JURNAL Healthsains
Printed ISSN: 2722-7782
Electronic ISSN:2722-5356
jurnal.healthsains.co.id

CHANGES IN THE MENTAL HEALTH CONDITION AMONG ELDERLY AFTER GIVING REFLEXOLOGY MASSAGE INTERVENTION

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Keywords:
Reflexology, massage, mental health, Depression (GDS), Anxiety (GAT-7), elderly.

ABSTRACT
Introduction: The number of elderly people in Indonesia is estimated to rise by about 10 percent and by 2024 it will rise to 20 percent and this group is facing issues such as living below the poverty line, health problems such as mental health (depression and anxiety) Various instruments of mental health are widely used both in hospitals and in the community Objective: The objective of this study was to know the changes in the mental health condition of elders after given reflexology intervention Methods: This is quasi experimental study with pre and post design among elder group ≥ 60 years. The elderly people were interviewed with GDS and GAT-7 before receiving treatment. The following step consisted of alternate massaging the legs using reflexology. After completing the reflexology massage intervention every 2 (two) times a week with a duration of 100-140 minutes, the second GDS and GAT-7 interview was then conducted. The results of the difference in the average scores of GDS and GAT-7 were compared to see the extent of the benefits of reflexology intervention in reducing anxiety and depression in the elderly group. Other variables are age, marriage status, education, research carried out in Puraseda village, Leuwiliang district, Bogor district of West Java. Sampling method uses random sampling techniques that meet the inclusion criteria with a minimum sample size of 10. Analysis is performed in a descriptive and bivariate to see the difference between GS and GAT-7 scores. Results: The overall average GDS score decreased after being given reflexology massage. Our study found that there was an influence of reflexology on the elderly mental health. The average depression score before reflexology was 18.60 with a standard deviation of 3.01. Then, an average depression score after reflexology intervention was 16.20 with a standard deviation of 2.68. In this study, the anxiety score was carried out using the Wilcoxon test, where 7 subjects' anxiety levels decreased, 3 subjects' anxiety levels increased, and 5 subjects remained the same.

Introduction

Based on the 2019 National Socio-Economic Survey (Susesnas), the number of Indonesian populations aged 60 years or more reached 25.7 million people or around 9.6 percent. According to the Central Statistics Agency, the number of elderly people in Indonesia is estimated to increase by around 10 percent in 2020. In 2024, the number will increase to 20 percent. In 2050, the estimated number will reach 74 million people or around 25 percent of the total population. This group faces problems such as living below the poverty line and far from an adequate level of welfare (National Team for the Acceleration of Poverty Reduction, 2020)

The health problems experienced by the elderly people vary from feeling useless, easily sad, stress, depression, anxiety, dementia, delirium, and sleep disturbances. These problems were both quality and quantity. Sleep disorders among elderly include frequently waking up at night, feeling tired during the day and often complaining that it is difficult to sleep. This can be caused by several factors such as the environment, increased use of medications which can result in a decrease in quality of life, frequent sleepiness during the day. and some depressed mood. sleep disorders have an impact on sufferers' social, psychological, physical, and economic lives. The impact of insomnia is quite severe, including loss of productivity and medical costs for health services. Apart from increasing the risk of generative diseases such as hypertension and heart disease, depression and stress are also manifestations of sleep disorders. Sleep disorders also increase the risk of falls in the elderly (Helbig, 2013), and suicidal ideation and drug abuse (R. Nadorff et al., 2013). Elderly people often have psychosocial mental health problems such as isolation or withdrawal from social activities for various reasons such as after retirement, after severe and long illness, after the death of a living partner, etc. (Priyayi et al., 2018). (Isnawati & Yunita, 2018) Over the time of the covid pandemic adding to health problems such as anxiety, depression, and loneliness (Meng et al., 2020), (Parlapani et al., 2020), (Kotwal et al., 2021).

Some instruments were used to measure mental health problems of the elderly such as the presence of anxiety, depression. The hospital anxiety and depression scale (HADS-M), the Geriatric Depression Scale (GDS) 15 and the GDS 30, the Generalized Anxiety Disorder Screener (GAD-7), the Beck Anxiity Inventory (BAI), the State-Trait Anxiality Inventary (STAI) and the General Depression scales (GDA-7). The mental health problem that will be seen is anxiety where the subjects are asked how often, over the last two weeks, they have been disturbed by each of the 7 main symptoms of general anxious disorder. The response options consisted of "nothing at all," "a few days," "more than half a day," and "almost every day," each worth 0, 1, 2, and 3. The mental health problem can know of GAD-7 scores range from 0 to 21, with scores of 5, 10, and 15 representing mild, moderate, and severe anxiety symptoms on each score. Depression problems are being done with Geriatric Depression Scales (GDS) 15 and GDS 30. A systematic review assessing the accuracy of the filtering of the second version of GDS (Park & Lee, 2021).

One of the methods is reflexology massage, which is a popular noninvasive therapy. (Aydin et al., 2016). Reflexology massage is a therapeutic method aimed at stimulating target organs with electrochemical messages delivered to organs through neurons that are stimulated through reflex points in the hands and legs (Ernst et al., 2011), (Ardianti & Julianto, 2022). (Song et al., 2015). On the article will see changes in the mental health condition of the elderly after being given reflexology massage interventions in particular anxiety and depression.

