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The Effect of Acupressure and Lavender Aromatherapy Combination on Blood Pressure and Anxiety in Postpartum Women

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ABSTRACT

Postpartum is one of the periods with the highest risk of complications during pregnancy. In addition, anxiety is one of the factors that can cause hypertension. One of the non-pharmacological techniques that can be used is a combination of acupressure and lavender aromatherapy. This study aims to prove the effect of combination therapy with acupressure and lavender aromatherapy on reducing blood pressure and anxiety in postpartum women with hypertension. Quasi-experimental research, a pre-test and post-test with a control group design. The sampling technique used purposive sampling with the number of subjects 34 respondents divided into two groups. Analysis of the data used to determine the effect of the intervention before and after treatment on blood pressure data was the Wilcoxon test, while the paired t-test was for anxiety data. The Mann-Whitney test was utilized to assess differences in blood pressure, whereas the independent t-test was employed for anxiety. The mean difference in blood pressure and anxiety in each group decreased, but the mean difference in the intervention group was more significant than the control group. The analysis results on the mean post-test of systolic blood pressure showed a value of 134.41 mmHg ($p=0.000$), the mean post-test of diastolic blood pressure was 89.47 mmHg ($p=0.108$), and the mean post-test of anxiety score was 9.8 ($p=0.001$). The combination of acupressure and lavender aromatherapy has been shown to reduce blood pressure and anxiety in postpartum women with hypertension.

Keywords: Acupressure, anxiety, hypertension, lavender aromatherapy, postpartum women.

INTRODUCTION

Hypertension in the puerperium is a condition in which there is an increase in blood pressure 140/90 mmHg with or without proteinuria and or edema. In general, women who suffer from hypertension during pregnancy can become normotensive quickly after birth. However, postpartum hypertension can appear during the first week of the puerperium. At that time,

blood pressure, which was initially known to decrease, will increase and reach a peak three to six days postpartum.⁽¹⁾ Several risk factors that can cause postpartum hypertension, among others, are nulliparous women, having a history of preeclampsia, increased body mass index (BMI), age, and psychosocial stress. One of the psychosocial stresses is maternal anxiety, increasing the risk of postpartum

hypertension up to 3.1 times.⁽²⁾ According to a study conducted by Yayuk (2019), it was found that anxiety can increase systolic blood pressure by 0.409 in postpartum women.⁽³⁾

The incidence of postpartum hypertension is 5-10% compared to other cases of puerperal pathology. Women who suffer from hypertension can increase the risk of death by 37.27 times compared to women without the disease.⁽⁴⁾ The incidence rate of this hypertension during the puerperium is difficult to ascertain, but the data uncovered that 10% of maternal deaths during the puerperium are caused by hypertension.⁽⁵⁾ In the United States, 184 out of 988 postpartum women (18.6%) had hypertension.⁽⁶⁾ In Indonesia, the incidence rate of hypertension is included in pregnancy complications, which is 8%, along with other complications, such as high fever, anemia, and seizures.⁽⁷⁾ In addition, hypertension is one of the highest causes of maternal mortality in Central Java Province, 36.80% of the total 78.6 per 100,000 live births.⁽⁸⁾ In Purbalingga Regency, for example, the incidence of hypertension in postpartum women has increased, where there were 132 cases in 2015 and increased to 216 cases.⁽⁹⁾

According to Hardianti's research, it was disclosed that the risk of postpartum women who experience anxiety increases 7.84 times for those who suffer from hypertension compared to postpartum women who do not experience anxiety.⁽¹⁰⁾ If not treated immediately, anxiety symptoms can persist and be associated with a significant decrease in body functions, affect the quality of life, worsen the economic burden, cause diseases like hypertension, and develop postpartum depression.⁽¹¹⁾

Handling of postpartum hypertension can be done with pharmacological and non-pharmacological. Pharmacological handling of hypertension is carried out by administering antihypertensive drugs, including labetalol, hydralazine, and nifedipine. Until now, antihypertensive therapy has been used as a treatment for postpartum hypertension cases, even though the quality based on evidence is shallow. For this reason, additional therapy is needed to treat postpartum hypertension.⁽³⁾ One of the holistic therapies used as a non-pharmacological treatment of postpartum hypertension is the administration of acupressure and lavender aromatherapy combination therapy.

