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The Combination Effects of Physical Exercise and Dzikr for Anxiety Symptoms Improvement in the Elderly Hajj Pilgrim Candidates in Sragen

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ABSTRACT

Background. Anxiety disorders often occur in prospective elderly hajj pilgrims during preparation for departure. Physical exercise and dzikr are recommended as one of the non-pharmacological efforts in reducing anxiety disorders.
Method. Quasi-experimental one group pretest and post-test with research subjects elderly hajj pilgrim candidates in Sragen in 2019 with symptoms of anxiety that were assessed using the Beck Anxiety Inventory (BAI) score. The intervention was carried out in the form of a combination of forty minutes of physical exercise and thirty minutes of dzikr, 4 times during two weeks and assessed differences in BAI scores before and after the intervention.
Aims. To find out the improvement of the BAI score after the combined intervention of physical exercise and remembrance, the Paired t-test was performed if the data distribution was normal and the Wilcoxon test if the data distribution was not normal. Differences were considered significant if $p < 0.05$.
Result. There were significant differences in the overall BAI score (p-value <0.001, $p < 0.05$), mild anxiety BAI score (p-value 0.001; $p < 0.05$), systolic blood pressure (p-value 0.002, $p < 0.05$), and pulse frequency (p-value 0.012, $p < 0.05$) before and after the intervention. Obtaining a decrease in systolic blood pressure and a decrease in pulse frequency are parameters for achieving a relaxation response.
Conclusions. Significant anxiety symptom improvements were demonstrated as the effect of a combination of physical exercise and dzikr in the elderly hajj pilgrim candidates in Sragen.

Keywords. *Anxiety symptoms, Beck Anxiety Inventory, physical exercise, dzikr*

Abstrak

Latar Belakang. *Gangguan kecemasan sering terjadi pada lansia jamaah calon haji selama persiapan keberangkatan. Latihan fisik dan zikir direkomendasikan sebagai salah satu upaya non farmakologis dalam mengurangi gangguan cemas.*
Metode*. Quasi experimental one group pretest dan post-test dengan subyek penelitian lansia jamaah calon haji di Sragen pada tahun 2019 dengan gejala kecemasan yang dinilai dengan menggunakan skor Beck Anxiety Inventory (BAI). Dilakukan intervensi berupa gabungan 40 menit latihan fisik dan 30 menit dzikr, empat kali selama dua minggu dan dinilai perbedaan skor BAI sebelum dan setelah intervensi.*
Tujuan. *Untuk mengetahui perbaikan skor BAI setelah intervensi gabungan latihan fisik dan dzikr dilakukan uji Paired t-test apabila distribusi data normal dan uji Wilcoxon bila distribusi data tidak normal. Perbedaan dianggap bermakna bila p<0,05.*

Hasil. *Terdapat perbedaan signifikan skor BAI keseluruhan (p-value <0,001, p<0,05), skor BAI kecemasan ringan (p-value 0,001; p<0,05), tekanan darah sistole (p-value 0,002, p<0,05), dan frekuensi nadi (p-value 0,012, p<0,05) sebelum dan setelah intervensi. Didapatkannya penurunan tekanan darah sistole dan penurunan frekuensi nadi merupakan suatu parameter tercapainya respon relaksasi.*
Simpulan*. Terdapat perbaikan gejala kecemasan secara signifikan dari gabungan latihan fisik dan dzikr pada lansia jamaah calon haji di Sragen.*

Kata Kunci. *Gejala kecemasan, Beck Anxiety Inventory, latihan fisik, dzikr*

Introduction

Elderly pilgrims mostly have co-morbid chronic physical diseases and pre-existing health conditions so that many of them experience difficulties in mobilization, self-care, and activities, which can be a risk factor for anxiety disorders in elderly pilgrims.[1]

Some psychological manifestations of anxiety include difficulty in concentrating, feelings of fear, stress, anxiety, and general physical symptoms including fatigue, palpitations, and trembling.[2] Elderly often show symptoms that are not specific, such as symptoms that are often associated with the aging process, such as changing sleep patterns and memory deterioration.[3]

