Indonesian Journal of Global Health Research
Volume 7 Number 1, February 2025
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

THE APPLICATION OF TERA EXERCISES IN REDUCING LEVELS OF GOUT PAIN IN THE ELDERLY

Witriyani
Faculty of Health Sciences, Universitas Duta Bangsa Surakarta, Jl. Bhayangkara No.55, Tipes, Serengan, Surakarta, Central Java 57154 Indonesia
witriyani@udb.ac.id

ABSTRACT

Gout is a disease caused by the accumulation of uric acid crystals in the body. In the elderly, cells decline due to the aging process which can cause various diseases, one of which is an increase in uric acid levels (hyperuricemia). Elderly people who suffer from gout experience metabolic imbalances in the body. This disorder causes the formation of monosodium urate crystals which cause inflammation and pain. Exercise, one of which is tera exercise, is a non-pharmacological therapy that aims to reduce pain. Objective: This research is to determine the effect of tera exercise on reducing the level of gout pain in the elderly. Method: This type of research is experimental research with design quasy experiment (nonequivalent control group design). The population in this study were elderly people who attended posbindu in Karanganom. The sampling technique was purposive sampling with a total sample of 26 people. The data in this study was collected using a research instrument in the form of a NRS (Numeric Rating Scale) questionnaire pain scale assessment sheet. The data obtained were analyzed using a non-parametric test with the Wilcoxon test to compare the same subjects before and after being given the intervention. Results: The results of statistical tests using the Wilcoxon test showed that the value was p (0.001) <α (0.005) where the p-value was smaller than the alpha value and Ha was accepted. Conclusion: Based on the research results, it was concluded that there was an effect of applying tera exercise in reducing the level of gout pain in the elderly at Posbindu Karanganom.

Keywords: elderly; gout; pain; tera excercises

How to cite (in APA style)
Witriyani, W. (2024). The Application of Tera Exercises in Reducing Levels of Gout Pain in the Elderly. Indonesian Journal of Global Health Research, 7(1), 175-182. https://doi.org/10.37287/ijghr.v7i1.4112.

INTRODUCTION

The elderly population is expected to increase to 27.1 million people in 2020, to 33.7 million people in 2025 and 48.2 million people in 2035, data from the National Socio-Economic Survey (Susenas) in 2021 shows that Indonesia has the number of elderly people is 21.5 million of the entire population of Indonesia. According to data from the Indonesian Ministry of Health (2021), the highest number of elderly people in Indonesia is DIY province with a percentage of elderly people of 13.4% and for Central Java province it is 11.5%. For the Klaten region, the number of elderly people reached 16.12% of the total population in Klaten district (BPS Klaten, 2022). Old age cells decline due to the aging process, which can cause various diseases, one of which is increased uric acid levels (hyperuricemia). This is caused by a decrease in kidney function, resulting in a decrease in uric acid excretion in the kidney tubules in the form of urine. In addition, due to the aging process, there is a decrease in the production of the urikinase enzyme, which causes the elimination of uric acid to be hampered (Fatimah, 2017).

Gout in America has increased from year to year, around 8.3 million people (4%) experience gout. 90% of the Indonesian population suffers from gout in the age range of 34 years and over. Uric acid that is not treated properly will result in various complications that attack the

body's organs, the most dangerous of which is that it can interfere with the functioning of the kidneys and result in damage to the kidneys due to overwork of the kidneys (WHO, 2015). Gout experienced by the elderly is due to the buildup of crystals obtained from purine metabolism which affect the joints, especially the peripheral joints in the toes and hands as well as the knee joints. Elderly people who experience gout experience an increase in uric acid levels due to excessive formation or decreased excretion of uric acid. Elderly people who experience gout experience metabolic imbalances (formation and excretion) of uric acid, including idiopathic and secondary decreases in uric acid excretion (Sari, 2017).

Increasing the production of food intake containing purines will cause an increase in uric acid production. If there is a metabolic imbalance, there will be the formation of monosodium urate crystals which will cause inflammation. Elderly people who suffer from inflamed gout will feel severe pain, which often occurs in the upper legs, ankles, lower legs and experience joint pain (Reny, 2014). Pain due to gout often disrupts the daily activities of the elderly, according to (Yekti, 2016) who said that by adjusting a diet that is high in purine and taking medication, complaints of pain due to gout can be reduced. This study aims to determine the effect of applying tera exercises on reducing the level of gout pain in the elderly. Apart from the methods above, regular exercise can be done to reduce complaints of gout pain, one of which is tera exercise.