METHODS

Study Design

This type of quantitative research used a quasi-experimental design, with a pre-test and post-test design with a control group design.

Setting and Respondents

This research was conducted in March-May 2021 in the working area of the Purbalingga Community Health Center and Kalimanah Community Health Center, Purbalingga. The inclusion criteria in this study were postpartum women who had hypertension with blood pressure 140/90 mmHg, postpartum women who were fully conscious, and postpartum women who were not allergic to fragrances. Exclusion criteria included postpartum women who received other interventions, such as consuming extracts and deep breathing relaxation practices and postpartum women who had open wounds, fractures, or burns. Respondents in this study were 34 people, divided into two groups. The intervention group was the group that received a combination of acupressure and lavender aromatherapy + antihypertensive drugs, while the control group was the standard treatment group with antihypertensive drugs. Every postpartum woman who became a respondent was voluntary without any coercion and had received an explanation of the research procedure and informed consent.

Experimental Procedure

Before giving the intervention, the respondents first measured blood pressure and anxiety scores. The combination intervention of acupressure therapy and lavender aromatherapy was given simultaneously for ten minutes. Acupressure was performed at three massage point locations: Pc 6 (Neiguan), Gv 20 (Baihui), and Bl 15 (Sin Su), with each pressing duration of two minutes. Lavender aromatherapy was carried out using a diffuser and five drops of essential oil, and 20 ml of water, and taking antihypertensive drugs. The combination intervention was done three times a week. Meanwhile, the control group was given standard treatment, namely the consumption of antihypertensive drugs according to the dose from the doctor. On the fourth day of observation, blood pressure and anxiety scores were measured again.

Variabel, Instrument, and Measurement

The assessment and monitoring of the intervention were carried out using an observation sheet. Blood pressure and anxiety were assessed before (pre-test) and after (post-test) treatment. Blood pressure was measured utilizing an electronic sphygmomanometer. Postpartum hypertension is with blood pressure 140/90 mmHg. Meanwhile, anxiety was assessed employing the HARS questionnaire, with a score category > 14; it could be said that the woman was experiencing anxiety.

Data Analysis

Data analysis of blood pressure variables to determine the effect of intervention in both groups used the Mann-Whitney test, while for anxiety data, the independent t-test was employed, with a significance level of $p < 0.05$.

Ethical Clearance

This research is ethically compliant and officially registered with the research ethics committee at the Poltekkes Kemenkes Semarang with ethical clearance number 056/EA/KEPK/2021.

RESULT AND DISCUSSION

Table 1 describes the respondents' characteristics. Most postpartum women with hypertension were in the age range of 21-35 years. A total of 22 respondents (64.7%) had multiparous parity status, with the last education being dominated by senior high school education as many as 23 respondents (67.6%). In addition, the majority of postpartum women worked as housewives, with 17 respondents (50%). Meanwhile, for the delivery type, most women gave birth using the *sectio caesarea* method, as many as 29 respondents (93.5%). There were also 20 respondents (58.8%) with a previous history of hypertension who also suffered from hypertension during the puerperium.

Table 1: Distribution of Respondents Characteristics

Characteristics	Group		p-value
	Intervention (n=17)	Control (n=17)	
	N	%	
Age			
Mean \pm SD	32,6 \pm 4,2	31,6 \pm 4,5	
Min - Max	24 - 39	19 - 37	
< 20 years old	-	-	1 5,9 %
21-35 years old	12	70,6 %	12 70,6 %
>35 years old	5	29,4%	4 23,5%
Parity			
Primipara	7	41,2%	5 29,4%
Multipara	10	58,8%	12 70,6%
Education			
Junior high school	2	11,8%	2 11,8%
Senior high school	11	64,7%	12 70,6%
Diploma III	2	11,8%	1 5,9%
Bachelor's degree	2	11,8%	2 11,8%
Occupation			
Housewife	8	47,1%	9 52,9%
Private	5	29,4%	3 17,6%
Self-employed	4	23,5%	3 17,6%
Civil servant	-	-	2 11,8%
Delivery type			
Spontaneous	3	17,6%	2 11,8%
SC	14	82,4%	15 88,2%
Hypertension history			
Yes	10	56,8%	10 58,8%
No	7	41,2%	7 41,2%

