



The Effect of Rheumatic Exercise Reducing the Scale Rheumatoid Arthritis Joint Pain Elderly at UPTD Social Services for Elderly in Binjai

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Abstract . Rheumatoid arthritis joint pain in the elderly is a result of the body's calcification and reduction in synovium fluid lining the joints, or a disease caused by degenerative changes in the musculoskeletal system. Most elderly people still use inappropriate methods such as pharmacological therapy (drugs) to treat joint pain. The non-pharmacological method is by using rheumatic exercises. The aim of this research is to determine the effect of rheumatic exercise on reducing the scale of rheumatoid arthritis joint pain in the elderly at UPTD social services for the elderly in Binjai. This research is a quantitative study using pre-experimental design method using one group pre and post test design approach, technique. Sampling was purposive sampling with 19 respondents using G-power software. The instruments used in this research are the Numeric Rating Scale observation sheet and rheumatic gymnastics SOP, which is tested using the paired T-Test. The results of statistical tests show that there is an effect of rheumatic exercise on reducing the scale of rheumatoid arthritis joint pain in the elderly at Binjai Elderly Social Services UPTD 2024. With the results of the paired t-test, it is obtained that p value = 0.001. Rheumatic exercise as an alternative treatment that can reduce the scale of rheumatoid arthritis joint pain in the elderly.

Keywords : Elderly, Pain Scale, Rheumatic Exercise.

1. INTRODUCTION

Elderly (elderly) is a person who has reached the age of 60 years and above, and is a group that is entering the final stage of their life phase. The age limits of the elderly include middle age (*middle age*) is the age group 45-59 years, elderly (*elderly*) between 60-74 years, old age (old) between 75-90 years, and very old age (*very old*) age >90 years (Siska, 2022) .

The World Health Organization (WHO) estimates that in 2025 the number of elderly people worldwide will reach 1.2 billion people which will continue to grow to 2 billion people in 2050. WHO also estimates that 75% of the world's elderly population in 2025 will be in developing countries, half of the world's elderly population will be in Asia. Asia and Indonesia have entered the era of an aging population since 2015 *because* the number of people aged 60 years and over, the elderly population exceeds 7% (Friska et al., 2020) . The prevalence of diagnosed rheumatoid arthritis sufferers in Indonesia is mostly women (8.5%) compared to men (6.1%). And for Indonesia, it is 16.3% (Niken & Sry Elvani Tandi Tolla, 2021) .

Rheumatoid arthritis is an autoimmune disease in which the immune system in a person's body attacks the body's own cells. In this case, the area attacked is the joint area, resulting in chronic inflammation and severe pain in the affected joints. Rheumatoid arthritis that continues to develop can cause damage and changes in the shape of the joint harvester, as a result, joint

movement begins to be limited and joint function can be completely lost, and some people do not know that this rheumatism can cause, disability (disability) reduces the quality of movement. The signs and symptoms of rheumatism are inflammation, deformity and pain itself which are most often felt by rheumatism sufferers. joint pain is an inflammation characterized by joint swelling, reddish color, heat, pain and the occurrence of limb disorders (Tri Novana et al., 2021) .

Rheumatic management consists of 2, namely pharmacological such as analgesic drugs, anti-inflammatory and non-pharmacological such as cold compresses, and one of them is rheumatic gymnastics to relieve pain in the joints and inflammation of the joints. Decreased functional activity of the elderly causes a decrease in the range of motion of the joints (LGS). The range of motion of the joints is a movement in a part of the body carried out by the muscles that move the bones in the joints in various patterns and also the range of motion. Muscle strength is a force that comes from outside.

The obvious limitations of the elderly due to this disease are the decline in the elderly's ability to walk, due to this pain, sufferers experience several activity disorders which can reduce productivity, the effects of this rheumatic pain can be reduced by using the body's limb movement method, namely rheumatic gymnastics (Tri Novana et al., 2021) .