Materials and methods

This study used quasi-experimental designs with pre and post designs in elderly groups ≥ 60 years. In this study, elderly people were interviewed with GDS and GAT-7 before receiving treatment. The next step is to give reflexology massage treatments to the legs alternately. After the intervention is completed then a second GDS and GAT-7 interview was conducted. The result of the difference between the average scores of GDS, GAT-7, compared to see to what extent the influence of reflexology massage interventions on the reduction of anxiety and depression in the elderly group. Other variables are age, marital status, education, treatment performed on the elderly who meets the criteria of inclusion and exclusion. Each elderly will be given a reflexology massage intervention every 2 (two) times a week with a duration of 100-140 minutes. The population of the study was ≥ 60 years old in Puraseda Village, Leuwiliang district, Bogor district of West Java. The sampling method uses random samplings that meet the inclusion criteria until the desired number of respondents is met, where the number of samples targeted is obtained using the formula below Source: Ariawan, 1998:

$$Sp^2 = \frac{[(n_1-1)S_1^2+(n^2-1)S_2^2]}{(n_1-1)+(n_2-1)}$$

$$n = \frac{2\sigma^2[z_{1-\alpha}^2 + z_{1-\beta}]^2}{(\mu_1-\mu_2)^2}$$

Note
- Z1-α/2 = Degree of significance of 5%
- Z1-ß = Degree of test strength of 80%
- μ1= mean score after intervention
- μ2= average score after intervention
- Minimum sample count is 10

In this study, inclusion criteria were elderly people aged over 60 years. Exclusion criteria was elderly people who have communication problem and those who are unable to mobilize independently. Subjects were dropped out if they did not participate in reflexology 3 times during the intervention. Analysis will use univariate for description and bivariate for analysis of differences of score GDS and GAT-7 before and after intervention

Results

Table 1. Mean, SD, Min, Mx CI 95% age, depression, anxiety score before and after Intervention Reflexology

Subjects	Average±SD	Min	Max	CI 95%
Age	65,40 ±5,34	60	72	62,90 – 67,90
Male	64,88±5,64	60	72	60,16-69,59
Female	65,75±5.36	60	72	62.34-69.16
Depression Score				
Before Intervention	18,60±3,01	12	23	17,19-20,01
After intervention	16,20±2,68	12	21	14,94-17,96
Anxiety Score				
Before Intervention	2,53 ± 3,52	0	11	0,58 - 4,48
After intervention	0,67 ± 1,17	0	4	0,02 – 1,30

From table 1 above, we found that there is an overall mean ± SD age range of 65.40 ± 5.345 with a minimum age of 60 years and a maximum of 72 years with a CI of 95% (61.90 - 67.90). Where the mean ± SD age of men is 64.88 ± 5.64, the mean age of women is 65.75 ± 5.36. The overall average GDS score decreased after being given reflexology massage so that there was an influence of reflexology on the elderly where the average depression score before reflexology was 18.60 ± 3.01. The average depression score after reflexology intervention was 16.20 with a standard deviation of 2. 68. The average anxiety before the intervention was 2.53 ± 3.52 and after the intervention 0.67 ± 1.17. it appeared that there was a decrease in anxiety scores after the intervention. Before analyzing the benefits of the intervention using bivariate analysis, a normality test for depression and anxiety scores before and after the intervention was carried out

Table 2. Normality Means before and after Intervention

Depresion Score	Normality	Note
Before Intervention	0,58	**Normal Distribution**
After Intervention	0,37	**Normal Distribution**
Anxiety Score	**Normality**	
Before Intervention	0,005	Not Normal Distribution
After Intervention	0,000	Not Normal Distribution

In table 2 above, the significant value before the intervention is 0.58, >0.05, which means the data before the intervention above is normally distributed and after the intervention is 0.37, >0.05, which means the distribution is normal. Because in the depression score normality test the results were normal and normal, the t-paired test was used. The anxiety score before and after the intervention both have a value of 0.005 <0.05, meaning the distribution is not normal, so to analyze the difference in anxiety scores using the Wilcoxon test.

Table 3. The Differences of Depression Score Before and after Intervention

Depression Score	Mean±SD	CI (95%)	P
Before -after	2.40±3,45	0,78-4,01	**0,006***

**Paired T-Test is significance*

The results of the Paired t-test showed a significance of 0.006 (p<0.05) with an average difference before and after of 2.40 ± 3.45. Because the p value <0.05, H0 is rejected and H1 is accepted, which indicates that there is a difference in depression scores before and after the intervention.

Table 4. Differences of Anxiety Score Before and after Interventio

Anxity Score	N	p
Negative Ranks	7	0,073*
Positive Ranks	3	
Ties	5	

*Wilcoxon

Wilcoxon test results showed that 7 subjects' anxiety levels decreased, 3 subjects' anxiety levels increased, and 5 subjects remained the same. Statistically, it shows a significant difference of p= 0.073 (p <0.05) so that H0 is accepted and H1 is rejected. This indicates a change in anxiety levels before and after intervention.

