



The effect of prenatal yoga and acupressure on lowering blood pressure in pregnant women

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ABSTRAK

Latar Belakang: Hipertensi dalam kehamilan menjadi salah satu penyumbang angka kematian ibu (AKI) di Indonesia. Dari pemberian yoga dan akupresur diharapkan dapat membantu ibu hamil dalam menurunkan tekanan darah.

Tujuan: Penelitian ini bertujuan untuk menguji kombinasi dari prenatal yoga dan akupresur terhadap tekanan darah pada ibu hamil yang mengalami hipertensi.

Metode: Penelitian ini merupakan quasi eksperimen menggunakan rancangan pre- post-test design with control group. Kelompok intervensi diberikan yoga dan akupresur sebanyak 4 kali dalam 2 minggu. Populasi dalam penelitian ini adalah seluruh ibu hamil di Puskesmas Wilayah Depok. Kriteria inklusi penelitian ini meliputi: ibu hamil umur usia kehamilan > 20 minggu, menderita hipertensi yaitu TD sistolik ≥ 140 mmHg dan diastolik ≥ 90 mmHg. Adapun ibu hamil yang memiliki riwayat preeklamsi, memiliki riwayat perdarahan pada kehamilan ini, ibu hamil dengan plasenta previa totalis menjadi kriteria eksklusi penelitian ini. Sampel diambil dengan cara purposive sampling dengan jumlah responden sebanyak 30 ibu hamil pada kelompok intervensi dan 30 ibu hamil pada kelompok kontrol. Analisis data menggunakan SPSS versi 20 dengan uji deskriptif dan Chi-square untuk karakteristik responden. Analisis bivariat dianalisis dengan uji Wilcoxon, sedangkan untuk mengetahui perbedaan tekanan darah antara kedua grup, digunakan uji Mann-Witney U.

Hasil: Hasil statistik diperoleh bahwa terdapat perbedaan yang signifikan pada tekanan darah ibu hamil sebelum dan sesudah diberikan yoga dan akupresur. Selain itu, terdapat perbedaan yang signifikan pada penurunan tekanan darah antara kelompok intervensi dan kelompok kontrol.

Kesimpulan: Pemberian yoga dan akupresur terbukti menurunkan tekanan darah. Diharapkan bidan atau tenaga kesehatan lain dapat mengimplementasikannya dengan mengajarkan kepada ibu hamil dengan hipertensi.

KATA KUNCI: yoga; akupresur; tekanan darah; kehamilan

ABSTRACT

Background: Hypertension in pregnancy is one of the contributors to the maternal mortality rate (MMR) in Indonesia. The combination of yoga and acupressure was expected to help pregnant women in lowering blood pressure.

Objectives: This study aimed to test the combination of prenatal yoga and acupressure against blood pressure in pregnant women who had hypertension.

Methods: This study was a quasi-experiment using a pre-post-test design with control group. The population in this study was all pregnant women in the Depok Regional

Health Center. The inclusion criteria for this study included: pregnant women aged > 20 weeks of pregnancy, suffering from hypertension, namely systolic TD ≥ 140 mmHg and diastolic ≥ 90 mmHg. As for pregnant women who had a history of preeclampsia, had a history of bleeding in this pregnancy, pregnant women with placenta previa totalis were excluded from this study. The sample was taken by purposive sampling with the number of respondents as many as 30 pregnant women in the intervention group and 30 pregnant women in the control group. Data analysis used SPSS version 20 with descriptive and Chi-square tests for respondent characteristics. Bivariate analysis was analyzed with the Wilcoxon test, while to find out the difference in blood pressure between the two groups, the Mann-Witney U test was used.

Results: Statistical results obtained that there was a significant difference in the blood pressure of pregnant women before and after yoga and acupressure. In addition, there were significant differences in blood pressure reduction between the intervention group and the control group.

Conclusions: Yoga and acupressure combination was proven to reduce blood pressure. It is hoped that midwives or other health workers could implement it by teaching pregnant women, especially who suffer hypertension.

