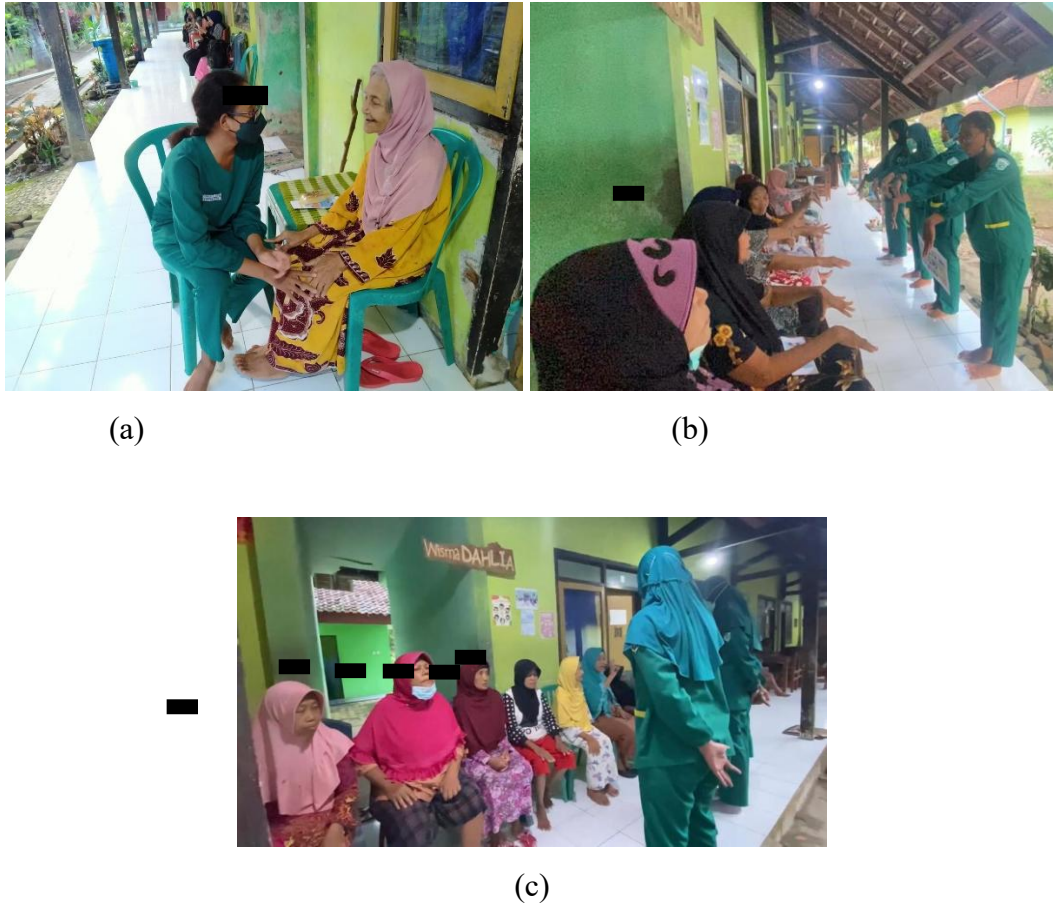


Fig 1. Activities for empowering the elderly with joint pain at Wisma Dahlia UPT PSTW Jember. (a) Screening for problems and measuring pain scale before performing progressive muscle relaxation. (b) Progressive muscle relaxation exercise activities with the elderly. (c) Evaluation of pain scale results after progressive muscle relaxation exercises.

Source: Primary data 13 June 2022

Osteoarthritis (OA) is a non-inflammatory degenerative joint disease that can affect any joint that bears the weight of the body, this disorder is most often found and often causes a person's disability (Heiwer Matongka et al., 2021). OA is more common in women than men. The increasing incidence of osteoarthritis in aging women is believed to be due to the reduction in estrogen during menopause, so the elderly need to exercise self-control in order to maintain good health and always be productive. (Heiwer Matongka et al., 2021; Soesanto, E., Istiarti, T., & Pietojjo, 2010; Taufandas et al., 2018).

Progressive muscle relaxation therapy is a therapy that focuses on maintaining a relaxed state which will involve the process of muscle contraction and relaxation from head to toe which will increase awareness of the body's muscle response. This technique in addition to reducing pain, anxiety, reducing fatigue can also reduce high blood pressure (Susanto et al., 2021; Wijaya & Nurhidayati, 2020). The decrease in pain scale in the elderly shows that progressive muscle relaxation therapy is able to effectively reduce pain. Progressive muscle training can reduce the pain mediator stimulus so that the pain felt by the client can be

reduced both in quantity and quality (Soesanto, E., Istiarti, T., & Pietojjo, 2010). The relaxation response also reduces pain by reducing tissue oxygen demand, decreasing lactic acid production and releasing endorphins. Increased endorphins in the body will have an impact as a neurotransmitter that binds to opioid receptors, which can inhibit the transmission of painful stimuli. Thus, complementary progressive muscle relaxation therapy can reduce pain perception in the elderly.

According to the results of Richard and Sari's research (2020) regarding the effect of progressive muscle relaxation therapy on changes in the joint pain scale in the elderly, it showed that there was a significant decrease in joint pain before and after progressive muscle relaxation therapy was carried out for approximately 20 minutes, twice a week. This is evident from the decrease in the joint pain scale in the elderly, namely after being given the intervention of progressive muscle relaxation therapy there is a decrease in the pain scale in all the elderly, which means that progressive muscle relaxation therapy has a significant effect on reducing the pain scale. Progressive muscle relaxation therapy that is done regularly can train sensory receptor responses in all joint surfaces, joint capsules, muscles, skin, and ligaments in stimulating proprioceptive formation and improving body balance (Fitriyansyah et al., 2014). Therefore, good pain management during the aging process is needed so that the elderly can increase the value of self-efficacy (Susanto et al., 2019) in joint pain control.

A limitation in the implementation of community service empowerment for the elderly with joint pain using progressive muscle relaxation therapy is time constraints. Where the implementation of this service is carried out for one week. Service activities that can make the implementation of progressive muscle relaxation therapy can only be done 3 times a week. It is necessary to make scheduled ROP activities in order to control joint pain in the elderly.

CONCLUSION

After empowering the elderly through progressive muscle relaxation therapy, there was a conversion in the level of pain before and after the intervention. From the results of the study, there was a decrease in pain levels before and after being given progressive muscle relaxation therapy with moderate pain (4-6) percentage from 61.5% to 15.3% pain. Then the percentage of mild pain (1-3) from 38.5% to 84.7%. Thus, it can be concluded that this therapy has an impact in reducing the level of pain in the elderly with joint pain at Wisma Dahlia UPT PSTW Jember.

SUGGESTION

Progressive muscle relaxation therapy is expected to be carried out routinely and regularly to obtain maximum changes, so that it can reduce pain levels in the elderly who experience joint pain. In addition, therapy can be combined with the use of other natural resources were available in the environment.

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