The Beck Anxiety Inventory (BAI) is a standard screening questionnaire consisting of 21 questions that assess anxiety symptoms and their severity. A score of 0-7 is a minimum anxiety disorder, a score of 8-15 is a mild anxiety disorder, a score of 16-25 is a moderate anxiety disorder, and a score of 26-63 is a severe anxiety disorder.[4]

Physical exercise, especially aerobic training, is a new non-pharmacological therapy for anxiety disorders. Physical exercise can affect the HPA axis, reduce sympathetic nervous system hyperactivity, improve parasympathetic nervous system function. enhance anti-inflammatory mechanisms, reduce oxidative stress, and increase neurotrophic factors.[5]

The elderly aged 65 years or more, must collect at least 150 minutes of moderate to high-intensity physical exercise per week. It is also useful to increase muscle and bone strength, at least with exercise at least 2 times per week.[6] Evaluation of physical exercise is done after 1-2 weeks.[7]

Dzikr belongs to transcendental meditation which will cause a relaxation response that inhibits the work of the sympathetic nerves and increases the activation of the parasympathetic nerve, stimulates the adrenal cortex to reduce blood cortisol, and the adrenal medulla to decrease epinephrine, norepinephrine, and increase nitric oxide. This situation will cause a decrease in pulse rate, blood pressure, oxygen consumption, metabolism, lactate production, and comfortable feeling.[8] Regular meditation is associated with an increase in cortical thickness in several brain areas associated with attention, such as the prefrontal cortex and the right anterior insula.[9]

Method

This study used a quasi-experimental design of one group pre-test and post-test, which was conducted in the guidance group of pilgrims for prospective pilgrims in Sragen during 2019 who experienced anxiety symptoms. The inclusion criteria of the study are hajj pilgrim candidates in Sragen in 2019

with the age of 60 years and over, elderly who can still do their daily activities without help or dependence from others, BAI scores more than 2, answer "no" in all columns PAR-Q and You questionnaire, not in a state of acute illness, not taking drugs to reduce anxiety symptoms and willing to sign informed consent. The exclusion criteria of the study were the elderly over the age of 90 years and had participated in Umrah or Hajj activities for less than 5 years before. The intervention was carried out in the form of a combination of forty minutes of physical exercise and thirty minutes of dzikr, 4 times during two weeks and assessed differences in BAI scores before and after the intervention. The criterion for drop out is if the research subject participates in the exercise ≤ 3 times.

The basic characteristics of research subjects are continuous data presented in the form of mean ± standard deviation (SD) or median (range of minimum and maximum values) while discrete data is in the form of numbers (percentages). To determine the difference in BAI scores, blood pressure, pulse frequency, and breath frequency before and after the intervention was given, a paired T-test was performed if the data distribution was normal or the Wilcoxon test if the data distribution was not normal.

Result

From this study, total samples of 79 subjects were obtained until the end of the study as shown in Figure 1.

Respondents in this study were mostly male (51.9%), married (86%), poorly educated (54.5%), and had low employment (39.2%). The mean age of respondents in this study was 65 ± 4.613 years, the average exercise habits were 5.14 ± 2.182 times a week. The mean pretest BAI score was 5.54 ± 3.182. There were 21.5% of subjects with a BAI score of

