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The Effect of Prenatal Yoga on Anxiety and Depression in Kudus, Central Java

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ABSTRACT

Background: Anxiety and depression in pregnancy can lead to low fetal quality, increased risk of pregnancy complication and developmental disorder of the child. Antidepressant treatment may cause recurrence or addiction rate of up to 50%. In theory, yoga can relieve undesirable psychic symptoms such as anxiety and depression during pregnancy. This study aimed to determine the effect of prenatal yoga on anxiety and depression.
Subjects and Method: This study was a randomized controlled trial, conducted at Budi Luhur clinic in Kudus, Central Java, from 27 December 2017 to 7 February 2018. A total of 102 pregnant women was selected for this study by simple random sampling. This sample was allocated at random into the intervention group (n_1=51) and control group (n_2=51). The independent variable was prenatal yoga as the intervention under study. The dependent variables were anxiety and depression. The data were collected by questionnaire. Difference in the dependent variables between the two groups was tested by Mann-Whitney test and a multiple linear regression.
Results: The mean level of anxiety was lower in the intervention group than the control group both at two weeks after the intervention (b= -9.25; 95% CI= -10.22 to -8.28; p< 0.001) and four weeks after the intervention (b= -5.79; 95% CI= -7.68 to -3.90; p< 0.001). The mean level of depression was lower in the intervention group than the control group both at two weeks after the intervention (b= -10.82; 95% CI= -12.29 to -9.35; p< 0.001) and four weeks after the intervention (b= -2.58; 95% CI= -3.98 to -1.18; p< 0.001).
Conclusion: Prenatal yoga intervention can reduce anxiety and depression during pregnancy.

Keywords: prenatal yoga, anxiety, depression

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BACKGROUND

Worldwide 350 million pregnant women have anxiety and psychological disorders that can reduce the quality of pregnancy outcomes (Pascoe et al, 2015). Indonesia has an incidence of pregnant women with anxiety of 56.5% and depression 14.8%.

Anxiety in pregnancy can cause psychiatric disorders, decreasing the quality of the fetus, preeclampsia, spontaneous abortion, preterm birth, low birth weight (LBW), postpartum depression, increasing risk of heart rhythm disorders, and developmental delay even personality disorder until adulthood, (Gong et al., 2015; Kusaka et al., 2016).

The treatment with anti-depressant medication which is still debated between the benefits and risks for pregnant women and their fetuses (Field et al., 2013). The available anti-depressant medications as follows: The first Selective serotonin reuptakes inhibitors (SSRIs) which include SSRIs are citalopram (Celexa), fluoxetine (Prozac) and sertraline (Zoloft), both Serotonin and norepinephrine reup take inhi-

bitors (SNRIs) which include SNRIs namely duloxetine (Cymbalta) and venlafaxine (Effexor XR), and the third Buproprion (Wellbutrin) and the fourth Trisilik (Uebelacker et al., 2016). Previous study reported more than 50% of pregnant women who take antidepressant are still have recurrence (Muzik et al., 2012).

Based on side effects of antidepressant for mothers and fetuses that are still debated, another method of tackling anxiety with body exercise and mind exercise called "prenatal yoga" which is believed to decrease anxiety and depression levels (Field, 2016). Prenatal yoga or psychotherapeutic exercise includes (interpersonal psychotherapy, cognitive psychotherapy and psychoterapi for personality) (Jiang *et al.*, 2015). Practicing yoga during pregnancy is useful as a self-help media that will reduce anxiety (Battle et al., 2015).

This study aimed to determine the effect of prenatal yoga practice on decreasing levels of anxiety and depression.

SUBJECTS AND METHOD

The study was an experimental with RCT (randomized controlled-trial) design. Conducted in Budi Luhur clinic in Kudus from 27 December to 7 February 2018.

A total of 102 pregnant women were divided into 2 groups. 51 pregnant women in the control group and 51 pregnant women in prenatal yoga groups. Prenatal yoga is given within 1 month and 2 times for follow up, in this study there is no lost to follow up.

The inclusion criteria are trimester II-III. Exclusion criteria were heart disease, lung disease, cervical incompetent, history of vaginal bleeding in second and third trimester, placental abnormalities (such as placenta previa), pre-eclampsia, and hypertension. Data were collected by using Hamilton anxiety rating scale questionnaire (HARS) and Hamilton Depression rating scale (HDRS). Data analysis using linear regression test and Mann-Whitney with SPSS version 22.

The research ethics clearance for this study was obtained from the Research Ethics Committee at Dr. Moewardi Hospital, Surakarta, Indonesia. Research ethics included informed consent, anonymity, and confidentiality.

RESULTS

1. Characteristics of study subjects

Characteristics of the subjects of the study in Table 1 showed that 51 pregnant women in each group had imbalance in depression level spread.

Table 1. Characteristic of the study subjects

Characteristic	Group	n	Mean	Median	SD	p
Materanal age (year)	Control	51	26.02	26	2.60	0.480
	Prental Yoga	51	26.65	26	4.04	
Gestasional age (week)	Control	51	29.00	28	4.34	0.141
	Prental Yoga	51	27.57	28	4.98	
Anxiety (baseline)	Control	51	23.06	22	3.80	0.766
	Prental Yoga	51	22.59	21	4.67	
Depression (baseline)	Control	51	25.73	25	4.95	0.004
	Prental Yoga	51	29.65	30	7.32	
Gravida	Control	51	1.51	1	0.58	0.509
	Prental Yoga	51	1.45	1	0.61	

Based on Table 2, pregnant women in the prenatal yoga group had higher levels of depression than the control group (p= 0.004). Therefore, multiple linear regression analysis is required.