The p-value in each respondent's characteristic group revealed a result of more than 0.05. It signifies that the data obtained were homogeneous, and there were no differences in the respondents' characteristics based on age, parity, education, occupation, delivery type, and hypertension history.

Table 2. Analysis of the Intervention Effect on Changes in Blood Pressure

Variable	Group		p-value
	Intervention	Control	
	Mean ± SD	Mean ± SD	
Blood pressure			
Systolic			
Pretest	155,41 ± 13,0	154,4 ± 9,9	0,83 ^a
Posttest	134,41 ± 7,9	146,5 ± 12,0	0,002 ^b
p-value	0,000 ^c	0,000 ^d	
Δ	21 ± 9,8	7,94 ± 4,5	0,000 ^a
Diastolic			
Pretest	99,29 ± 9,8	96,71 ± 7,1	0,33 ^a
Posttest	89,47 ± 5,7	90,41 ± 5,8	0,636 ^b
p-value	0,000 ^c	0,000 ^c	
Δ	9,82 ± 6,7	6,29 ± 4,5	0,108 ^a

a: Mann-Whitney, b:Independent t-test, c:Wilcoxon, d:Paired t-test

The mean measurement of systolic and diastolic blood pressure in the intervention group and the control group decreased. However, in systolic blood pressure, the decrease was greater in the intervention group of 21 mmHg than the control group of 7.94 mmHg. Meanwhile, in the diastolic blood pressure data, the mean decrease in the intervention group was 9.82 mmHg, and the control group was 6.29 mmHg.

Furthermore, the discrimination test analysis of systolic blood pressure in the intervention and control

groups resulted in a p = 0.000. It means that there was a significant effect on systolic blood pressure after giving the intervention between the intervention group and the control group. Meanwhile, on diastolic blood pressure, it produced a p = 0.108. It indicates no significant effect on diastolic blood pressure after giving the intervention between the intervention group and the control group.

Table 3. Analysis of the Intervention Effect on Changes in Anxiety

Variable	Group		p-value
	Intervention	Control	
	Mean ± SD	Mean ± SD	
Anxiety score			
Pretest	16,1 ± 5	15,8 ± 3,4	0,844 ^a
Posttest	9,8 ± 2,3	12,5 ± 3,2	0,008 ^a
p-value	0,000 ^b	0,000 ^b	
Δ	6,35 ± 3,2	3,29 ± 1,4	0,001 ^a

a: Independent t-test, b: Paired t-test

The mean measurement of anxiety scores in the intervention group and control group decreased, but the decrease was greater in the intervention group of 6.35 compared to the control group of 3.29. In addition, the discrimination test analysis for anxiety scores in the intervention group and control group yielded a p = 0.001. It denotes a significant effect on the anxiety score after giving the intervention between the intervention group and the control group.

DISCUSSION

In this study, the statistical test results showed that both treatments in the intervention group and the control group could reduce blood pressure (systolic and diastolic) and anxiety. However, after further analysis was carried out, it was found that the combination treatment of acupressure therapy and lavender aromatherapy gave a better effect. The intervention group treatment in the form of a combination of acupressure therapy and lavender

aromatherapy was complementary therapy so that respondents continued to take antihypertensive drugs in the form of nifedipine, amlodipine, and dopamet. Administering complementary therapy was proven to reduce blood pressure in respondents because complementary therapy could provide a better synergistic effect on respondents in the intervention group compared to the control group, who were only given standard treatment in the form of antihypertensive drugs. Concerning this, hypertension during the puerperium can cause problems due to the dysfunction of endothelial cells in several organs, such as the risk of cardiometabolic disease and other complications.⁽¹²⁾ For this reason, efforts to treat hypertension during the puerperium are needed.