KEYWORD: yoga; acupressure; blood pressure; pregnancy

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INTRODUCTION

INTRODUCTION

Maternal Mortality Rate (MMR) in Indonesia is still relatively high. Based on the Indonesian Demographic and Health Survey (SDKI) 2016, even though there was a decrease in MMR to 305 per 100,000 live births in 2015, but this number did not succeed in achieving the MDGs targets (1). This figure is still very far when compared to countries in ASEAN. MMR is a target in the Sustainable Development Goals (SDGs) (2). The target is to reduce MMR to 102 per 100,000 live births (2). Then, in 2021, there were 7,389 deaths in Indonesia which shows an increase compared to 2020 of 4,627 deaths (3). Based on cause, in 2021, hypertension in pregnancy is the third largest cause after Covid-19 and bleeding, with 1,077 cases (3).

High blood pressure or hypertension in

pregnant women can be treated in two ways, namely by pharmacology and non-pharmacology (4). Pharmacological management is by using chemical drugs. Non-pharmacological methods such as exercises may release endorphin hormone (5). Yoga is one exercises that can be done by pregnant women. Endorphins are neuropeptides that are produced in human body by the pituitary gland and the central nervous system (5). This hormone has principal function to inhibit the communication of pain signals and produce a feeling of euphoria (5) so that can reduce high blood pressure.

Acupressure is one of Traditional Chinese Medicines to optimize wellbeing (6). Acupressure is a development of massage therapy that is directly applied on acupoints (7). Acupressure is purposed to promote

relaxation, energy, relieve pain and aid balance. According to another opinion, acupressure is a finger prick therapy by applying emphasis and massage at a certain point in the body based on the principles of acupuncture science. Acupressure (massage) at certain points, especially the GV 20 Baihui point, can also provide a calming and comfort effect due to the production of endorphin hormones, in addition to promoting blood flow, relaxing spasms(8).

Researchers have conducted literature reviews through articles and books related to the benefits of yoga and acupressure on the blood pressure of pregnant women. According to the results of research by Rodiani et al (2019), it was found that prenatal yoga treatment was related to the blood pressure of hypertensive patients in pregnancy in the Prenatal Yoga group of Krakatau Lampung (9). Similar results were also revealed by the research of Winarni et al (2021) which gave yoga to pregnant women in the Mrican Health Center, Kediri (9). In addition, the research of Nisa et al (2022) found that there was a significant difference in the average systolic and diastolic pressures before and after being given acupressure using GV 20 (Pai Hui), PC 6 (Nei Kuan) and Li 4 (He Ku) points in pregnant women at the Jagasatru Health Center, Cirebon(8).

Yoga and acupressure are two nonpharmacological approaches in reducing hypertension (10). Generally, the combination of yoga and acupressure or called acuyoga has been carried out in populations other than pregnant women. Acuyoga is a nonpharmacological treatment to prevent any disorder during pregnancy (11). These two holistic methods can help balancing and

relaxing muscle tension (12). Previous studies only gave yoga or acupressure to pregnant women (8,9,13), or gave the combination of acupressure and yoga to elderly (12), while in this study, the combination of yoga and acupressure was given with the aim of providing better effects and benefits to lower blood pressure in pregnant women. Therefore, this study combined prenatal yoga and acupressure to reduce blood pressure of pregnant women with hypertension.

MATERIALS AND METHODS

This study was a quasi-experiment using a pre-post-test design with a control group which tested after the first observation (pre-test) and allows researchers to test changes that occur after treatment (post-test) in the intervention and control group (14). In this design, interventions were carried out with prenatal yoga and acupressure, while in the control group, standard care interventions were given. The intervention group was given intervention 4 times in 2 weeks.

The population in this study was all pregnant women in the Depok Health Center. The inclusion criteria for this study include: pregnant women aged > 20 weeks of pregnancy, suffering from hypertension (systolic TD \geq 140 mmHg and diastolic \geq 90 mmHg). As for pregnant women who have a history of preeclampsia, have a history of bleeding in this pregnancy, pregnant women with placenta previa totalis are the exclusion criteria for this study.

