



The Effect of Acuyoga on Fetal Heart among Pregnant Women with Hypertension

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Abstract. Acuyoga is a non-pharmacological therapy that has the benefit of accelerating blood circulation to the fetus. The study aimed to examine the effect of Acuyoga on fetal heart rate among pregnant women with hypertension. We conduct a quasi-experimental, pretest, and posttest with control group design. Thirty total was allocated in the experimental and control groups. Each group consisted of 15 respondents. Patients in the experimental group received the Acuyoga postpartum awhile control group received the prenatal yoga. The intervention was carried out twice a week for four weeks, with a duration of sixty minutes. The results of the dependent statistical test showed an average Fetal Heart Rate test before intervention in the experimental group of 133.47x/minute and after the intervention was given to 146.27 x/minute increasing of 12.8 x/minute. Independent t-test results obtained p-value 0.015 (<0.050). The size of the Cohen d effect is 0.94, which means that acuyoga is very effective in reducing fetal heart rate. Acuyoga twice a week for four weeks with a duration of sixty minutes was effective in increasing fetal heart rate in pregnant women with hypertension.

Keywords: Acuyoga, fetal well-being, fetal heart rate, pregnancy hypertension, women pregnant.



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INTRODUCTION

Pregnancy hypertension is one of the causes of maternal mortality. Hypertension is the cause of maternal and perinatal morbidity and mortality (1). World Health Organization estimated that in 14% of 289,000 maternal have been deaths due to hypertension during pregnancy (2). A tenth of maternal mortality in Asia and Africa were also caused by hypertension in pregnancy (3). Basic Health Research in 2013 The prevalence of pregnancy hypertension in Indonesia was 25.8% (4). Hypertension ranked second as the cause of maternal mortality in Central Java. In 2017 hypertension cases in Central Java amounted to

32.97% (5). Hypertension in pregnancy in the city of Semarang, in 2016 the incidence of hypertension was 21% and increased in 2017 by 22% (6).

Hypertension in pregnancy is an increase in systolic blood pressure $\geq 140/90$ mmHg without proteinuria, which appears at over 20 weeks gestation (7,1). Hypertension in pregnancy, if not followed up, can lead to pre-eclampsia and eclampsia (1,8). Another impact of hypertension caused vasoconstriction and inhibited oxygen supply to the fetus due to the reduced maternal blood supply to the placenta. This causes disrupted fetal growth. The worst impact that will occur is fetal death in the womb or Intrauterine Fetal Death (IUFD) (9).

About 75.9% of mothers with a history of hypertension had IUFD and had a risk of 3,396 times compared to mothers who did not have a history of hypertension (9). Pregnant women with hypertension also increased their risk of occurrence of asphyxia in newborns (10). Hypertension in pregnancy affects reducing fetal well-being, so it needs intensive monitoring so that the incidence of death in the fetus due to hypertension can be prevented. Fetal welfare monitoring can be done in a simple way, which is to monitor the fetal heart rate using a laenec or Doppler (11).

Pharmacological therapy in hypertension has good effectiveness, but its application causes side effects at the beginning of use. Besides pharmacological treatment that starts with one type of drug and low dose, but blood pressure has not reached the target. The dose of the medicine will be increased or switched to another antihypertensive drug. Most patients require an antihypertensive drug combination to reach the blood pressure target, thereby increasing the cost of treatment and reducing patient compliance because the amount of medication that must be taken is increased.

Non-pharmacological therapy for hypertension included acupressure, yoga, aromatherapy, music therapy, hypnosis, relaxation, and banana therapy. Non-pharmacological treatment is considered safer and more comfortable to do and has minimal side effects so that non-pharmacological treatment can support the application of pharmacological therapy (13,14,15).

