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The Effect of Physical Exercise on Depression in Menopausal Women

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Abstract

Women during menopause often complain of mood disorders due to hormonal changes. Physical exercise is known to reduce depression, but research on menopausal women is limited. The purpose of this study was to determine the effect of physical exercise on depression in menopausal women. The research design used was a quasi-experimental pre and post-test for 16 weeks. The measuring instrument used is a GDS (Geriatric Depression Scale). The research subjects consisted of 34 menopausal women aged 45-65 years. Subjects were divided into the physical exercise group (2x90 minutes/week, n=17) and the control group (n=17). The results showed that physical exercise significantly decreased depression ($p=0.013$) compared to the control group. It concluded that regular exercise is effective in preventing and treating mood disorders that occur during menopause.

INTRODUCTION

Menopause is a transitional period in women characterized by irregular menstruation, vasomotor symptoms, sleep disorders, mood disorders, and genitourinary disorders (Potter et al., 2018). In 2020 it was estimated that there are 11.54% menopausal women from the total population of Indonesia (Setiawan et al., 2020).

Menopause is a biological event related to the cessation of female reproduction due to the physiological aging process (Wieder-Huszla et al., 2014). Menopause is also associated with mood disorders due to hormonal fluctuations that are usually regular, becoming increasingly erratic followed by periods of estrogen cessation (Clayton et al., 2010). Other prominent psychological symptoms are mood swings, irritability, unstable emotions, feeling worthless, and the emergence of anxiety that can interfere with daily activities (Reid et al., 2014).

Depression is the most common psychological disorder in perimenopausal women (Fouad et al., 2021; Kim, 2020; National Institute of Mental Health, 2010). Depression negatively affects postmenopausal women related to personality, relationships with friends, and performance at work (Barghandan et al., 2021; Fouad et al., 2021). In addition, WHO reports that depression in postmenopausal women is a cause of morbidity, mortality, and suicide (National Institute of Mental Health, 2010). Depression occurs due to a decrease in estrogen, affecting various parts of the body, including emotions and the brain (Ali et al., 2020; Fouad et al., 2021; Octavani & Meiyanti, 2019).

Menopausal women should take precautions against psychological problems such as depression (Bernard et al., 2015). It aims to improve their quality of life, especially in the psychological domain, and decrease morbidity

(Kim, 2020). Several therapies to overcome depression in menopausal women have been carried out, such as estrogen hormone therapy, but this therapy has side effects. Prolonged physical exercise is associated with preventing anxiety in menopausal women (Grindler et al., 2015). In addition, exercise is known to improve mood in the elderly. Physical exercise is also known to have a beneficial effect on depressive symptoms (Dinas et al., 2011).

The author, in 2018, conducted a study related to the effect of brain exercise and aerobic exercise, which is proven can improve the psychological condition of older women (Fitriana, 2018). Physical exercise is known to reduce depression, but research on menopausal women is limited. Previous studies primarily focused on the importance of physical exercise on individual function in general (Fitriana, 2018; Henderson, Victor, MD, MS, 2011). In addition, various previous studies focused on elderly respondents in general, while this phenomenon related to postmenopausal women has not been widely studied. This study aims to determine the effect of physical exercise on depression in menopausal women.

METHODS

Design Study

This research design is a quasi-experiment with pre and post-test for 16 weeks from September-December 2020. This research has been approved by the Ethics Commission of the PPNI West Java Nursing College (No.III/001/KEPK-SLE/STIKEP/PPNI/JABAR/VIII/2020).

Participants

The research subjects came from the community of recitation mothers in the C community health center area C who were willing to participate. Sample selection using a purposive sampling technique. The inclusion criteria for this study were mothers aged 45-65 years who did not have severe disease and did not participate in sports for at least three months before the intervention. The total population is 76 people, and those who meet the criteria are 34 people, 17 people in the exercise group, and 17 people in the control group.

Intervention

Intervention for 16 weeks. The intervention group received aerobic exercise, accompanied by viral or Indonesian dangdut music to entertain participants. The music provided changes every week. Exercise 2x90 minutes per week in the morning, consisting of 15 minutes warm-up, 60 minutes core movement, and 15 minutes cool down. Warming up helps the body increase blood flow to the muscles, reducing the risk of injury to muscles and joints. The cool-down exercise lasts 15 minutes with a gradually decreasing tempo.

Data Collection

Sociodemographic data includes age, blood pressure, duration of menopause, number of children, education level, employment, menopausal status, and history of the disease. This data collection was carried out from interviews and physical assessments. The level of education is divided into four, namely elementary, junior high school, senior high school, and college. Employment is divided into three, namely housewife, self-employment, and worker. Menopause status is divided into three, namely premenopause, perimenopause, and postmenopause. Premenopause begins with a decrease in the hormone estrogen, characterized by weight gain, frequent headaches, and easy forgetfulness. Perimenopause is a phase characterized by irregular menstruation that can take place in a matter of months and years, and postmenopause is a phase marked by the cessation of menstruation for more than 12 months (Wahyuni et al., 2018).

