Effects of Elderly Gymnastics and Reflexology Program on Anxiety Among Elderly Using The Generalized Anxiety Disorder Screener (GAD-7)

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Keywords	ABSTRACT
Anxiety , GAD=7, elderly, gymnastics, exercises , reflexology	*The purpose of this study is to evaluate the impact of reflexology and elderly exercise as a combination intervention on lowering anxiety levels in seniors. The sample is a population that meets the inclusion criteria. The number of targeted samples is obtained using the average difference formula randomly. Number of respondents are 15 who fullfil the inclusion criteria aged 60-72 . The program package consists of reflexology combined with elderly exercises: Reflections are carried out: 2 times a week for 5 weeks, rlderly excersises is s is carried out 2 times a week. In measuring anxiety, the use the Generalized Anxiety Disorder Screener (GAD-7) has been proven to have high reliability and validity and identifies possible cases of generalized anxiety disorder and assesses the severity of symptoms. The respondents consist of 2 male (13.3%) and 13 female respondents (86.7%) with average age was 63.1 ± 2.2 and gender was differentiated into men with an average of 62.5 ± 3.5 then women with an average of 63.2 ± 2.1 then it is also known that the average level of anxiety before the intervention was 2.53 ± 3.52 with a 95% confidence level (95% CI) between 0.58 - 4.48 and the average level of anxiety after the intervention was 0.67 ± 1, 17 with a 95% confidence level (95% CI) between 0.02 – 1.30. into catagories 12 people (80%) had normal anxiety levels before the intervention, 2 people (13.3%) had mild, and 1 person (6.7%) had moderate and no severe. Wilcoxon test results, 7 respondents decreased anxiety levels, 3 respondents increased anxiety levels, and 5 respondents' anxiety remained the same as before undergoing the program package but statistically not significant.*

INTRODUCTION

Aging is a natural process that everyone goes through, and as we grow older, our bodies undergo various changes that can affect our overall health and wellbeing (Greer, 2019). The elderly,

Dwi Ratna Sari Handayani, Hafna Rosyita, Dewi Atika Putri, Imam Waluyo, Muhamad Arsyad Subu

in particular, are at risk of experiencing various physical and mental health issues, such as decreased muscle mass, functional disorders, balance problems, sleep disturbances, and anxiety.(Izquierdo et al., 2021) Anxiety is one of the most common mental health problems experienced by the elderly, with prevalenc(Greer, 2019)e rates of up to 50% in developing countries(Bandelow & Michaelis, 2022). Anxiety is characterized by a feeling of unease, nervousness, or worry that can affect a person's day-to-day functioning(Pressley, Ha, & Learn, 2021). It can also lead to other health problems such as depression, chronic pain, and high blood pressure.(Hamam et al., 2020) Given the prevalence and impact of anxiety on the elderly, it is important to find ways to reduce their symptoms and improve their overall quality of life(Ravens-Sieberer et al., 2022). (Mason & Faller, 2019; Vaitheswaran & Ramanujam, 2018; Mason et al., 2019; Meidutė & Česnaitienė, 2020).

One possible solution is exercise. Exercise has been shown to be beneficial for improving physical and mental health in the elderly(Peng, Menhas, Dai, & Younas, 2022). It can help to improve cardiovascular health, maintain muscle mass, improve bone density, and reduce the risk of falls.(Abou Elmagd, 2016) In addition, exercise has been found to have positive effects on mental health by reducing symptoms of anxiety and depression (Dunn, 2010; Herring et al., 2011; Schuch, Vasconcelos-Moreno & Fleck, 2011; Bond et al., 2020).

Reflexology is another complementary therapy that has been found to be beneficial for reducing anxiety and improving quality of life in the elderly(Zeidabadi, Abbas, Mangolian Shahrbabaki, & Dehghan, 2022). Reflexology is a non-invasive therapy that involves applying pressure to specific points on the feet, hands, or ears that correspond to different organs and systems in the body(Marican, Halim, Nor, & Nasir, 2019). It is believed that reflexology can help to improve circulation, reduce pain, and promote relaxation(Abdelaziz & Mohammed, 2014). (Kurbanova & Yuldasheva, 2022; Kabuk, Şendir & Filinte, 2022). Combining exercise and reflexology into a program package may provide a comprehensive approach to reducing anxiety in the elderly(Ozdelikara & Alkan, 2018). The inclusion of exercise in a reflexology program can help to improve physical health and provide a sense of accomplishment and empowerment. The addition of reflexology can help to promote relaxation, reduce stress, and improve overall wellbeing.