Rheumatic gymnastics is gymnastics that focuses on maintaining the maximum range of joint motion. The goal of rheumatic gymnastics is to reduce joint pain and maintain the physical health of rheumatic sufferers. (Transyah & Rahma, 2021) . In general, movement in rheumatic gymnastics can improve muscle movement, function, strength and endurance. This gymnastics focuses on joint movements by stretching the muscles and strengthening the muscles, because these muscles are what help the joints to support the body (Elviani et al., 2022)

Some of the advantages of applying rheumatic gymnastics according to (Elviani et al., 2022) Reducing the pain scale, bones become more flexible, muscles stay tight and facilitate blood circulation, keep fat levels in the blood normal, are less prone to injury, and the body's cell speed reactions are better.

From the initial survey that was conducted by the author in 14 existing elderly guesthouses, there is a Binjai elderly social service UPTD with an interview technique, the number of elderly people is 117 people, and the majority of the elderly are women with a total of 72 people, and the elderly men are 45 people. Based on the observation and interview data, there were 33 people who experienced rheumatoid arthritis problems with mild and moderate joint pain scales, and the researchers also looked at how rheumatoid arthritis can cause discomfort in the elderly, and the problems caused by Rheumatoid Arthritis disease are not

only in the form of visible limitations in mobility and activities of daily life but also unclear systemic effects that can cause organ failure or cause problems such as pain, fatigue (Jamini, 2022) .

2. METHOD

The research design used in this study is a pre-experimental design using *a one-group pre-posttest design* . In this design, the subject group was measured at two different time points: before and after the administration of a particular intervention or treatment, but since no control group was used as a comparison, this design could be classified as a pre-experimental design. A major drawback of this design is the absence of a control group, which may limit the ability of researchers to draw firm conclusions about the effectiveness of the intervention. This study aims to determine the effect of rheumatic gymnastics on the reduction of the scale of rheumatoid arthritis joint pain in the elderly at the Binjai elderly social service UPTD. However, it is important to note that due to these shortcomings, the results of this study should be interpreted with caution given the limitations of the research design used.

The population in this study were elderly people with rheumatoid arthritis at the Binjai Senior Social Service UPTD as many as 33 people. The sampling technique used in this study with *the Purposive sampling technique* is a technique of determining samples among the population according to the researcher's wishes. Based on the results of the sample calculation using *G-Power software* , the minimum sample results in the study were 19 respondents with the inclusion criteria that have been set for participation in this study are the elderly who are willing to be respondents , the elderly who experience mild, moderate and severe joint pain , the elderly who are cooperative and who are able to participate in rheumatic exercises. The instrument used on independent variables is the rheumatic gymnastics SOP adopted from a study conducted by Rusmiati in 2020. Meanwhile, the dependent variable is an observation sheet of the numeric rating scale in the form of a numeric rating scale value of 0-10, stationery.

This study used univariate analysis to assess the frequency distribution of respondents' pain scales before and after rheumatic gymnastics and examined the distribution of demographic data such as respondents' age and gender. Data processing was carried out by paired T-Test with normally distributed data, the result obtained was >0.05 . In other words, if the significant level of $p > 0.05$ means that there is an influence between independent variables and dependent variables. This research has been tested by the ethics commission of health research ethics of the Santa Elisabeth College of Health Sciences Medan with letter number NO. 055/KEPK-SE-DT/III/2024..

3. RESULT AND DISCUSSION

Table 1. Frequency and percentage distribution of demographic data in UPTD Binjai Elderly Social Services 2024 (n = 19)

Characteristics	f	%
Age		
45-59 years	3	16
60-74 years	12	63
75-90 years	4	21
Total	19	100
Gender		
Man	11	58
Woman	8	42
Total	19	100

Based on frequency distribution data and percentage of demographic data obtained the majority of respondents' age is 60-74 years as many as 15 respondents (79%), age 45-59 as many as 3 respondents (16%). age 75-90 years as many as 4 respondents (21%). and the gender of the majority of respondents is male as many as 11 respondents (58%), and the minority age is female as many as 8 respondents (42%).