METHOD

This type of research is experimental with a quasy-experimental research design using nonequivalent control group design. The research was conducted in Karanganom village. The population is 40 elderly people in Karanganom village. The research sample was 26 respondents who met the inclusion criteria. The sampling technique in this research used a purposive sampling method. Research sampling is purposive sampling, namely sampling based on certain considerations made by the researcher himself, based on previously known characteristics or properties of the population. The instrument in this research is a questionnaire in the form of an NRS (Numeric Rating Scale) pain scale assessment sheet that in this study we did not test the validity and reliability of the NRS (Numeric Rating Scale) pain scale because the pain scale used by researchers was standard. NRS is a measuring tool aimed at respondents to assess pain according to the intensity of pain felt on a scale of 0-10 as well as an SOP sheet. In this study, we did not test the validity of the NRS (Numeric Rating Scale) pain scale because the pain scale used by researchers was standard. Univariate analysis in the study was the respondent's age, gender, level of gout pain, intensity of pain duration. Bivariate analysis in this study was used to determine the influence of dependent and independent variables. The next step was to process data about gout pain before and after being given tera exercises. In this study, an α value of 0.05 or 5% was used and the confidence level in this study was 95%. This study used a non-parametric test with the Wilcoxon test to compare the same subjects before and after being given the intervention.

RESULTS

Table 1.
Respondents age characteristics (n= 26)

Age (Years)	Treatment		Control	
	f	%	f	%
50-60	4	30,8	5	38,5
61-70	7	53,8	6	46,2
71-80	2	15,4	2	15,4
Total	13	100	13	100

Based on table 1 above, it shows that the majority of respondents in the treatment group and control group were 61-70 years old, there were 7 people (53.8%) in the treatment group and there were 6 people (46.2%) in the control group.

Table 2.
Respondent Gender Characteristics (=26)

Gender	Treatment		Control	
	f	%	f	%
Man	0	0	0	0
Woman	13	100	13	100
Total	13	100	13	100

Based on the gender characteristics of the respondents, it is shown in table 2 that for both the treatment and control groups, the majority of respondents' gender was female with a total of 13 people in the treatment group and 13 people in the control group with a percentage of (100%).

Table 3.
Pain Duration Intensity (n=26)

Intensity Pain	Treatment		Control	
	f	%	f	%
< 6 month	6	46,2	5	38,5
>6 month	7	53,8	8	61,5

Based on table 3, it shows that the majority of pain intensity was >6 months, there were 7 people (53.8%) in the treatment group and 8 people (61.5%) in the control group.

Table 4.
Job Frequency Distribution (n=26)

Job	Treatment		Control	
	f	%	f	%
Housewife	2	15,4	10	76,9
Farmer	5	38,5	1	7,7
Other	6	46,2	2	15,4

Based on table 4 above, it shows that the type of work of respondents in the treatment group was 2 people (15.4%), for jobs as farmers there were 5 people (38.5%), other jobs were 6 people (46.2%) and in the control group the type of work as housewives was 10 people (76.9%), for work as a farmer there was 1 person (7.7%) and for other work there were 2 people (15.4%).

Table 5.
Frequency Distribution of Pain Level Characteristics in the Treatment Group (n=26)

Pain Level	Before treatment		After treatment	
	f	%	f	%
Light	0	0	11	84,6
Medium	9	69,2	2	15,4
Heavy	4	30,8	0	0

Based on table 5 above, in the treatment group, before being given treatment, the majority of respondents had moderate pain levels, namely 9 respondents (69.2%), while after being given treatment, the majority of respondents had mild pain levels, namely 11 respondents (84.6%).

Table 6.
Frequency Distribution of Pain Level Characteristics in the control Group (n=26)

Pain Level	Before		After	
	f	%	f	%
Light	6	46,2	0	0
Medium	7	53,8	9	69,2
Heavy	0	0	4	30,8

Based on table 6 above, the pain level before and after in the control group was moderate, before there were 7 respondents (53.8%) and after there were 9 respondents (69.2%).

Table 7.
Wilcoxon Test Treatment Group

Pain Level	Pre test		Post test		Z hitung	P Value
	f	%	f	%		
Light	0	0	11	84,6		
Medium	9	69,2	2	15,4	-3.419	.001
Heavy	4	30,8	0	0		

Based on table 7, the results showed that there was a decrease in the level of pain between before and after treatment in the treatment group. Based on the results of calculations using the Wilcoxon test, the calculated Z value was (-3.419) with a p-value of 0.001.

Table 8.
Wilcoxon Test Control Group

Tingkat Nyeri	Pre test		Post test		Z hitung	P Value
	f	%	f	%		
Light	6	46,2	0	0		
Medium	7	53,8	9	69,2	-3.162	.002
Heavy	0	0	4	30,8		

Based on table 8 in the control group, the results showed that some respondents experienced an increase in pain levels. Based on the results of calculations using the Wilcoxon test, the calculated Z value was (-3.162) with a p-value of 0.002.

Table 9.
Mann-Whitney Test control and Treatment Group

	Mann-Whitney	Z	Asymp.Sig.(2-tailed)
Posttest	9,000	-4,209	0,000

Based on table 9 above, the significant value or Asymp.Sig.(2-tailed) of 0.000 is smaller than the probability value of 0.05 (Asymp.Sig.(2-tailed) <0.05), so it can be concluded that Ha is accepted, thus it can be said that there is a difference in pain level results between the treatment group and the control group.