2. Bivariat Analysis

Mann Whitney test analysis results in table 2 shows that there is a decrease in the average of anxiety and depression in prenatal yoga group and statistically significant.

Follow-up 1 result showed an average of anxiety in yoga group was lower (13.53) than control group (23.06). At follow-up 2 the yoga group anxiety was lower (13.22) than the control group (23.86) and both of these differences were statistically significant at p<0.001.

The results of follow-up 1 show the average depression in yoga group (16.61) was lower than control group (25.73). At follow-up 2 the yoga group depression mean (16.24) was lower than control group (25.82).

Table 2. Mann Whitney analysis on the effect of prenatal yoga toward anxiety and depression.

Variable Group	n	Mean	Median	SD	p
Anxiety follow up 1					
Control grup	51	23.06	22	3.80	<0.001
Prenatal yoga	51	13.53	13	3.26	
Anxiety follow up 2					
Control grup	51	23.86	23	3.55	<0.001
Prenatal yoga	51	13.22	13	3.16	
Depression follow up 1					
Control grup	51	25.73	25	4.95	<0.001
Prenatal yoga	51	16.61	18	3.93	
Depression follow up 2					
Control grup	51	25.82	25	4.65	<0.001
Prenatal yoga	51	16.24	17	3.77	

3. Multiple linear regression analysis

Multiple linear regression showed that prenatal yoga can decrease anxiety and depression. In comparison of baseline and follow-up 1 scores there was a higher decreasing score than the decreasing scores on comparison follow-up 1 and follow-up 2.

Anxiety scores of prenatal yoga groups at follow-up 1 decreased by (b = -9.25) compared to baseline. Whereas on the follow-up 2 decreaseed score (b = -5.79) compared to follow up 1.

The adjusted value (R^2) explains the magnitude of the effect of yoga on the anxiety treatment. The results at follow-up 1 show that yoga had an effect of 83% in decreased anxiety. This result was higher than in follow up 2 (79%). Both of the above results show the highest prenatal yoga effect is on follow-up 1 and will gradually decrease.

The prenatal yoga group's depression score at follow-up 1 decreased by (b = -10.82) compared with baseline. Whereas at the follow-up 2 decrease is lower (b = -2.58) than follow-up 1.

Adjusted R^2 values at follow-up 1 showed that yoga had an effect of 68.8% in decreased depression but this result was lower when compared to follow up 2 (84.9%).

Table 3. Multiple linear regression the effect of prenatal yoga for anxiety and depression.

Independent Variable	b	95% CI		p
		Lower limit	Upper limit	
Anxiety follow up 1				
Constant	9.29	6.54	12.04	<0.001
Prenatal Yoga	-9.25	-10.22	-8.28	<0.001
Baseline	0.59	0.48	0.71	<0.001
n observasi = 102				
Adjusted R^2= 83%				
p = 0.001				
Anxiety follow up 2				
Constant	12.11	8.35	15.87	<0.001
Prenatal Yoga	-5.79	-7.68	-3.90	<0.001
Anxiety follow up 1	0.50	0.35	0.67	<0.001
n observasi = 102				
Adjusted R^2= 79%				
p = 0.001				
Depression follow up 1				
Constant	14.52	11.44	17.59	<0.001
Prenatal Yoga	-10.82	-12.29	-9.35	<0.001
Baseline	0.43	0.32	0.55	<0.001
n observasi = 102				
Adjusted R^2= 68.8%				
p = 0.001				
Depression follow up 2				
Constant	6.05	3.13	8.97	<0.001
Prenatal Yoga	-2.58	-3.98	-1.18	<0.001
Depression follow up 1	0.77	0.66	0.88	<0.001
n observasi = 102				
Adjusted R^2= 84.9%				
p = 0.001				

DISCUSSION

Yoga is a combiation from physical exercise that is useful for stretching and the formation of posture or commonly called "Asana" as well as breathing exercises or "pranayama" has been studied has a role in overcoming depression and symptoms, one of the most important part in yoga that is useful for overcome depression in pregnancy is pranayama (Babbar and Shyken, 2016).

Pranayamic breathing is a slow, rhythmic deep breathing technique and combined with several movements that will activate the parasympathetic system that working opposite to the sympathetic nervous system, where when the sympathetic system works optimally then cortisol will be removed. This system will block the expenditure of cortisol which is one of the causes of depression (Jerath et al., 2006).

Breathing with Pranayamic technique, will expand and stretch the vagal (vagal) and lung tissue for decreased heart rate, blood pressure, metabolism in the body an oxygen consumption. In addition, there is an increased in neuroplasticity, the ability of the brain to change adaptive adjustments that are characterized by increased concentration, intelligence and increased control of motor motion (Satyapriya et al., 2009).

The same mechanism also has an effect in pregnancy that is the occurrence of streching process in lung tissue and vagus nerve then there is an increased in cardiac output, heart rate to supply oxygen for mother and fetus, as well as increased blood volume.

Therefore, the autonomic nervous response will be activated and a decrease in cortisol levels, besides pranayama movment is also proven to reduce the sleep disturbance commonly experienced by pregnant women (Babbar et al., 2016).

CONFLICT OF INTEREST

None declared.

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