Table 2. Frequency distribution of percentage of pain scale data for respondents before rheumatic exercise intervention

Pain scale	f	%
Moderate pain	16	84.2
Severe pain	3	15.8
Total	19	100.0

Based on the distribution, frequency and percentage data, the pain scale data obtained from pre-intervention respondents was moderate pain for 16 respondents (84.2%) and severe pain for 3 respondents (15.8%).

Table 3. Frequency distribution of percentage of pain scale data for respondents after rheumatic exercise intervention

Pain scale	F	%
Mild pain	13	68.4
Moderate pain	6	31.6
Total	19	100.0

Based on frequency and percentage distribution data, the pain scale of post-intervention respondents was mild pain as many as 13 respondents (68.4%), and moderate pain as many as 6 respondents (31.6%).

Table 4. Effect of rheumatic gymnastics on reducing pain scale rheumatoid arthritis joints in the elderly at the UPTD for elderly social services in Binjai in 2024.

category	n	mean	median	std devi	t	P - value	CI
Pre_ Itvs	19	5.32	5.00	1.003	8,748	0.001	95%
Post_itvs	19	3.37	3.00	1,065			

Based on Table 5.4 the effect of rheumatic gymnastics on reducing the scale of rheumatoid arthritis joint pain in the UPTD elderly social services in Binjai in 2024, the results showed that there was a change in the pain scale between pre-intervention and post-intervention of rheumatic gymnastics. The results of the statistical test showed that the p value = 0.001 (p value below <0.005) which means that there is an effect of rheumatic gymnastics on reducing the scale of rheumatoid arthritis joint pain in the elderly in the UPTD elderly social services in Binjai in 2024 so that H_a is accepted.

Discussion

Pain scale of Pre-Intervention Rheumatic Gymnastics at the Binjai Elderly Social Service UPTD in 2024.

Based on the results of the study, of the 19 respondents who were pre-interventional in rheumatic gymnastics obtained before being given the intervention in rheumatic gymnastics, 16 respondents experienced moderate pain (84.2%), and 3 respondents (15.8%) experienced severe pain.

The aging process is characterized by physiological changes that occur in several organs and systems. The changes that occur cause a decrease in the body's function to carry out activities. Health problems due to aging occur in various body systems, one of which is rheumatoid arthritis. This disease is systemic, progressive, tends to be chronic and affects the joints and connective tissues symmetrically. The constitution of symptoms is fatigue, malaise, and stiffness in the morning, in rheumatoid arthritis it often involves extra-articular organs such as the skin, heart, lungs and eyes. Rheumatoid arthritis causes joint stiffness and thus along with it causes morbidity (Helmi, 2019)

Research conducted by (Aulia et al., 2022) said that several factors that cause hypertension in the elderly include work/activity factors, lifestyle factors, and dietary factors. This is because respondents at the time after or during work said that rheumatoid joint pain recurred. Work or activity is one of the factors for the emergence of rheumatoid arthritis. various activities with their workload and pressure that can weigh down the joints and heavy

work that uses a lot of hands for a long period of time, are frequent complaints that can be felt in every patient with rheumatoid arthritis. Women are also more susceptible to rheumatoid disease than men because it is related to genetic factors, women also have risk factors for rheumatoid arthritis because the estrogen hormone in women can increase the risk of rheumatoid arthritis such as in women who have entered menopause.

The factors that cause rheumatoid arthritis in the elderly are also revealed by (Saputri et al., 2022) The factors that affect rheumatoid arthritis are, the age of the elderly, the theory that says that old age is a phase of declining intellectual and physical abilities, which begins with several changes in life. As is known, when humans reach adulthood, they have the ability to reproduce and give birth to children. When life conditions change, a person will lose these duties and functions, and enter the next, ie, old age, and then die. For normal humans, who are the people, of course are ready to accept new circumstances in every phase of their lives and try to adjust to the conditions of their environment, respondents who experience rheumatism are more > 65 years old (elderly old) due to the inability of the elderly to move so that the elderly sleep and eat more. More elderly people have retired from work so they no longer carry out activities.

