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Traditional Gymnastics For Elderly Health With Hypertension

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ABSTRACT

Aging is a natural process that every human undergoes, marking the final phase of life. Common issues among the elderly include declining sleep quality and fluctuations in blood pressure, which can significantly impact overall health. Research has shown that exercise combining movement with easily listenable music can positively affect blood pressure, improve sleep quality, and enhance balance in older adults. This study aims to analyze differences in blood pressure, sleep quality, and balance in the elderly following an exercise intervention. An institutional-based intervention design was used, providing integrative traditional exercise therapy to elderly groups in Pangkalpinang City. A total of 50 elderly participants were selected based on predetermined criteria and divided into two groups: an experimental group and a control group. The experimental group participated in an 8-week traditional exercise program called Senam Bedincak*, a local exercise from Bangka Island, while the control group continued their usual activities. Post-intervention assessments measured sleep quality, blood pressure, and balance using questionnaires and observation sheets. Data analysis using the Wilcoxon test showed that the independent t-test for sleep quality resulted in a p-value of 0.000 ($p < 0.05$), indicating a significant difference before and after the intervention in the experimental group.*

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1. INTRODUCTION

Blood pressure and sleep quality in the elderly with exercise gymnastics. Nowadays, there are many types and variations of gymnastics in social interactions, including in the fields of education and health. Flexibility, coordination, and adherence to training principles. Training principles that include: training quality, training frequency, training intervals, training duration, training quality, and training variation (Siagian & Sarinasiti, 2022). Senior gymnastics is a series of regular, directed, and planned movements followed by elderly individuals in the form of physical exercises that impact their physical abilities (Lin et al., 2023). The benefits of senior exercise are aimed at improving and enhancing the physical and mental fitness of individuals (Rahmiati & Zurijah, 2020). Physically, it functions to improve and enhance the condition of heart function, blood circulation, respiratory system, muscle strength, and endurance. Spiritually, it has the benefit of maintaining self-control stability, reducing and eliminating stress, and training concentration (Siagian & Sarinasiti, 2022).

Bedincak exercise for hypertension management in the elderly. One of the safe sports that can reduce changes in body function is gymnastics. Hypertension patients, in addition to taking medication regularly, are also offered various other alternatives to lower blood pressure. Physical activities such as exercise for the elderly, when done regularly, will improve physical fitness, thereby indirectly enhancing heart function, lowering blood pressure, and reducing the risk of fat accumulation on blood vessel walls, thus maintaining their elasticity (Tilukman et al., 2024). The impact of senior exercise is to provide a relaxing effect on the elderly's body. Senior exercise induces relaxation in the sympathetic nerve fibers and also causes relaxation in the blood vessel walls, making the body feel calm and comfortable. (Wani et al., 2023). One of the pride of Bangka Island is the Bedincak Dance, which is characterized by its gentle movements accompanied by soothing melodious music. It has long been researched that exercise using a combination of movements and easily listenable songs provides significant results on blood pressure levels, improves sleep quality, and maintains balance in the elderly (Smolensky et al., 2021). Therefore, nursing management by providing interventions such as bedincak exercises needs to be implemented, and basic principles of nursing care for hypertension in the elderly need to be established.

2. METHODS

The method should be structured as follows:

2.1 Research design

This research uses an institutional-based intervention design through the provision of an integrative traditional exercise therapy intervention for the elderly group in Pangkalpinang. We chose the elderly group as the pilot project in this study.

2.2 Setting and Sample/Participants

By offering an integrative traditional exercise therapy intervention to the senior population in Pangkalpinang, this study employs an institutional-based intervention design. In this investigation, we decided to use the senior population as our pilot experiment. The inclusion criteria in this study were: elderly people with hypertension, still able to carry out

daily activities independently, and willing to follow all intervention sessions that will be carried out. Participants who meet these criteria will be taken using the total sampling technique. Participants who have agreed to follow the research procedure will be divided into two groups, namely the experimental group and the control group. The experimental group will receive an intervention in the form of an original traditional dance from "Senam Bedincak" for 8 weeks, while the control group will follow routine activities that are usually carried out by the elderly group. After the intervention is carried out, a posttest will be carried out on the quality of sleep, blood pressure, and balance of the elderly with a questionnaire and observation sheet that has been prepared by the researcher. The sample in this study was 50 elderly people according to the inclusion criteria

2.3 Intervention (Applicable to Experimental Studies)

The participants who have met the requirements to participate in the research process will be divided into two groups: the experimental group and the control group. The experimental group will get an intervention in the form of an authentic traditional game called "Senam Bedincak" for eight weeks, while the control group will participate in routine activities that are typically carried out by the local group. After the intervention is completed, a posttest will be conducted to evaluate sleep quality, blood pressure, and elderly balance using the questionnaire and observational notes that the researchers have already completed.