DISCUSSION

The results of this study showed that the average age of the elderly (Table 1) was 65.40 ± 5.345 years. This is possibly because life expectancy is greater for women than men according to estimates by the Central Intelligence Agency World Factbook (2011). The presence of mental health problems in this study is in line with research conducted by Aydin, Aslan, Yalcin 2016 on women with OAB (Overactive Bladder Symptoms) who had symptoms of depression. It was found that the symptoms of mild depression and moderate depression were found to decrease significantly after reflexology massage and symptoms of severe depression were found to be absent after reflexology massage.

According to Wang et al. (2008) reflexology is defined as the systematic application of pressure to specific reflex points on the feet with the aim of demonstrating the effect of

homeostasis, relaxation, and healing response. Research conducted by (McCullough, et al., 2014) "Nerve impulse theory" says that stimulation applied to specific reflexology points on the feet can increase nerve connections to the appropriate parts of the body. This is the most promising theory and shows that the benefits of reflexology can be achieved by modulating the autonomic nervous system (ANS).

Research conducted by Krohn, et al. (2011) examined the effect of massage on depression by providing massage therapy twice a week for 5 weeks with a duration of 30 minutes per meeting. The results were that after massage therapy the depression score (PHQ) was reduced significantly, and anxiety depression (BSF) scores were also reduced. Several factors that significantly influence depression are age, gender, physical activity, smoking status, mood, stress, anxiety. There are several factors that cause the decrease in depression scores to be insignificant, including the lack of optimal reflection techniques. Due to the lack of experiences and therapist experience, the number of subjects was not large enough and the GDS questionnaire was subjective. Likewise, daily activities that have an effect such as resistance exercise for six weeks also reduce feelings of anxiety, concentration, irritability, muscle tension and symptoms. fatigue and vigor on the signs and symptoms associated with GAD (Herringetal.,2011). Reflexology helps the body systems return to their natural state and reduces the symptoms of diseases that can affect psychological indicators more than biometric parameters (Embong et al., 2017). Physiological changes, such as increased blood circulation and muscle relaxation are the main consequences of reflexology massage Increases patient comfort. Massage therapy has the effect of reducing anxiety and muscle tension. Massage stimulation will stimulate delta-A nerve fibers and C fibers and release substance P in afferent nerves.

Differences in the techniques used for reflexology, and the number and length of reflexology sessions, may explain differences in results. Inconsistency in the maps and points used for reflexology is considered a major intervention problem for patients (Embong et al., 2017). (Korhan et al., 2014) found that the decrease in physiological signs of anxiety in samples who received reflexology massage could be caused by the relaxation response from the reflexology intervention. There is also the Pommeranz Endorphin theory which states that the release of endorphins in the body can be done through massage because it is the body's reaction. Endorphins are substances produced naturally by the body, work and have effects like morphine. Endorphins are calming, provide a comfortable effect and play an important role in regenerating cells to repair worn/damaged body parts. This confirms that reflexology has a role in reducing anxiety, which is one of the psychological problems in the elderly. Physiological concepts can explain reflexology mechanisms and the possibility of diagnosis or as additional information in making a medical diagnosis and as evidence-based practice in integration in conventional health services (Chummun & Tiran, 2008).

The use of reflexology to reduce anxiety in several conditions, such as in patients undergoing hymodialysis, shows significant changes and differences in the intervention and control groups (Choudhari & Sapali, 2017) and provides a relaxing effect and reduces tension and anxiety in CABG patients (Gunnarsdottir & Jonsdottir, 2007); (Bagheri-Nesami et al., 2014) including use to reduce anxiety in patients undergoing angiography (Mahmoudi et al., 2014). Besides that, reflexology can function as an effective method for reducing physiological signs

of anxiety. such as systolic blood pressure, distolic blood pressure, pulse and respiration rate and can also reduce the need for sedation, this is mentioned in research (Korhan et al., 2014)

Research into stress, anxiety and depression in older people turns out that in Canada the incidence was lower than in the younger group during Covid-19. This is interesting, perhaps because the younger group had more social activity before the Covid pandemic than the elderly, so once there were restrictions, the younger group felt more pressured by their activities. Likewise in Europe (Spain), mental health problems during the beginning of Covid also showed the need for psychosocial support in all age groups, especially women (Nwachukwu et al., 2020), (González-Sanguino et al., 2020). The risks that cause mental health problems in the elderly in Thailand, especially anxiety and depression, have been identified and it is necessary to develop instruments related to chronic diseases, chronic physical diseases, and disabilities. The need for training for coping skills, cognitive modification skills, including understanding self-esteem in the elderly (Yoelao et al., 2016). Longitudinal studies make it a challenge to carry out assessment and treatment of elderly health, especially anxiety (Sami & Nilforooshan, 2015). The prevalence of depression is quite high in the elderly, especially women in Turkey, one of the factors being low levels of life satisfaction, lack of social security,

Conclusion

The benefits of reflexology for the mental health of the elderly, especially depression and anxiety, have been proven to maintain the health of the elderly.

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