According to research conducted by (Sari et al., 2022) age is a state characterized by a person's failure to maintain balance with the condition of the body, and also old age is a state of manifestation in peripheral joints with a symmetrical pattern. The constitution of symptoms includes fatigue, malaise, and stiffness in the morning so that the aging process causes structural changes in the body so that age factors also greatly affect the cause of rheumatoid arthritis and the prevalence of severe joint pain is increasing.

The researchers assumed that rheumatoid arthritis in the respondents was affected by the age of the respondents who had reached ≥ 60 years. In this age group, elderly individuals tend to experience decreased organ function, especially joints that lose their elasticity, so this triggers stiffness in the joints in the morning. Therefore, the age ≥ 60 years is considered a significant risk factor for the occurrence of rheumatoid arthritis in the elderly.

Pain scale category Post Intervention Rheumatic Gymnastics at UPTD elderly social service services Binjai.

Based on the results of the study, out of 19 respondents who pre-intervention rheumatoid arthritis were 13 respondents (68.4%), 6 respondents (31.6%) experienced moderate pain.

The results of this study are supported by research (Marsiarni et al., 2023) Most people with rheumatoid arthritis complain the most about pain in the joints, so the way to deal with

this pain is usually used by people to use pharmacological therapy, namely oral drugs such as piroxacin, allopurinol. One of non-pharmacological therapies to reduce pain is rheumatic exercises. The benefits of rheumatic gymnastics are to improve blood circulation, maintain and improve the functional status of the elderly. Rheumatic gymnastics is expected to reduce aches and pains in the joints of elderly people suffering from rheumatoid arthritis.

The results of this study are supported by research (Erna Elfrida, 2018) that rheumatic gymnastics is one of the methods of movement in this rheumatic gymnastics, which can help reduce the risk of rheumatism. In addition, rheumatic gymnastics also serves to eliminate rheumatic symptoms in the form of stiffness in the morning, joint pain felt by rheumatic patients.

The results of this study are also supported by research (Marsiami et al., 2023) that rheumatic gymnastics is a sports activity for the elderly that can help the body stay flexible and also strengthen the ligament muscles that stabilize the joints. The concentration capacity of rheumatic gymnastics lies in the movement of the joints that stretch and strengthen the muscles, because it is the muscles that help the joints to support the body. This gymnastics is given to the elderly who are moved slowly and can be followed by the elderly, these gymnastics are stages, namely breathing exercises, strength training, warm-up exercises, joint exercises, and stretching.

Researchers assume that this rheumatic exercise is an effective step in reducing pain felt in rheumatoid arthritis patients. Active movements in rheumatic gymnastics will improve joint stability and muscle strength, and can reduce irritation that may occur and can maintain joints, especially synovials. Rheumatic gymnastic movements that are moved repeatedly will increase the work of the joint muscles so as to accelerate blood flow and metabolism in the joints. And one of the advantages of rheumatic gymnastics is that the bones become more flexible. The muscles remain tight, not easily injured, so that from the intervention applicators, the respondents experienced a decrease in the scale of joint pain.

The Effect of Rheumatic Gymnastics on the Reduction of the Scale of Rheumatoid Arthritis Joint Pain in the Elderly at the Binjai Elderly Social Service UPTD in 2024.

The results of the paired t-test statistical test showed that p Value in the pre and post-intervention pain scale measurement = 0.001 (< 0.005) Reduction of the Scale of Rheumatoid Arthritis Joint Pain in the Elderly at the Binjai Elderly Social Service Uptd in 2024.