Several studies have been conducted to investigate the effectiveness of an exercise and reflexology program package in reducing anxiety in the elderly(Baljon, Romli, Ismail, Khuan, & Chew, 2022). One study carried out in Malaysia found that a program consisting of 16 weeks of exercise and reflexology significantly reduced symptoms of anxiety in the elderly participants. The study also found that the program improved their physical health and functional performance, as well as their quality of life(de Souza, de Faria Marcon, de Arruda, Junior, & de Melo, 2018). (Philippe et al., 2022, Bandyopadhyay & Das, 2022; Loaiza et al., 2017). Another study conducted in Taiwan found that a 12-week program of exercise and foot reflexology was effective in reducing anxiety and improving the mental health of elderly participants. The study also found that the program improved their physical fitness, balance, and flexibility. Overall, the evidence suggests that a program package consisting of exercise and reflexology can be effective in reducing anxiety and improving the physical and mental health of the elderly(Ekkekakis, 2023). Such programs could be easily implemented in community settings, care homes, or healthcare facilities, and could provide a low-cost, non-invasive, and enjoyable way for the elderly to maintain their overall health and wellbeing (Mason et al., 2019, Herzog et al., 2022, Schuch, Vasconcelos-Moreno & Fleck, 2011).

The good news is that there are ways to manage anxiety in the elderly, and one of these ways is through exercise and reflexology. Exercise, especially in older adults, has gained popularity as a non-pharmacologic method for managing anxiety, stress, and depression. There is a wealth of research that supports the use of exercise in reducing anxiety in the elderly. Exercise has been found to be an effective way to improve mental health and well-being and to reduce the risk of cognitive decline, depression, and anxiety disorders (Mura & Carta, 2013). Reflexology, on the other hand, is a complementary therapy that involves applying pressure to specific points on the feet, hands, or ears. Reflexology has been shown to be effective in improving the symptoms of anxiety and depression in older adults. Reflexology has been found to be a safe and non-invasive therapy that can provide significant benefits to the elderly. Several studies have investigated the effects of exercise and reflexology on the anxiety of the elderly. One study, in particular, examined the effect of an exercise and reflexology program package on the anxiety of the elderly living in nursing homes

(Cortés-Rodríguez et al., 2017). The study found that the exercise and reflexology program package significantly reduced the anxiety of the elderly participants compared to the control group. The study also found that the program package had a positive effect on the elderly's balance, functional capacity, and perception of quality of life. Another study investigated the effect of a 12-week yoga and reflexology program on the anxiety and depression of the elderly living alone (Chen et al., 2019). The study found that the yoga and reflexology program significantly reduced the anxiety and depression of the elderly participants compared to the control group.

Exercise and reflexology are two complementary therapies that have been found to be effective in reducing anxiety and improving physical and mental health in the elderly. Combining exercise and reflexology into a program package can provide a comprehensive approach to reducing anxiety that may be particularly beneficial for the elderly. Further research is needed to explore the optimal combination of exercise and reflexology and to determine the long-term benefits of such programs. The general purpose of this article is to analyze the effect of a combined intervention of reflexology and elderly exercise on reducing anxiety levels in the elderly in Puraseda Village, Kec. Leuwiliang, Bogor regency.

METHODS

The sample is a population that meets the inclusion criteria, where the targeted number of samples is obtained by using the average difference formula below by taking it randomly that the minimum sample is 11 research respondents

$$= \frac{2\sigma^2 \left[z_1 - \frac{\alpha}{2} + z_1 - \beta \right]^2}{(\mu 1 - \mu 2)^2}$$

With inclusion criteria aged 60-72 who have lived for 3 years in Puruseda village. For exclusion criteria, elderly can not communicative, unable to mobilize independently, and who have heart disease with dropout criteria do not attend the program 3 times during the program. The program package consisted of reflexology and elderly exercises. Reflections were carried out 2 times a week for 5 weeks. For 100 minutes each session was carried out in the morning. Elderly excersises were carried out 2 times a week. Intensity: 60-70% of Maximum Pulse Rate (MPR) for 45 minutes with moderate aerobics starting with a Warm Up (Warming Up) increasing the elasticity of the muscles and ligaments around the joints to reduce the risk of injury. Increases body temperature and pulse. Movement selection is carried out systematically and consistently followed by aerobics. This exercise aims to increase the strength of the muscles, as an exercise for balance, flexibility, and cardio respiration. Then, cool down to achieve a normal pulse.