In this case, acupressure serves to stimulate the release of serotonin as a neurotransmitter that acts as a carrier of impulses to the brain stem, causing activation of the pineal gland to produce the hormone melatonin. The hormone melatonin plays an essential role in regulating blood pressure in the body.⁽¹³⁾ This study aligns with research carried out by Nampo (2020), explaining that there was a significant difference between before and after giving acupressure in patients with hypertensive and was evidenced by the $p = 0.000$. In addition, this study's results are also supported by a study conducted by Chen et al. (2018). The study used a meta-analysis method and explained that the administration of acupressure with a combination of antihypertensive drugs was more effective in lowering blood pressure than the administration of antihypertensive drugs alone.⁽¹⁴⁾

On the other hand, the scent inhaled by humans has a direct effect on the brain. The nose will pick up on these scent receptors, which are then relayed to the brain regions that control mood emotions. In addition, information is conveyed to the hypothalamus as a regulator of the body's internal systems, one of which is the heartbeat. If a person inhales lavender aromatherapy, it will increase alpha waves, which then cause the release of serotonin.⁽¹⁵⁾

Furthermore, acupressure is useful in helping a person to manage anxiety and stress management. The working process of acupressure is directly related to the autonomic nervous system by relaxing nervous tension and improving stress management. The

benefits provided from acupressure are to provide calm as an effort to relax and reduce negative thoughts. Aromatherapy using lavender oil also can reduce anxiety levels, heart rate, high blood pressure, stress, improve sleep rest patterns, and increase the secretion of the melatonin and serotonin hormones.⁽¹⁶⁾ On the other side, lavender aromatherapy is known as a therapy that has hypnotic, sedative, and anti-neuro depressive effects. Thus, lavender aromatherapy can provide comfort and a sense of calm and relieve stress for its users. Aromatherapy using lavender oil can also treat insomnia and anxiety, improve mood, and provide a relaxing effect.⁽¹⁷⁾

This study agrees with research conducted by Hajiri et al. (2019), which exposed a significant effect on decreasing anxiety levels after being given acupressure therapy in patients with coronary heart disease. In addition, the acupressure points selected in this study were Pc 6, Gv 20, and Bl 15 to reduce blood pressure and anxiety. Acupressure was done with a duration of ten minutes three times a week.⁽¹⁸⁾

However, the limitation of this study is that the researchers only presented two groups in this study. The researchers should use four groups so that which intervention is more effective can be assessed. In addition, researchers could not fully control for confounding variables that might affect the study results, including physical activity, BMI, and food records of nutritional intake. The food consumed by the mothers can affect the blood pressure results, where researchers should invite enumerators from nutritionists to collaborate in conducting and analyzing respondents' food records.

CONCLUSION

Giving a combination of acupressure therapy and lavender aromatherapy three times a week could reduce blood pressure (systolic and diastolic) and anxiety. Nevertheless, this research could not assess which treatment had more influence. Thus, further studies are needed to present four groups so that an intervention assessment of each group can be carried out. Further researchers should also assess the serotonin content to measure the blood pressure of postpartum women with hypertension