Acuyoga is a combination of acupressure and yoga. Acuyoga is part of yoga by using meridian points of organs in the body. Meridian points like Gall Bladder 20 (GB 20), Governing Vessel 20 (GV 20), Pericardium 6 (PC 6) and Bladder 18 (BL 18) have benefits for lowering blood pressure (16,17). Acuyoga is a form of physical activity that triggers the stimulation of endothelial-dependent vasodilatation through the organs inside the body.¹⁸ Acuyoga also has relaxation techniques that regulate the flow of vital energy in troubled organs. Acuyoga also has the benefit of accelerating blood circulation to the fetus (16). If blood circulation and oxygen supply to the fetus are smooth, then stabilization of the fetal heart rate will be maintained.

Based on the background description and identification of the problem, innovation with intervention in dealing with pregnant women with hypertension, researchers are interested in researching "Effectiveness of Acuyoga on fetal heart rate in pregnant women with hypertension."

OBJECTIVE

The study aimed at examining the Effect of acuyoga on fetal heart rate among pregnant women with hypertensive

METHOD

We conduct a quasi-experimental, pretest, and posttest with control group design. The variable that will be the object of this study is acuyoga, which is the independent variable, and the fetal heart rate is the dependent variable. Samples in this study were hypertensive pregnant women. Thirty total was allocated in the experimental and control groups. The method of sampling in this study used purposive sampling. This study was divided into two groups. Group one was given acuyoga intervention, and the second group was prenatal yoga.

The research instruments used in this study are as follows: 1) Observation sheet containing data about the respondent's research, date of research, respondent's code, age, gravida, education and employment, observation sheet of blood pressure and fetal heart rate 2) Standard Operating Procedures Acuyoga that have been validated by two experts and Standard Operating Procedures for prenatal yoga.

This research was registered at the Health Research Ethics Commission Faculty of Dentistry Sultan Agung Islamic University, Semarang Number. 029/B.1-KEPK/SA-FKG/III/2019.

Descriptive analysis is used to describe the characteristics of each variable in the percentage, frequency of age, gravida, education, and employment. Data normality test as a bivariate parameter monitor using the Shapiro Wilk test. Analyzing the fetal heart rate pretest and posttest between the experimental groups compared with the control group using the dependent t-test. The Independent t-test was performed to determine the effect of the intervention on fetal heart rate in the experiment and control group

RESULTS

Characteristics of respondents

Table 1 showed the characteristics of respondents. Most of the respondents are 34 and 35 years old. In the experimental group, five respondents (33.3%) are 34 years old, and two respondents (13.3%) are 35 years old. In the control group, only one (6.7%) is 34 years old, and four respondents (26.7%) are 35 years old. Characteristics of respondents based on the gravida, most of the respondents, are multigravida. In the experimental group are 14 respondents (93.3%) the same as the control group. Based on the educational background, respondents at the senior high school education level were 11 respondents (73.3%) in the experimental group and nine respondents (60.0%) in the control group. On employment background, the majority of respondents did not work, or homemakers were 13 respondents (86.7%) in the experimental group and nine respondents (60.0%) in the control group. The results of the One Way ANOVA Test for homogeneity test, the characteristics of this study p-value ≥ 0.05 mean that the variance between the experimental group and the control group is homogeneous or equivalent

Table 1. Characteristics of respondents

Characteristics Respondents	Experiment			Control			P-value
	n	%	Mean±SD	n	%	Mean±SD	
Age			31.87±3.182			31.47±2.774	0.878*
24	1	6.7		0	0		
28	1	6.7		2	13.3		
29	2	13.3		3	20.0		
30	1	6.7		3	20.0		
32	1	6.7		1	6.7		
33	2	13.3		1	6.7		
34	5	33.3		1	6.7		
35	2	13.3		4	26.7		
Gravida			1.93±0.258			1.93±0.258	1.000*
Primigravida	1	6.7		1	6.7		
Multigravida	14	93.3		14	93.3		
Education			3.00±0.239			1.67±0.926	0.826*
Primary School	1	6.7		2	13.3		
Junior High School	-	-		-	-		
Senior High School	11	73.7		9	60.0		
College	3	20.0		4	26.7		
Employment			3.00±0.232			1.67±0.900	0.99*
Unemployment	13	86.7		9	60.0		
Entrepreneur	1	6.7		2	13.3		
Government employees	1	6.7		4	26.7		