The parameters used in measuring anxiety use the Generalized Anxiety Disorder Screener (GAD-7) which has been proven to have high reliability and validity and identifies possible cases of generalized anxiety disorder and assesses the severity of symptoms. The GAD-7 items describe the most salient diagnostic features of the DSM-IV diagnostic criteria A, B, and C for generalized anxiety disorder. At GAD-7, respondents were asked how often, over the past 2 weeks, they had been bothered by each of the 7 major symptoms of generalized anxiety disorder. then for the 7 GAD question items, the 7 questions have 4 components namely: Physical, what is being asked is Difficult to relax? and feel less rested and difficult to rest. Psychologically, what is asked is worrying too much about different things. And the feeling of dread as if something might happen? Social, what is being asked is feeling anxious, anxious, or feeling ostracized? Emotionally, what is being asked is not being able to stop or control worry. And being easily irritated or annoyed(sensitive)? The response options for the questions above consisted of "not at all," "some days," "more than half the day," and "almost every day," which scored 0, 1, 2, and 3 respectively. In addition, the GAD-7 score ranges from 0 to 21, with scores of 5, 10, and 15 representing mild, moderate, and severe levels of anxiety symptoms on each score. Score 5 = mild anxiety, 10 = moderate anxiety, 15 = severe anxiety . Studies show that the GAD-7 score applies to both males and females as well as older and younger respondents (Zbozinek et al., 2012, Wolk et al., 1996; Ross, 2013).

Dwi Ratna Sari Handayani, Hafna Rosyita, Dewi Atika Putri, Imam Waluyo, Muhamad Arsyad Subu

RESULTS AND DISCUSSION

The description of the research respondents was carried out using univariate analysis to see the distribution of the characteristics of the subject's age, gender, and level of anxiety.

Table1. Gender distribution of the elderly (n=15))

| Gender	N	%
Male	2	13,3%
Female	13	86,7%

Gender indicated that there were 2 male respondents (13.3%) and 13 female respondents (86.7%).

Table 2. Average Age, Gender, and Anxiety Levels Before and after (n=15)

Respondents Chharasteristic	Mean ± SD	Min	Max	CI 95%
age	63,1 ±2,2	60	66	61,9 - 64,3
male	62,5±3,5	60	65	30,7-94,2
female	63,2±2,1	60	66	61,9-64,5
Anxiety level				
Before	2,53 ± 3,52	0	11	0,58 - 4,48
After	0,67 ± 1,17	0	4	0,02 – 1,30

From the data above, it was found that the average age was 63.1 ± 2.2 and gender was differentiated into men with an average of 62.5 ± 3.5 then women with an average of 63.2 ± 2.1 then it is also known that the average level of anxiety before the intervention was 2.53 ± 3.52 with a 95% confidence level (95% CI) between 0.58 - 4.48 and the average level of anxiety after the intervention was 0.67 ± 1, 17 with a 95% confidence level (95% CI) between 0.02 – 1.30.

Graphs 1. Level anxiety of respondents before and after program pakage
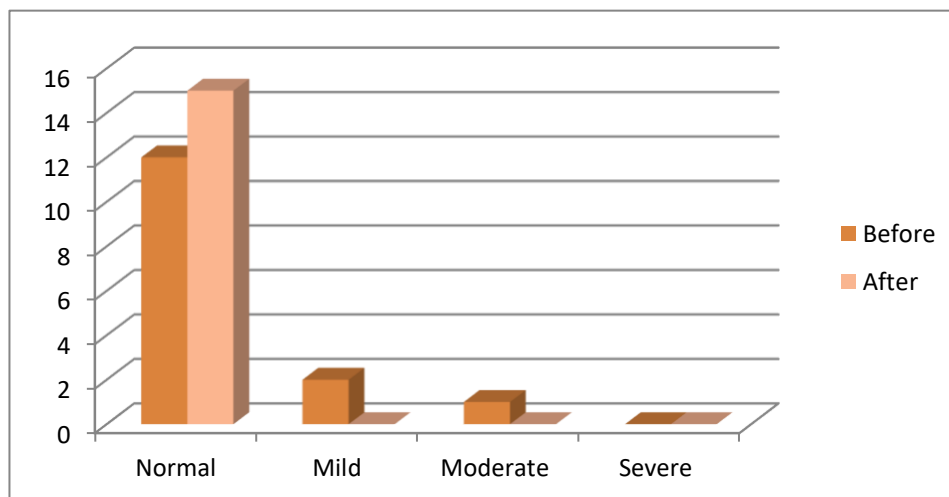
Based on the research respondents, 12 people (80%) had normal anxiety levels before the intervention, 2 people (13.3%) had mild, and 1 person (6.7%) had moderate and no severe. After the intervention, the respondents who had anxiety levels decreased, normal as many as 15 people (100%).