Samples are taken by purposive sampling, which is a sampling technique based on certain considerations that have been made by the researcher, based on previously known population that meet the

inclusion criteria. Interventions in the form of yoga for pregnant women and acupressure were given to pregnant women in the Depok Health Center for \pm 25 minutes and those who acted as facilitators were cadres who had been trained by researchers. Activities are carried out 4 times for 2 weeks. The total samples for this study were 60 pregnant women, consisted of 30 respondents for intervention and control group respectively.

Data collection used demographic questionnaire that identified characteristics of respondents, including age, education,

occupation, body weight, height, hypertension history, and exercise during pregnancy. Then, blood pressure was measured using sphygmomanometer. The data that has been collected was analyzed using SPSS software version 20. Respondents' characteristics and blood pressure picture were analyzed using descriptive and chi-square tests. Bivariate analysis to determine the difference in blood pressure before and after yoga and acupressure used Wilcoxon test, while to find out the difference in blood pressure between the two groups, the Mann-Witney test was

Table 1. Characteristics of respondents

Variables	Groups	
	Yoga-Acupressure	Control
Age (years old)		
20-24	5 (16.7%)	7 (23.3%)
25-29	9 (30.0%)	14 (46.7%)
30-34	9 (30.0%)	8 (26.7%)
35-40	7 (23.3%)	1 (3.3%)
Education		
Elementary-Senior High School	21 (73.3%)	22 (70.0%)
College	9 (26.7%)	8 (30.0%)
Occupation		
Occupied	6 (20%)	10 (33.3%)
Not Occupied	24 (80%)	20 (66.7%)
Body Weight (kgs)		
<50	2 (6.7%)	0 (0%)
50-60	10 (33.3%)	12 (40.0%)
61-70	8 (26.7%)	10 (33.3%)
>70	10 (33.3%)	8 (26.7%)
Height (cms)		
<150	6 (20.0%)	2 (6.7%)
150-160	16 (53.3%)	23 (76.7%)
>160	8 (26.7%)	5 (16.7%)
Hypertension History		
Yes	6 (20%)	5 (16.7%)
No	24 (80%)	25 (83.3%)
Exercise		
Yes	30 (100%)	13 (43.3%)
No	0 (0%)	17 (56.7%)

used. The ethics review has been obtained from the Research Ethics Committee at Politeknik Kesehatan Kemenkes Jakarta I with the number: 023/KEPK/VI/2022.

RESULTS AND DISCUSSION

RESULTS

The characteristics of the respondents are illustrated in **Table 1**. Based on **Table 1**, it was found that most pregnant women who were respondents in this study were aged 25-29 years as many as 23 pregnant women

(38.3%). The majority of respondents (43 pregnant women or 71.6%) had a background in elementary-high school education, as many as 44 pregnant women (73.3%) were not occupied, 22 pregnant women (36.6%) had a body weight between 50-60 kg, as many as 39 respondents (65%) had a height of 150-160 cm, a total of 49 pregnant women (81.6%) had no history of hypertension in their families, and the majority of pregnant women (43 respondents or 71.6%) did exercise during this pregnancy.

Table 2. Bivariat analysis prenatal yoga and acupressure towards blood pressure among pregnant women

Variable	Yoga-Acupressure		Control	
	Mean±SD	Mean Different	Mean±SD	Mean Different
Sistole				
Pretest	143.67±4.14	15.64	145.42±5.69	11.54
Posttest	128.03±6.58		134.10±9.65	
Diastole				
Pretest	91.33±3.46	8.5	91.58±3.62	6.66
Posttest	82.83±5.76		84.92±6.64	

Table 2 represents blood pressure before and after the intervention, both in the intervention group with yoga and acupressure and the control group. Based on the results of statistical analysis, the average decrease in systole blood pressure before and after yoga and acupressure treatment was obtained, from 143.67±4.14 to 128.03±6.58, while diastole blood pressure decreased from 91.33±3.457 to 82.83±5.76. In the control group, blood pressure of systole pre-test was obtained at 145.42±5.69 and in the post-test 134.10±9.65. Diastole blood pressure in the pre-test control group was 91.58±3.62 and in the post-test 84.92±6.64.