DISCUSSION

Based on the results of univariate analysis, the frequency of respondents' pain levels was at a moderate level of 69.2%, this was supported by research conducted by Wurangian (2014), it was found that the average level of gout pain in his research was at a moderate level with a percentage of 40%. The pain that is felt is the result of a buildup of uric acid crystals that are not optimally removed from the body. Sadli (2017) explains that the increase in uric acid levels in the elderly is caused by a degenerative process which causes a decrease in kidney function. Decreased kidney function can result in inhibition of uric acid excretion in the body and ultimately result in gout. Accumulated levels of uric acid that cannot be excreted by the

body will cause annoying pain. The results of data analysis on the frequency of pain levels after being given tera exercises in the treatment group showed that 11 respondents (84.6%) experienced a decrease in mild pain levels. Initially, before being given tera exercises, 9 respondents experienced moderate levels of pain and 4 respondents experienced severe levels of pain. After being given tera exercises, 11 respondents' pain levels decreased to mild pain levels and 2 respondents experienced moderate pain levels. This shows that giving tera exercises has a positive impact on reducing the level of gout pain. Reny (2014) explains that elderly people are advised to do exercise in addition to consuming healthy food to maintain their health. The recommended exercise for the elderly is light exercise and is not dangerous for the elderly, jumping or hing impact movements are not recommended. Pain complaints felt by the elderly are generally treated with pharmacology, but apart from using pharmacology, regular exercise or exercise can reduce pain complaints.

Based on table 7, it shows that before the exercise was carried out, there were 9 elderly respondents who experienced moderate levels of pain and 4 respondents who experienced severe levels of pain. After doing tera exercises four times, there was a decrease in the level of mild gout pain by 11 respondents and moderate pain by 2 respondents, this shows that there was a decrease in the level of gout pain after being given tera exercises. Elderly respondents who experienced moderate levels of gout pain experienced a significant decrease, namely before the tera exercise, 9 respondents experienced a decrease in the level of mild pain. Of the respondents who experienced severe gout pain before tera exercise, there were 4 respondents and after being given tera exercise, 2 respondents experienced a decrease in pain level to mild level and 2 respondents experienced a decrease in pain level to moderate level. The results of data analysis carried out using the Wilcoxon statistical test obtained a calculated Z value of -3,419 with a p-value of $0.001 < \alpha$ (0.05), where Ho was rejected and Ha was accepted. The results of the research can be concluded that there is an effect of tera exercise on reducing the level of gout pain in the elderly at Posbindu Karanganom. Prasetia (2018) explains that tera exercise as an activity therapy is an appropriate non-pharmacological therapy for reducing uric acid, apart from that, it is also an excellent therapy for improving the fitness and function of muscles and joints, especially for the elderly. Physical exercise aims to improve and improve the condition and function of the heart, blood circulation, respiratory system, nervous system, digestive system, endocrine glands, muscle strength and endurance, muscle and joint flexibility, balance, coordination and metabolic processes.

The results of calculations using Mann-Whitney analysis showed that the significant value was smaller than the probability value, where the Asymp.Sig.(2-tailed) value was <0.05, so for the results it could be concluded that there was a difference in the level of pain between the treatment group and the control. According to research by Masluhiya (2017), elderly people who exercise regularly are beneficial in improving the condition of joint strength and flexibility, apart from that, exercise also has a warming effect on the body so that it can reduce pain and prevent the deposition of uric acid in the extremities of the body due to lack of blood supply. Research conducted by Dwiyaningsih (2017) explains that exercise has various benefits for the body and mind, one of which can prevent and treat gout. For people who suffer from gout, exercise has benefits in overcoming pain caused by gout because the body's nerves relax when exercising.

Exercise can encourage the heart to work optimally, where exercise can increase energy needs by cells, tissues and organs of the body, which results can increase venous return, causing the volume to directly increase cardiac output, causing arterial blood pressure to increase and the impact of this phase can reduce sympathetic nerve activity and cause heart rate to decrease,

volume decreases, vasodilation venous arterioles, because this decrease results in decreased cardiac output and decreased resistance total peripheral, resulting in a decrease in blood pressure which results in decreased pain (Putri AA, 2022). Tera gymnastics is a sport that is suitable for the elderly because it is gymnastics tera is a form of light exercise used to train muscles and joints, apart from that, the movements in it are light and do not harm the elderly, movements that avoid jumping and crossing legs, but can still stimulate work functions organs, muscles and joints found in the human body withlight or moderate intensity. To reduce para joint painElderly people are encouraged to do physical activity or exercise light intensity such as doing tera exercises. Apart from that, do sportsregularly because it can keep the body healthy (Syafridahlia A, 2022).

CONCLUSION

Based on the results of research on the application of tera exercises to reduce the level of gout pain in the elderly at Posbindu Karanganom, it can be concluded that the majority of elderly people experienced moderate levels of gout pain in the treatment group and mild levels of pain in the treatment group after doing tera exercises. The results showed that there was a reduction in the level of gout pain in the elderly to a mild level of pain after doing tera exercises. Based on the results of statistical test research using the Wilcoxon test, the result was P value = 0.001, which means P value <0.05 so that Ho was rejected, indicating that there was an influence on the application of tera exercise on reducing the level of gout pain in the elderly at Posbindu Karanganom.

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