Effect of acuyoga intervention on fetal heart rate

Based on Table 4.3, it can be explained the results of the dependent t-test analysis showed that in the experimental group the average fetal heart rate before intervention was 133.47x / minute and after intervention was 146.27x / minute so that an increase of 12.8x / minute with a p-value <0.05, which means that there is a difference in fetal heart rate before and after intervention in the experimental group. In the average control group before the intervention was 132.40x / minute and after intervention 140.07 x / minute and increased by 7.67 x / minute with p-value <0.05, which means that there is a difference in fetal heart rate of the control group before and after being given an intervention.

Table 2. Effect of acuyoga intervention on fetal heart rate

Group	Mean	SD	p-value
Experimental Group			0.00
Pre-test	133.47	8.90	
Post-test	146.27	6.28	
Control group			0.16
Pre-test	132.40	8.72	
Post-test	140.07	6.87	

DISCUSSION

The results of the dependent statistical test showed an average Fetal Heart Rate test before intervention in the intervention group of 133.47x/minute and after the intervention was given to 146.27x/minute increasing of 12.8 x/minute. The average control group before the intervention was 132.40 x/ minute and after the intervention was 140.07 x/minute and increased by 7.67 x/minute. P-value in both groups <0.050, which means the difference in Fetal Heart Rate in the control group before and given intervention. Independent test results t-test results obtained p-value 0.015 (<0.050). The size of the Cohen d effect is 0.94, which means that acuyoga is very effective in reducing fetal heart rate.

Yoga is useful to facilitate blood circulation and optimize lung capacity to deliver oxygen so that it is absorbed by the body and transmitted to the fetus. Oxygen passing through the placenta enters the fetal body through the umbilical vein, and most of the blood flows into the inferior vena cava and then enters the right atrium. Then forwarded to the left atrium, then pumped to the aorta and from the aorta will flow throughout the fetal body (19,20).

Yoga provides vagal stimulation, and activating parasympathetic to reduce sympathetic performance can reduce resistance in the uterine arteries, which facilitates blood flow. This research is supported by Rakhsani's 2015 study that prenatal yoga resulted in better blood circulation from the uterus through the placenta to the fetus so that it can improve intrauterine fetal growth (21,22)

Physical activity increases the number of hormones flowing in the placenta, including norepinephrine, which plays an essential role in the development of autonomic nerves. The autonomic nervous system regulates the main functions of the body including the heart rate (21,15)

Acuyoga has relaxation techniques that regulate the flow of vital energy from troubled organs. If blood circulation and oxygen supply to the fetus are smooth, the stabilization of fetal well-being, such as the fetal heart rate, will be maintained (16,23).

The meditation and relaxation session using relaxation music on acuyoga and prenatal yoga is also a form of stimulation with a soft rhythm of music so that the baby is not stressed and calmer which has an impact on fetal heart rate stabilization (24)

Ages above 20 weeks, the fetus can hear, feel, and do movements. When the fetus listens to music, the brain processes what is heard, and the heart rate will follow the rhythm of the music that is heard. When the body relaxes, the body releases stress, and the fetus feels comfortable and increases growth.

The application of a combination of techniques based on movement, touch, and pressure will maximize the stimulation given. This combination as a whole provides interconnected benefits to the body's response so that it can be used as a form of therapeutic intervention to reduce complaints and as a form of alternative therapy in terms of non-pharmacological support for pharmacological therapy

CONCLUSION

The results of the research conducted on 30 respondents with the provision of acuyoga twice a week for four weeks were obtained effectively increases the frequency of the fetal heart rate by an average of 12.8 x / minute.

LIMITATION

The limitations of the study only examined the variable intensity of the fetal heart rate. The researcher was unable to fully control the external variables that could affect the experiment, for example, the anxiety factor.

IMPLICATION

Future researchers are interested in researching the acuyoga so that they can add other variables related to fetal well-being, such as fetal movements. Prospective researchers are expected to add to the examination of biomarkers such as norepinephrine

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