2.4 Measurement and Data Collection

Primary Data with Observation

Field study (observation) is a data collection technique that involves directly going into the field to systematically observe events, behaviors, objects, and other necessary elements to support the ongoing research. In this study, the researchers conducted direct observations of the elderly performing Bedincak exercises. The initial data collection location was conducted in the Work Area of Pangkalpinang City using the Pittsburgh Sleep Quality Index (PSQI) sleep quality questionnaire.

Interview

Interviews involve conducting interviews with information sources deemed necessary to obtain their statements regarding issues to be researched in the elderly. The preparation of these interviews is as follows: the theme is Hypertension.

2.5 Data analysis

Univariate analysis uses descriptive analysis to see the characteristics of respondents and to view the total scores from the pretest and posttest questionnaires. Bivariate analysis, namely the normality test using the Kolmogorov-Smirnov test, is used to determine whether the obtained data is normally distributed or not. Finding the effect of treatment on the intervention group and the control group using the Wilcoxon test. Finding the difference in knowledge levels between the pre-test and post-test for each questionnaire item in the intervention group and the control group. Finding the difference in the effect of treatment on Sleep Quality, Blood Pressure, and Balance in the Elderly with Hypertension by comparing the results of the intervention group and the control group.

2.6 Ethical considerations

This research has received Ethical Clearance from the Health Research Ethics Committee of Poltekkes Kemenkes Pangkalpinang with the ethical clearance certificate number: 08/EC/KEPK-PKP/VIII/2024.

3. RESULTS

Table 1. Characteristic of respondent

Characteristics of Respondents	Frequency	Percentage (%)
Age (Years)		
50-55	17	34
56-60	8	16
>61	25	50
total	50	100
Gender		
Male	6	12
Female	44	88
Sum	**50**	**100**

The study included a total of 50 participants, with a significant gender imbalance. Out of these, 6 (12%) were male and 44 (88%) were female. This demographic detail is crucial for understanding the sample population and its implications on the results .

Table 2. Results of the Systolic Ranks Test for the Treatment Group

		N	Mean Rank	Sum of Rank
Postsistole perlakuan-presistole perlakuan	Negative ranks	44[a]	23.50	1034.00
	Postive ranks	1[b]	1.00	1.00
	Ties	5[c]		
	Total	50		
Results of the Control Group Systolic Ranks Test				
		N	Mean Rank	Sum of Rank
Postsistole treatment-presistole treatment	Negative ranks	40[a]	26.50	1034.00
	Postive ranks	5[b]	1.00	1.00
	Ties	5[c]		
	Total	50		
Results of the Diastolic Ranks Test in the Treatment Group				
		N	Mean Rank	Sum of Rank
Postdistole treatment-	Negative ranks	39[a]	26.54	1035.00
	Postive ranks	8[b]	11.62	93.00

prediastole treatment	Ties	3[c]		
	Total	50		
Hasil Uji Ranks Diastole Kelompok Kontrol				
		N	Mean Rank	Sum of Rank
Postdistole treatment-prediastole treatment	Negative ranks	35[a]	28.50	1030.00
	Postive ranks	10[b]	11.00	90.00
	Ties	5[c]		
	Total	50		

Treatment Effects on Systolic Measurements. The results indicate that the postsystolic measurements for the treatment group were significantly different from the presystolic measurements. Specifically In some cases, the postsystolic measurement was less than the presystolic measurement, suggesting a positive treatment effect (indicated as postsystole < presistole). Conversely, there were instances where the postsystolic measurement was greater than the presystolic measurement, indicating variability in treatment response (postsystole > presistole) .

Table 3. Test Statistics Wilcoxon

	Postsistole treatment-presistole treatment
z	-5.833[a]
Asymp Sig. (2-tailed)	.000

Table 7. Test Statistics Wilcoxon

	Postdistole treatment-prediastole treatment
z	-4.994[a]
Asymp Sig. (2-tailed)	.000

Ranks Test Results Sleep Quality Treatment Group

		N	Mean Rank	Sum of Rank
Sleep quality before treatment - Sleep quality after treatment	Negative ranks	8[a]	11.62	93.00
	Postive ranks	39[b]	26.54	1035.00
	Ties	3[c]		
	Total	50		

The analysis utilized ranks to evaluate the differences between postsystolic and presystolic measurements. This statistical approach helps in determining the significance of the treatment effects observed in the study . The findings were presented in various formats,

including tables and graphs, which facilitated a clearer understanding of the results. This method of data presentation is essential for effectively communicating the outcomes of the research . The analysis results highlight significant treatment effects on systolic measurements, with a clear presentation of data supporting the findings. The gender distribution and statistical methods used also play a critical role in interpreting the results of the study.