Examination of Depression

Examination of depression using a GDS (Geriatric Depression Scale) questionnaire totaling 15 questions through the subjects filling in the questionnaire themselves (Ishihara et al., 2011). The Indonesian version of the GDS-15 has a Cronbach's alpha value of 0.755, AUC (area under the curve) 92.2%, a sensitivity of 71.8%, and a specificity of 87.6% (Utami, 2019).

Data Analysis

Data were analyzed using SPSS version 25 with a confidence level of $p < 0.05$. Data normality uses Shapiro Wilk. The differences between the two groups used the independent t-test for normally distributed data and the chi-square for categorical data. Changes before and after intervention were analyzed using Wilcoxon.

RESULT

Subjects total 34 people, namely 17 people in the aerobic exercise group and 17 people in the control group who did their daily activities. Based on sociodemographic data, namely age, blood pressure, duration of menopause, number of children, education level, employment, menopausal status, and disease history there were no significant differences between the two groups ($p > 0.05$) (Table 1).

Based on examinations before and after the intervention, it was found that there was a significant difference in depression ($p=0.013$) compared to the control group (Table 2).

Table 1. Sociodemographic data

Variable	Physical Exercise (n=17)	Control (n=17)	p
Age, mean (SD), yr	52.3 (4.1)	52.7 (4.5)	0.814
Education, n (%)			
Elementary	1 (33.3)	2 (66.7)	0,866
Junior high school	4 (57.1)	3 (42.9)	
Senior high school	9 (47.4)	10 (52.6)	
College	3 (60.0)	2 (40.0)	
Employment, n (%)			
Housewife	14 (56)	11 (44)	0.286
Self-employment	3 (42.9)	4 (57.1)	
Worker	0 (0)	2 (100)	
Menopausal status, n (%)			
Premenopause	3 (100)	0 (0)	0.176
Perimenopause	6 (50)	6 (50)	
Postmenopause	8 (42)	11 (58)	
Hypertension, n (%)			
Yes	2 (50)	2 (50)	0.699
No	15 (50)	15 (50)	
Diabetes, n (%)			
Yes	1 (50)	1 (50)	0.758
No	16 (50)	16 (50)	

Table 2. Effect of exercise on depression

Group	Pre	Post	p
Physical exercise, mean (SD), score	3.5 (2.7)	1.9 (1.8)	0.013
Control, mean (sd), score	3.8 (3.5)	3.0 (2.7)	0.154

DISCUSSION

The results of the study found that physical exercise could reduce depression in menopausal women. RCT studies show that at least nine weeks of moderate-intensity exercise can be used to treat depression (Stanton & Reaburn, 2014). Exercise has a large and significant antidepressant effect in people with depression. Exercise can stimulate serotonin release so that it can reduce depression (Schuch et al., 2016). Physical exercise is also associated with an increase in β -endorphins which play a role in treating depression (Dinas et al., 2011). Studies show that women in the perimenopause phase are more likely to experience depression than those in the postmenopausal phase (Clayton et al., 2010).

Menopausal women who do a physical exercise show lower depression because of social interaction and mental distraction when doing physical exercise (Galas et al., 2019; Nguyen et al., 2020). These two things make menopausal women still feel comfortable and psychologically advantageous (Galas et al., 2019; National Institute of Mental Health, 2010; Nguyen et al., 2020). In addition, participation during physical exercise makes them more relaxed (Bernard et al., 2015; Fouad et al., 2021; Galas et al., 2019).

Physical exercise can positively affect body weight, body fat percentage and maintain blood pressure and bone density (Bernard et al., 2015; Galas et al., 2019). These physical conditions support the comfort sensation of postmenopausal women, thereby reducing the possibility of depression (Bernard et al., 2015). In addition, several studies have shown that physical exercise has an antidepressant effect (Bernard et al., 2015; Galas et al., 2019).

In this study, the intervention group who did a physical exercise in rhythmic exercise experienced a significant decrease in depression following previous similar studies (Bernard et al., 2015; Galas et al., 2019; Rodrigues et al., 2019; Sternfeld & Dugan, 2011). Physical exercise's physiological and psychological mechanisms can increase dopamine and serotonin hormones in neurotransmitters, increase synaptic nerve transmission, endorphins secretion, stress distraction, and increase self-efficacy and self-esteem (Galas et al., 2019; Sternfeld & Dugan, 2011). Menopausal women used to physical exercise have a positive mood, are prosperous, and avoid perceived stress, anxiety, and depression (Rodrigues et al., 2019). Apart from being a preventive measure, physical exercise can also play a role in managing psychological disorders in menopausal women (Rodrigues et al., 2019; Sternfeld & Dugan, 2011).

The exercises in this study were carried out in the morning because they were not too tired physically. In addition, the morning air is still fresh. Moreover, in the mood, usually in the mornings are still enthusiastic, so exercise is also done with enthusiasm.

CONCLUSION

Physical exercise can help menopausal women cope with physiological disorders during menopause, such as depression. Further research should be conducted with more respondents and a blood biochemical examination such as BDNF, cortisol, endorphins, or serotonin to determine the molecular mechanisms that occur in the blood.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

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