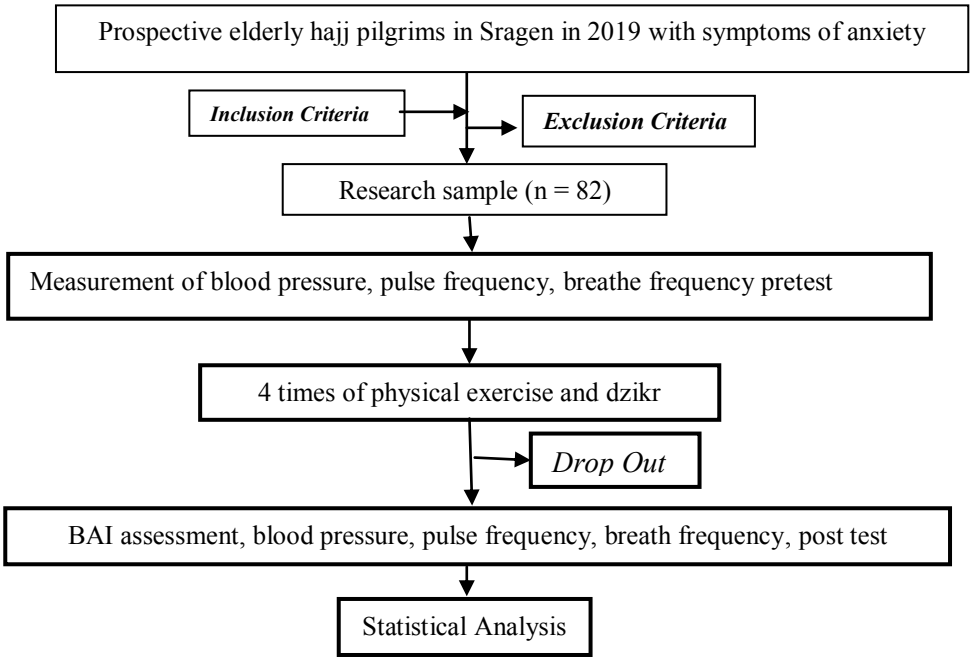

Figure 1. Study Flowchart

Table 1. Baseline Characteristics of Research Subjects

Variable	n	%	Mean± SD	Median
Sex				
Male	41	51.9		
Female	38	48.1		
Marital Status				
Married	68	86		
Single	1	1.3		
Death divorce	10	12.7		
Education				
Poor	43	54.5		
Fair	18	22.8		
High	18	22.8		
Employment				
Low	31	39.2		
Medium	18	22.8		
High	30	38		
Age			65.4 ±.61.3	
PE habit			5.14 ± 2.182	
BAI Pretest			5.54 ± 3.182	
Light BAI (8-15) pretest			10.41 ± 3.355	
Systolic blood pressure pretest			140.05 ± 20.812	
Diastolic blood pressure Pre test			82.75 ± 11.861	
Pulse frequency Pre Test			79 ± 9.735	
breath frequency Pre test			17.19 ± 1.272	
Total	79	100%		

Source: primary data. SD: Standard of Deviation. n= subjects

Table 2. Differences in BAI scores, mild BAI, blood pressure, pulse rate, and respiratory rate before and after the combination of physical exercise and dzikr

Variable	Pretest *Mean* ± SD	Post-test *Mean* ± SD	dif	P-*value*
BAI*	5.54 ± 3.182	2.57 ± 2.845	2.97	< 0.001
Light BAI *	10.41 ± 3.355	5.35 ± 4.286	5.1	0.001
Systolic Blood Pressure*	140.05 ± 20.812	134.65 ±18.210	5.4	0.002
Diastolic Blood Pressure*	82.75 ± 11.861	82 ±11.406	0.75	0.377
Pulse rate **	79 ± 9.735	76.86 ± 8.632	2.14	0.012
Respiratory rate*	17.19 ± 1.272	17.3 ±1.234	-0.11	0.342

Value p<0.05 is considered to be statistically different, *=*Wilcoxon*, **= *Paired t-test*,
SD: Standard of Deviation. BAI: *Beck Anxiety Inventory*. Blood pressure is in mmHg. Pulse rate and respiratory rate are in times per minute. Dif=difference

8-15 (mild anxiety level), with a mean pretest BAI of 10.41 ± 3.355. The mean systolic blood pressure was 140.05 ± 20.812 mmHg, the mean diastolic blood pressure was 82.75 ± 11.861 mmHg, the mean pulse rate was 79 ± 9.735 times per minute and the average respiration rate was 17.19 ± 1.227 times per minute.

Based on Table 2 above, there was a significant difference between BAI scores before and after the intervention (p-value <0.001; p<0.05), significant difference in BAI score for mild anxiety (8-15) before and after the intervention (p-value 0.001; p <0.05). There was a significant difference in systolic blood pressure before and after the intervention (p-value 0.002; p <0.05), and a significant difference in pulse rate before and after the intervention (p-value 0.012, p <0.05) statistically. There were no differences in diastolic blood pressure before and after the intervention (p-value 0.377) and respiration rate before and after the intervention (p-value 0.342).