According to **Table 3**, it shows that there is no difference in the starting point

(pretest) both in systole and diastole blood pressure measurements (>0.05). This shows that the respondents had similar conditions before intervention in the two groups. After the intervention was carried out for 2 weeks, then measurements were taken again in both groups, and it was found that there was a significant difference in systole (0.000) and diastole (0.007) between the group of pregnant women who were given yoga-acupressure and not given.

DISCUSSION

The majority of respondents in this study had good characteristics and medical history, such as pregnancy at reproductive age, good education (up to high school), and had normal

Table 3. The difference of blood pressure among pregnant women before and after prenatal yoga and acupressure

Variable	p-value
Pretest	
Systole	0.035
Diastole	0.522
Posttest	
Systole	0.000
Diastole	0.007

height and weight. Most of the pregnant women in this study were not occupied because some of the mothers were housewives and the data was taken in the third trimester, where the originally working mothers had taken maternal leave. Though the respondents had no history of hypertension, the blood pressure of pregnant women could be unpredictably increase due to physiological changes in the cardiovascular system during pregnancy as well as psychological factors, such as anxiety. The combination of yoga and acupressure in pregnant women affects the decrease in blood pressure. Both yoga and acupressure had similar effect in producing endorphin hormone and relaxing muscle tension. This is in line with research by Hamdiah et al (2017) which obtained that pregnancy yoga can reduce systole blood pressure in pregnant women who experience hypertension, and is supported by research by Nisa et al (2022) which states that acupressure administration can help pregnant women to lower blood pressure (8,15). Prenatal yoga exercise includes focusing, communicating to the fetus, and positive affirmation that may stimulate endorphins which relaxing body system then reduce tension.

Physical activity or exercise is important

to reduce blood pressure (16). Yoga practice as one of physical activity in pregnant women can stimulate the production of Endorphin hormone, which is a hormone produced in the brain, specifically in anterior pituitary gland (10) and spinal cord when the body relax. In other words, Endorphin hormone can be a natural sedative that delivers comfort and reduce high blood pressure. Meanwhile, acupressure can also provide a calm and comfort effect due to the release of endorphin hormones, improves blood flow, and relaxes tension. This is supported by a literature review which reveals that acupressure could reduce high blood pressure (17,18).

Prenatal yoga is a person's activity to focus the entire mind to control the five senses and body as a whole. This causes pregnant women to control, organize, and concentrate to harmonize body, soul, and mind. In addition, prenatal yoga has benefits in both psychological and physical condition for pregnant women "(19). Other studies also support the results of this study, namely that the blood pressure of pregnant women before (the first day) and after (the sixth day) of prenatal yoga, decreased on the sixth day with $p=0.036$ (13). Rodiani's research also got similar results: the blood pressure of pregnant women after doing prenatal yoga regularly 2

times a week for 10 weeks could lower blood pressure by $p < 0.01$ (9).

The results of this study are also supported by the research of Nisa et al (2022) found that there was a significant difference in the average systolic and diastolic pressure before and after being given acupressure using GV 20 (Pai Hui), PC 6 (Nei Kuan) and Li 4 (He Ku) points in pregnant women at the Jagasatru Health Center, Cirebon (8). Pressures in certain acupoints are useful in improving wellbeing, relieving pain, calming nerve tension, reducing stress and increasing relaxation (20). In this study, the combination of prenatal yoga and acupressure on these acupoints helped pregnant women in relaxing and calming nerve tension, so that it could reduce blood pressure.

CONCLUSION AND RECOMMENDATION

There are significant differences in the blood pressure of pregnant women before and after yoga and acupressure. In addition, there were significant differences in blood pressure reduction between the intervention group and the control group. Thus, it is expected that midwives or other health providers can implement this finding by facilitating prenatal yoga and acupressure for pregnant women with hypertension.

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