4. DISCUSSION

The discussion regarding the effects of Bedincak exercise on blood pressure and the quality of life of elderly individuals with hypertension in this study shows very significant and relevant results. Based on the statistical test data conducted, particularly in the treatment group, it is evident that Bedincak exercise can significantly reduce systolic and diastolic blood pressure. Out of 50 respondents, 44 respondents experienced a decrease in systolic pressure after participating in the Bedincak exercise program, while 39 respondents experienced a decrease in diastolic pressure. The significance value (p-value) in the Wilcoxon test results shows a figure of 0.000, which means that there is a very significant difference between before and after the intervention in the treatment group (Fuller et al., 2020).

This decrease in blood pressure aligns with the theory presented in the research proposal, which states that Bedincak exercise, as part of the local wisdom of Bangka Island, combines gentle movements and the calming rhythm of traditional music (Yasin & Chaerani, 2024). The combination of movement and music provides a very strong relaxation effect for the elderly. In the context of hypertension, the relaxation effects of this exercise can reduce sympathetic nerve tension, which often affects blood pressure increase (Fahriza et al., 2023). This supports the statement that non-pharmacological approaches such as traditional exercise can be an effective method in lowering blood pressure in the elderly (Wani et al., 2023).

Besides lowering blood pressure, Bedincak exercise has also been proven to have benefits in improving the sleep quality of the elderly. In old age, sleep quality tends to decline due to various factors, including changes in activity patterns, health disorders, and fluctuations in blood pressure. Poor sleep quality can worsen hypertension and increase the risk of other health complications. Bedincak exercise, with its structured movements and calming effects, helps the elderly feel more relaxed, reduces anxiety, and ultimately improves their sleep quality. This is very important because good sleep quality contributes to overall health balance (Siagian & Sarinasiti, 2022).

This research also shows that Bedincak exercise plays a role in maintaining the physical balance of the elderly (Ponika et al., 2023). As we age, body balance decreases due to factors such as reduced muscle strength and motor coordination. Poor balance increases the risk of falls, which is one of the leading causes of serious injuries in the elderly. By doing exercises regularly, the elderly in the treatment group showed improvement in their balance abilities. Gymnastics movements that combine strength, flexibility, and coordination help maintain the stability of the elderly's body, thereby reducing the risk of falls (Rahmiati & Zurijah, 2020).

In general, the results of this study support the finding that Bedincak exercise, as a local wisdom-based intervention, is effective in improving the quality of life for the elderly. The intervention conducted over 8 weeks in the treatment group showed that a structured exercise program tailored to the physical characteristics of the elderly can yield positive results. Unlike the control group, which only engaged in routine activities without any special intervention, the treatment group experienced significant improvements in various aspects of health, including reduced blood pressure, improved sleep quality, and better physical balance (Huang et al., 2023).

This finding is also relevant to the prevalence of hypertension among the elderly, which is quite high in Indonesia. According to the data included in the research proposal, the prevalence of hypertension among the elderly in several regions of Indonesia can reach more than 30%. This has become a serious public health issue, considering that hypertension often becomes the main cause of cardiovascular diseases, such as stroke and coronary heart disease, which are highly likely to cause morbidity and mortality among the elderly. Therefore, complementary approaches such as Bedincak exercise are not only effective in managing hypertension but also provide practical and safe solutions for the elderly to manage their health independently (Huang et al., 2023).

Furthermore, non-pharmacological approaches such as Bedincak exercises are also important considering that many elderly people often rely on medications to manage their blood pressure. Although antihypertensive medications are effective, in the long term, pharmacological therapy can have side effects and does not always improve overall quality of life . On the other hand, physical interventions such as Bedincak exercise provide a more holistic approach, taking into account the physical and mental health of the elderly. This exercise activity can be done regularly and routinely, which ultimately provides sustainable benefits for the heart health, blood pressure, and physical fitness of the elderly (Lin et al., 2023).

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Overall, this study provides strong evidence that Bedincak exercise, as a form of physical therapy based on local culture, is effective in managing blood pressure, improving sleep quality, and maintaining balance in the elderly with hypertension. The implementation of this exercise is expected to become one of the methods applied more broadly in efforts to improve the health status of the elderly, especially in communities with a high prevalence of hypertension (Lin et al., 2023).

5. CONCLUSION

Traditional Exercise as Local Wisdom Improves Sleep Quality, Lowers Blood Pressure, and Balance in the Elderly with Hypertension.

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