

THE EFFECTIVENESS OF TAI CHI IN REDUCING DEPRESSION LEVELS IN THE ELDERLY

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ABSTRACT

Background: Older adults are a group that is vulnerable to psychological changes, including depression. Depression in older adults can lead to a decline in overall well-being and increase the risk of additional health complications. One non-pharmacological intervention that can help reduce symptoms of depression is Tai Chi, which involves rhythmic movements and can improve physical and psychological balance.

Purpose: The purpose of this study was to examine how Tai Chi exercises affect depression levels among elderly people living in Purbayan Village.

Methods: This study used a quantitative approach with a pre-experimental design, in which one group underwent pre-test and post-test assessments. Participants were selected through random sampling based on inclusion criteria, which required elderly individuals who were able to perform daily activities independently. Data were collected using the Indonesian version of the Patient Health Questionnaire-9 (PHQ-9), which showed validity scores ranging from 0.508 to 0.907. The intervention involved Tai Chi exercises consisting of eight movements, performed independently at home for 30 minutes per session, three times a week.

Results: The results showed a decrease in the average depression score of 4.9 after the Tai Chi exercise intervention. Statistical analysis using a paired t-test showed a p-value of 0.000 (< 0.05), indicating a significant effect of the intervention.

Conclusion: Tai Chi exercises have been proven to reduce depression levels in older adults. This intervention has been proven effective as a non-pharmacological approach to improving mental well-being and overall quality of life among older adults.

Keywords: Depression, Elderly, Mental Health, Tai Chi

Received: November 7th, 2025; Revised: December 24th, 2025; Accepted: December 26th, 2025
DOI:<https://doi.org/10.36720/nhjk.v14i2.825>

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BACKGROUND

Aging is an inevitable part of life that every individual will experience (Nathalia & Elvira, 2020). As they age, older adults are prone to various health problems, one of which is depression. Depression in older adults is a psychological condition characterized by prolonged sadness, decreased interest in daily activities, sleep disturbances, fatigue, and an overall decline in life satisfaction (WHO, 2023).

The elderly population worldwide is expected to continue to increase in line with rising life expectancy in Indonesia (BPS, 2023).

Based on the classification proposed by the World Health Organization (WHO), individuals aged 45–59 years are considered middle-aged adults, those aged 60–74 years are categorized as early elderly, individuals aged 75–90 years as older elderly, and those over 90 years as very old elderly (Norlinta & Sari, 2021).

Based on data from the Central Statistics Agency (BPS, 2023), elderly women dominate the population structure of this group with a percentage of 52.28%, while elderly men account for 47.72%. In terms of age groups, seniors aged 60–69 years old contribute the most, accounting for 63.59% of the total senior population, and most of them live in urban areas.

The increase in the elderly population is accompanied by a number of health challenges, including psychological disorders such as depression. Globally, the prevalence of depression among the elderly is estimated to range from 8–15%, with an average of 13.5% based on analyzes across various countries (Salfia et al., 2020). In Indonesia, the prevalence of mild to severe depression in the elderly reaches 32%, with a higher risk in the 55–64 age group (approximately 0.7%), increasing to 10.0% in the 65–74 age group, and exceeding 10.0% for those aged 75 and over (Salfia et al., 2020).

Depression in the elderly is a mental health issue that requires serious attention as the population of this age group increases in Indonesia. The aging process involves physical, biological, psychological, and social changes that can potentially trigger depression. Various factors, such as loss of a partner, decline in physical abilities, chronic illnesses, and lack of family support, contribute to an increased risk of depression in the elderly (Yuniartika et al., 2021). This condition often causes the elderly to experience prolonged sadness, loss of interest in daily activities, and a tendency to withdraw from social interaction (Salfia et al., 2020).

Some studies show that depression in the elderly is influenced by gender, health conditions, and the duration of chronic illness. Yuniartika & Murti (2020) found that elderly women with a history of long-term chronic diseases, such as hypertension, are more susceptible to depression than men due to hormonal differences and emotional vulnerability.

Depression in the elderly is multifactorial and requires a comprehensive approach, including physical activities such as yoga therapy or Tai Chi exercises, which have been proven effective in reducing depression levels and improving quality of life (Yuniartika et al., 2021).

As an effort to address depression in the elderly, one potential strategy is to strengthen regular physical activity. Tai Chi, a traditional Chinese practice involving gentle, flexible, and flowing movements, has been shown to be effective in reducing depression levels while simultaneously boosting self-esteem, happiness, and quality of life (Kit, 2022).

OBJECTIVE

This research aims to determine the effect of Tai Chi exercise on depression levels in the elderly in Purbayan Village, contributing to efforts to prevent and manage this issue.