REFERENCES

1. Sharma KJ, Kilpatrick SJ. Postpartum hypertension: etiology, diagnosis, and management. *Obstet Gynecol Surv.* 2017;72(4):248-52. doi: 10.1097/OGX.0000000000000424, PMID 28426127.
2. Yu Y, Zhang S, Wang G, Hong X, Mallow EB, Walker SO, Pearson C, Heffner L, Zuckerman B, Wang X. The combined association of psychosocial stress and chronic hypertension with preeclampsia. *Am J Obstet Gynecol.* 2013;209(5):438.e1-438.e12. doi: 10.1016/j.ajog.2013.07.003, PMID 23850528.
3. Eliyana Y, Kering Terhadap PTB, Ibu Preeklampsia TDPada. Postpartum. *J Info Kesehat.* 2019;17(1):1-15.
4. Ritonga NJ, Setiani O, Umaroh U, Budhi R K, Amri F. Roselle flower (hibiscus sabdariffa) in the treatment of hypertension in postpartum mothers. *Belitung Nurs J.* 2017;3(3):229-37. doi: 10.33546/bnj.95.
5. Magee L, P VD. Prevention and treatment of postpartum hypertension [review]. *Cochrane Libr.* 2013.
6. Goel A, Maski MR, Bajracharya S, Wenger JB, Zhang D, Salahuddin S, Shahul SS, Thadhani R, Seely EW, Karumanchi SA, Rana S. Epidemiology and mechanisms of de novo and persistent hypertension in the postpartum period. *Circulation.* 2015;132(18):1726-33. doi: 10.1161/CIRCULATIONAHA.115.015721, PMID 26416810.
7. Kemenkes RI. *Survei Demografi dan Kesehatan Indonesia 2017.* Jakarta: Kementerian Kesehatan Indonesia; 2017.
8. Jateng D, Jawa Tengah Tahun PKP 2019. 2019. PMID 3511351(24).
9. Purwati NA, Kualitatif S. Kecemasan Pada Penderita Preeklampsia. *J Ilm Rekam Medis Inform Kesehat.* 2020;10(1):23-7.
10. Hardianti FA, Khoirun QKN, Kecemasan MairoN, Kejadian Preeklampsia RPD, Hamil PadaI. Kecemasan, Riwayat Preeklampsia dan Kejadian Preeklampsia Pada Ibu Hamil Multigravida. *j.keperawatan.terap.* 2018;4(1):21-6. doi: 10.31290/jkt.v(4)i(1)y(2018).page:21-26.
11. Febriani Y, Rasipin R. Analysis of factors related to anxiety level in postpartum mothers at Citra Insani maternity home. *J Ilm Kesehat.* 2020;9(2):670-7.
12. Aini FN, Widyawati MN, Santoso B. Diagnosa Preeklampsia Pada ibu Hamil menggunakan sistem informasi berbasis web. *J Keperawatan Silampari.* 2019;2(2):18-27. doi: 10.31539/jks.v2i2.508.
13. Majid YA, Rini PS. Terapi akupresur memberikan rasa tenang dan nyaman serta mampu menurunkan tekanan darah lansia. *J Sci n.a.* 2016;1(1):79-86. doi: 10.30604/jika.v1i1.11.
14. Chen H, Shen FE, Tan XD, Jiang WB, Gu YH. Efficacy and safety of acupuncture for essential hypertension: A meta-analysis. *Med Sci Monit.* 2018;24:2946-69. doi: 10.12659/MSM.909995, PMID 29735972.
15. Maisi S, Suryono S, Widyawati MN, Suwondo A, Kusworowulan S. Effectiveness of lavender aromatherapy and classical music therapy in lowering blood pressure in pregnant women with hypertension. *Belitung Nurs J.* 2017;3(6):750-6. doi: 10.33546/bnj.301.
16. Apryanti YP, Suhartono S, Ngadiyono N. The impact of lavender aromatherapy on pain intensity and beta endorphin levels in post-caesarean mothers. *Belitung Nurs J.* 2017;3(5):487-95. doi: 10.33546/bnj.199.
17. Dewi IP. Aromaterapi Lavender sebagai media Relaksasi. *J Udayana.* 2013;2(1):1-17.
18. Hajiri F, Pujiastuti SE, Siswanto J. Terapi Murottal dengan Akupresur terhadap Tingkat Kecemasan dan Kadar Gula Darah Pada Pasien Dengan Penyakit Jantung Koroner. *J Keperawatan Silampari.* 2019;2(2):146-59. doi: 10.31539/jks.v2i2.507.

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