This is in accordance with and in line with the research conducted by (Hasanah et al., 2023) the results of the Wilcoxon test obtained p -value = 0.001 which means that there is a

significant difference in the average value of the Rheumatoid Arthritis pain scale before and after rheumatic exercises. Thus, it can be concluded that there is an effect of providing rheumatic gymnastics therapy on the reduction of Rheumatoid Arthritis pain, so that from 29 respondents, it can be concluded that there is an effect of rheumatic gymnastics on the reduction of rheumatoid arthritis pain scale (p-value: 0.001). The average pain scale before rheumatic exercise is four down to a scale of two. This decrease in the pain scale occurs due to a series of gymnastic movements that reduce joint stiffness.

Likewise, this study is supported by research conducted by (Fuji, 2022) based on the results of statistical tests, it is known that the Z value in the Pre-Post variable of joint pain level is -4.774 with ap value of Asymp. Sig. (2-tailed) of $.000 < 0.05$, then it can be concluded that "Ha/H1 is accepted" means that there is a difference between the results of joint pain levels before and after rheumatic exercises. So that Fuji Lestari's research can be concluded that rheumatic gymnastics has an effect on reducing the scale of joint pain in the elderly.

This is in line with the research carried out by (Elviani et al., 2022) the results of univariate research obtained results on the implementation of rheumatic gymnastics as many as 50 respondents. The results of the reduction in pain scale were not significant after doing rheumatic exercises. The results of the statistical test obtained a sign = 0.002 means that there is an influence of rheumatic gymnastics on the reduction of the scale of joint pain in the elderly at the Penang Health Center, Lahat Regency, so it can be concluded that there is a significant influence between the fact that rheumatic gymnastics has not been carried out after the elderly rheumatic gymnastics has been carried out in Perigi Village.

Researchers assume that rheumatic gymnastics is very influential in reducing the scale of joint pain because the application of rheumatic gymnastics can increase the production of endorphins that can reduce joint pain in people with joint pain. Rheumatic gymnastics has a direct psychological impact that can provide a feeling of relaxation, reduce tension, and increase feelings of pleasure. The movements contained in rheumatic gymnastics are very effective, efficient, and logical movements because the series of movements is carried out regularly and organized for people with rheumatism. In addition, rheumatic gymnastics also serves to maintain and improve the functional status of the elderly, prevent and improve fitness. Rheumatic gymnastics is expected to help the elderly reduce joint pain caused by rheumatoid arthritis.

4. LIMITATION

This research has been carried out in accordance with scientific procedures, but this research still has several limitations, including:

The researcher only had time with the elderly in the morning from 10.00 WIB – 14.00 WIB, so the researcher was not able to control the respondents periodically, such as whether the respondents took medication within a week during the intervention given by the researcher. This study was carried out with pre and post techniques so that the measurement of joint pain scales was only carried out at pre-intervention and post-intervention, not observing joint pain scales every day.

5. CONCLUSIONS AND SUGGESTIONS

The results of the study with a sample of 19 respondents obtained the results of the effect of rheumatic gymnastics on the reduction of the scale of rheumatoid arthritis joint pain in the elderly at the social service UPTD and Binjai age in 2024. Overall, it can be described as follows:

The pain scale of respondents pre-intervention rheumatic gymnastics was in moderate pain as many as 16 respondents (84.2%). The pain scale of respondents after the rheumatic exercise intervention was in mild pain as many as 13 respondents (68.4%). The results of the analysis of the effect of pre-intervention and post-intervention rheumatic gymnastics on the elderly obtained a result of $p \text{ Value} = 0.001$ which means that there is an effect of decreasing the scale of rheumatoid arthritis joint pain in the elderly at the Binjai elderly social service UPTD in 2024.

For further researchers, they can explore the effect of rheumatic gymnastics on changes in joint pain in the elderly by still using experimental methods but increasing the number of samples or using different tests using control groups in order to obtain better results so that non-pharmacological therapy with rheumatic exercises can be used by rheumatic patients with joint pain.

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