Before carrying out an analysis of the results of the intervention program package, a normality test of the anxiety level score was carried out before and after the intervention.

Table 3 Normality of the average anxiety score before and after the intervention
(n=15)

Level anxiety	Normality	Note
Before	0,005	Not normal
After	0,000	Not normal

The normality test for anxiety scores before and after the program package intervention was equally abnormal, so the Wilcoxon test was used to test differences in levels of anxiety.

Table 4 Differences in anxiety levels before and after the intervention

Level of anxiety	N	Nilai P
Negative Ranks	7	0,073
Positive Ranks	3	
Ties	5	

Wilcoxon test results, 7 respondents decreased anxiety levels, 3 respondents increased anxiety levels, and 5 respondents' anxiety remained the same as before undergoing the program package but statistically not significant.

Discussion

The level of anxiety before the intervention, of respondents who had normal values was 12 (80.0%) respondents, respondents who had a mild anxiety level were 2 (13.3%), and respondents with moderate anxiety levels had a value of 1 (6.7%), and no subject has a high level of anxiety with a confidence level of 95% (CI 95%) 0.58 - 4.48 and the average level of anxiety after the intervention is 0.67 ± 1.175 with a confidence level of 95% (CI 95%) between 0.02 – 1.303.

The results of this study indicate that the reflexology and exercise program packages for the elderly before and after there are no differences.There were packegae program in this study before but , many study both rexology and elderly exercises was done witahoit combination . Here there were effects of six weeks of resistance (RET) significantly reduced feelings of anxiety-tension and the frequency and intensity of irritability and aerobic exercise training (AET) resulted in comparable improvements in trait anxiety, concentration, irritability, muscle tension, and symptoms of fatigue and vigor.on signs and symptoms associated with GAD (Herring & Jacob, 2011). The reflexology helps body systems return to the natural state and reduce symptoms of a disease can affect psychological indicators more than biometric parameters (Embong & Soh, 2017; McVicar, Greenwood, & Ellis, 2016) Physiological changes, such as the increased blood circulation and muscle relaxation, are the main consequences of reflexology massage that improve patient's comfort.(Morey JH.; 2005) Williamson et al (showed that foot reflexology massage was not more effective than non-specific foot massage for relieving psychological symptoms during menopause. Differences in techniques used for reflexology, and number and length of reflexology sessions, could account for differences in the results.Inconsistencies in maps and points used for reflexology massage are considered major interventional problems for patients (Williamson, White, & Hart, 2002) which may explain reasons for differences in the results of the Gunnarsdottir and Jonsdottir's study with those of the present study (Gunnarsdottir & Jonsdottir, 2007). The study of Mahmoudirad, Moslo and Bahrami (2014) showed that there was a statistically significant difference between the average anxiety score in the intervention group before and after the intervention (p <0.001). The mean anxiety score was reduced after the intervention compared to before and this led to significant differences in anxiety levels at the different stages. Korhan, Khorshid, & Uyar (2014) found that the decrease in physiological signs of anxiety in samples that received reflexology could be caused by a relaxation response from reflexology interventions. There is also the Pommeranz Endorphin theory which states that releasing endorphins in the body can be done through massage because it is a body reaction. Endorphins are substances that are produced naturally by the body, work, and have effects like morphine. Endorphins provide a comfortable effect and play an important role in regenerating cells to repair worn-out/damaged body parts. This confirms that reflexology has a role in reducing anxiety which is one of the psychological problems in the elderly.

Study limitations

This study has limitations in the form of not analyzing the role of age, gender differences, the effect of duration, repetition, intensity, and others. He also didn't take vital signs in the combined intervention of reflexology and elderly exercise on the anxiety level of the elderly. As well as the uneven number of female and male samples.

CONCLUSION

The combined intervention of reflexology and exercise for the elderly before the results obtained was 2,53 ± 3.52 and after the intervention was obtained 0,67 ± 1.17 for the level of anxiety using the Geriatric Anxiety Disorder Screener (GADS) measuring before and after the combined intervention of reflexology and exercise for the elderly was 6.43%. The level of mild and moderate anxiety after the combination intervention changed to 3.33%. The suggestions that can be given after this research are to keep the elderly active and the anxiety level of the elderly must be reduced so as not to get too high and also understand the symptoms of anxiety well.

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