METHODS

Study Design

In this study, a pre-experimental quantitative method was applied, combining a one-group pre-test–post-test model with a cross-sectional design to capture data from participants at different stages of observation.

Setting

This study was conducted at two Posyandu centers located in Purbayan Village, Baki District, Sukoharjo Regency, from July to September 2025.

Research Subject

The population in this study consists of 50 elderly individuals. A convenience sampling technique was then used, with inclusion criteria including elderly individuals capable of independent physical activity and experiencing mild to moderate depression. Exclusion criteria included elderly individuals over 80 years old, those with severe depression, and those requiring assistive devices for physical activity. A total of 30 elderly respondents were obtained.

Instruments

The respondents' level of depression was assessed using the Indonesian version of the Patient Health Questionnaire (PHQ-9), an instrument comprising nine items aimed at evaluating the presence and severity of depressive symptoms experienced during the previous. Responses are scored using a four-point Likert scale, with values ranging from 0 to 3: 0 representing *Never*, 1 representing *A Few Days*, 2 representing *More Than Half the Day*, and 3 representing *Almost Every Day*. The cumulative score, ranging from 0 to 27, reflects the severity of depression and is categorized into five levels: 0–4 (No depression), 5–9 (Mild depression), 10–14 (Moderate depression), 15–19 (Severe depression), and 20–27 (Very severe depression).

Intervention

The intervention involved 8 Tai Chi exercises. The exercise program was implemented three times a week for a total duration of 12 weeks. Each session lasted around 30 minutes and was conducted individually at the respective homes of the elderly participants. With elderly individuals experiencing mild to moderate depression, the results. The movements used include Raising and Lowering Arms, Opening and Closing Arms, Pushing Fists Forward, Swaying Body Sideways, Pushing Hands Diagonally, Raising Energy Ball, Taking Movement, and Pushing Palms Forward.

Data Analysis

To illustrate the demographic and clinical characteristics of the participants, a univariate analysis was performed, encompassing variables such as age, gender, level of education, occupation, and depression status before and after the intervention. The results of this analysis were presented in percentages and frequency distributions. Before conducting the bivariate test, To determine whether the data were normally distributed, the Shapiro-Wilk test was applied. This test was selected because it is appropriate for small sample sizes, specifically when the number of respondents is fewer than 50. Since the data were normally distributed, bivariate analysis was performed using the paired samples t-test to determine the difference in depression levels among the 30 respondents.

Ethical Consideration

The study was reviewed and approved by the Health Research Ethics Commission (KEPK) under the Faculty of Medicine, Muhammadiyah University of Surakarta (UMS), ensuring adherence to ethical standards in health research, with ethical approval number No. 5896/B.1/KEPK-FKUMS/X/2025.

RESULTS

Tabel 1. Characteristic Frequency Distribution of Samples The Effectiveness Of Tai Chi In Reducing Depression Levels In The Eldery

Characteristics	Frequency (N)	Presentation (%)
Gender		
Female	30	100
Total	30	100
Age		
Early elderly (60-65)	18	60
Middle elderly (66-70)	4	13,3
Advanced elderly (71-75)	4	13,3
Very advanced elderly (76-80)	4	13,3
Total	30	100
Education		
No attending school	6	20
Elementary school	8	26,7
Junior high school	5	16,7
High school	8	26,7
College	3	10
Total	30	100
Occupation		
Farmer/laborer	7	23,3
Housewife	22	73,3
Self-employed	1	3,3
Total	30	100

Sumber : Data Kuesioner 2025

This research was conducted at 2 Posyandu in Purbayan Village, Baki District, Sukoharjo Regency, with 30 elderly respondents, all aged 60-80 years. All elderly participants were women, with most having primary or secondary education, each with 8 respondents (26.7%). The majority of elderly participants in this study were not employed, totaling 22 respondents (73.3%).

Tabel 2. Frequency Distribution of Depression Levels in the Elderly: Pre-test and Post-test

No	Level of depression	Pre Test		Post Test	
		N	%	N	%
1.	Normal	0	0	19	63,3
2.	Mild	23	76,7	11	36,7
3.	Moderate	7	23,3	0	0
	Total	30	100	30	100

Sumber : Data Kuesioner 2025

The results in Table 2 show that the pretest data indicates the majority of elderly individuals have mild levels of depression, with 23 respondents (76.7%), followed by 7 respondents (23.3%) with moderate levels of depression. Furthermore, the posttest data shows that the majority of respondents have normal levels of depression, with 19 respondents (63.3%), followed by 11 respondents (36.7%) with mild levels of depression.