Discussion

In this study, the majority of subjects were male (41.9%). This is different from multicenter research in Bosnia Herzegovina in 1974 in the elderly with General Anxiety Disorder (GAD), where women experienced a prevalence of GAD for 6 months 2.2 times more often than men (6.0% vs. 2.7%, p = 0.0007) .[10]

In the research of elderly hajj pilgrim candidates in Sragen, the most anxiety arises in married pilgrims (86%). This contrasts with studies in Iran involving 376 elderly who showed that older unmarried men suffer more anxiety resulting in death (p <0.01) than women.[15]

As many as 54.5% of the pilgrims in this study had a low level of education. Low educational background with a limited level of knowledge and insight is one of the complications that will increase the risk of health problems in the pilgrims themselves.[12] Elderly anxiety in this study occurred in 39.2% of subjects with low employment rates. The low level of work makes it difficult for the elderly to meet their daily needs and access to overcome anxiety disorders that arise, the elderly will be vulnerable to conflict with their partners and the environment because they do not work and have low income.[3]

The elderly who experienced symptoms of anxiety in this study found an increase in systolic blood pressure before the intervention (140.05 ± 20,812 mmHg). Anxiety causes hypertension through increased sympathetic activity, neurotransmitter dysregulation, and disruption of the angiotensin renin system.[13]

In this study, there is a combined effect of physical exercise and dzikr on the improvement of anxiety symptoms assessed by the BAI score, where there is a significant difference in the BAI score for all anxiety levels (p-value <0,001, p <0.05) and BAI score mild anxiety (8-15) (p-value 0.001; p <0.05) pretest and post-test.

Regular physical exercise can overcome the symptoms of anxiety through a mechanism of decreased reactivity of the sympathetic nervous system, changes in the HPA axis, improvement of the monoamine system in the brain, mediation of endogenous opioid systems, increased Brain-Derived Neurotrophic Factor (BDNF), and increased regulation of hippocampal neurogenesis.[14] Physical exercise can affect cardio respiration, which is indicated by a decrease in blood pressure and pulse at rest.[15]

Dzikr is a transcendental meditation that produces a relaxation response, which includes a decrease in pulse rate, respiration rate, muscle tension, blood pressure, and oxygen consumption as well as an increase in brain alpha waves.[16] In this study, there were significant differences in systolic blood pressure (p-value 0.002, p <0.05), and pulse frequency (p-value 0.012, p <0.05) pretest and posttest.

The relaxation response parameter is indicated by changes in blood pressure, pulse rate, and respiration rate. In this study, a significant change in mean blood pressure was around 5.4 mmHg and the pulse rate was 2.14 times per minute. This is different from Novianto's (2006) study of 42 people with type 2 diabetes mellitus with hypertension and depressive symptoms who received resignation for 21 days, where there were significant changes in the mean systolic blood pressure around 14 mmHg and diastole blood pressure 7 mmHg and pulse rate 6 times per minute.

Lutgendorf *et al.*, (2003) found the differences in the mean value of the pulse frequency during stress (65.35 times per minute) and the relaxation conditions (63.85 times per minute). The study concluded that the relaxation response is achieved when the pulse rate decreases 2-4 times per minute. The difference in the achievement of the relaxation response is thought to be due to differences in the subject's characteristics and the type of relaxation meditation intervention used.

The lack of control in this study causes the unknown interaction of each independent variable (physical exercise and dzikr to anxiety symptoms. The intervention in this study was not carried out at the same time due to different schedule constraints and different rituals. In the Control group of dzikr activity outside the research schedule, other factors that might affect the anxiety of the elderly such as residence, socio-economic life, childhood trauma, and lifestyle (alcohol/smoking) have not been analyzed. There are no gymnastic standards and types of remembrance (remembrance) that become the main reference (guideline) for the elderly.

Conclusion

Significant anxiety symptom improvement was demonstrated as the effect of a combination of physical exercise and dzikr in the elderly hajj pilgrim candidates in Sragen.

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