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Tabel 3. Paired Sample T-Test Results

Variable	Mean Difference	t	df	Asymp. Sig. (2-tailed)
Pretest-Posttest	4.900	17.968	29	0.001

Sumber : Data 2025

Based on the Paired Sample T-test analysis, a significant reduction in depression scores was observed after the Tai Chi exercise intervention compared to before the intervention. The test yielded a mean difference of 4.900, a t-value of 17.968, and degrees of freedom (df) = 29,

confirming the effectiveness of the intervention. Result of the statistical test show revealed a significance value (Sig. 2-tailed) of 0.001, which is smaller than the threshold value of 0.05. This result demonstrates a significant difference between the pretest and posttest measurements, supporting the hypothesis that Tai Chi exercise effectively reduces depression levels among the elderly population in Purbayan Village. Consequently, it can be concluded that participation in Tai Chi sessions contributes to a meaningful decrease in depression symptoms among older adults.

DISCUSSION

Final of result indicate a significant change in the level of depression among the elderly after Tai Chi intervention ($p = 0.001$). This study shows that Tai Chi exercises have an effect in reducing depression levels. From a physiological perspective, Tai Chi uses slow movements and deep breathing, which can contribute to a decrease in stress hormones and an increase in emotional balance (Nguyen et al, 2023).

The findings of this research corroborate those of Rahardjo and Santosa (2021), who also reported similar outcomes in study, which shows that in the early stages of old age, a person begins to experience physiological changes that can cause a decline in bodily functions, sleep problems, and shifts in social roles, which can potentially trigger mild to moderate symptoms of depression. Additionally, women are more prone to depression due to decreased estrogen levels after menopause, which plays a role in regulating emotions and neurotransmitter stability in the brain. Therefore, this study was dominated by female respondents.

Similarity also occurs in the findings made are consistent with the theory proposed by Karyono (2021), which states that light physical activity such as Tai Chi can increase endorphin levels in the body, improve mood, and reduce stress and depression in the elderly. Tai Chi exercises are a form of exercise that combines gentle movements, deep breathing, and mental concentration that can stimulate the parasympathetic nervous system, thereby providing relaxation and emotional calm.

The results of this research align with the findings presented by Wachidah Yuniartika (2022), who also emphasized similar outcomes, who found that the involvement of older adults in regular physical activity can significantly reduce depression levels. Older adults who are physically active have better self-confidence and better social interactions, which ultimately affect their psychological health.

In addition, research (Sari & Widyastuti, 2020) shows that older adults who regularly participated in Tai Chi exercises for three weeks experienced a significant decrease in depression levels compared to individuals who did not participate. The mechanism of depression reduction through Tai Chi is related to increased blood circulation to the brain and increased secretion of neurotransmitters that play a role in emotional stability, such as serotonin and dopamine.

This explains that depression in the elderly is a common problem, which can be triggered by various biological, psychological, and social factors such as decreased physical ability, limitations in daily activities, and loneliness due to lack of social interaction (Lestari et al., 2022).

The findings of this study indicate that success of Tai Chi in improving the psychological condition of the elderly. This study is in line with research conducted by (Astuti & Pratiwi, 2022), which revealed that Tai Chi can increase relaxation, improve sleep quality, and reduce cortisol levels through increased endorphins, thereby improving mood and reducing manifestations of depression.

The findings of this study are consistent with those reported by (Rahman & Utami 2024), which concluded that Tai Chi exercises are very effective in reducing depression levels and improving social interaction in older adults. Therefore, Tai Chi can be used as an easy, safe, and affordable non-pharmacological intervention exercise approach to support the mental health of older adults.

CONCLUSION

Based on findings from the health center in Purbayan Village, Baki District, Sukoharjo Regency, it can be concluded that Tai Chi exercise has an influence on the level of depression experienced by the elderly. With the results obtained, the elderly who experience depression are mostly aged 60-65 years (early elderly). From the results of the effect test, it can be concluded that Tai Chi exercises can affect depression levels, as seen from the percentage results before the elderly were given the intervention and the percentage after the intervention was given.

According to the bivariate analysis, the obtained p-value was less than 0.05, confirming that the intervention significantly affected the depression levels of elderly participants in Purbayan Village, located in Baki District, Sukoharjo Regency.

SUGGESTIONS

It is hoped that the community, especially families with elderly members, can focus more deeply on psychological condition of the elderly at home. The community can use findings from this study to raise awareness regarding the importance of early detection of symptoms of depression and to immediately consult a health professional if signs of depression are found.

ACKNOWLEDGMENT

The author would like to convey deep gratitude to all those who have offered their guidance, encouragement, and assistance in the development and completion of this article. Thanks are also extended to the respondents for their time and participation in this study.

CONFLICTS OF INTEREST

The author has no conflicts of interest in completing this research.

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