Antenatal Yoga and Murottal Al-Quran Therapy Decreasing Anxiety and Blood Pressure of Preeclampsia Risk Women

Yoga Antenatal dan Terapi Murottal Al-Qur'an Menurunkan Kecemasan dan Tekanan Darah Ibu Hamil Berisiko Preeklampsi

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ABSTRACT

Pregnant women experience significant changes in physiological and psychological functions. The process of adjusting to this new condition often causes anxiety. One of the pregnancy complications that is affected by anxiety is preeclampsia. The purpose of this study was to identify the effects of antenatal yoga and murottal Al-Quran therapy on pregnant women at risk of preeclampsia. This study was conducted in primary health care in Majalengka, Indonesia, using true experiment (pretest-posttest control group) design as many 40 respondents divided into 4 groups, Antenatal Yoga (AY), the Murottal Al-Qur'an Therapy (MAT), combination of yoga and murottal al-Quran, and control group. Respondents were taken by cluster and simple random sampling. The anxiety, blood pressure, sFlt-1, and PIGF levels of all respondents were measured after 12 interventions. Data were analyzed with Kruskall-Wallis and One-way Anova tests. The antenatal yoga, murottal Al-Qur'an therapy, and its combination significantly decrease anxiety (p=0.007), systole (p=0.006), and diastole (p=0.001) in pregnant women with the risk of preeclampsia. There were no significant differences of sFlt-1 (p=0.286), PIGF (p=680) and ratio of sFlt-1/PIGF (p=969) among groups. The antenatal yoga, Murottal Al-Qur'an therapy, and it's combination effect decreasing anxiety and blood pressure in pregnant women with the risk of preeclampsia in Majalengka.

ABSTRAK

Ibu hamil akan mengalami perubahan signifikan pada fungsi fisiologis dan psikologis, proses penyesuaian diri terhadap keadaan baru ini sering kali menimbulkan kecemasan, dianggap sebagai faktor risiko untuk preeklampsia. Tujuan dari penelitian ini adalah untuk mengidentifikasi efektivitas yoga antenatal dan terapi murottal Al-Quran pada wanita hamil yang berisiko preeklampsia. Penelitian ini dilakukan di layanan kesehatan primer di Majalengka, Indonesia menggunakan desain true experiment (pretest-posttest control group). Sebanyak 40 responden dibagi menjadi 4 kelompok, Yoga Antenatal (YA), Terapi Murottal al-Qur'an (TMA), kombinasi yoga dan murottal al-Quran, dan kelompok kontrol. Responden diambil secara cluster dan simple random sampling. Tingkat kecemasan, tekanan darah, sFlt-1, dan PIGF dari semua responden diukur setelah 12 intervensi. Data dianalisis dengan uji Kruskall-Wallis dan One-way Anova. Hasil dari penelitian menunjukkan Yoga antenatal, terapi murottal Al-Qur'an, dan kombinasinya secara signifikan mengurangi kecemasan (p=0,007), sistolik (p=0,006), dan diastolik (p=0,001) pada wanita hamil dengan risiko preeklampsia. Tidak ada perbedaan yang signifikan antara sFlt-1 (p=0,286), PIGF (p=680) dan rasio sFlt-1 / PIGF (p = 969) di antara kelompok. Yoga antenatal, terapi Murottal Al-Qur'an, dan kombinasi efeknya menurunkan kecemasan dan tekanan darah pada wanita hamil dengan risiko preeklampsia di Majalengka.

INTRODUCTION

Preeclampsia occurs due to the influence of anxiety during pregnancy, anxiety is considered as one of the risk factors for preeclampsia.[1,2] High stress in pregnancy can increase stress hormones, can also cause an increase in blood pressure and a decrease in birth weight. Increased sFlt-1 levels in the maternal circulation will cause a decrease in free VEGF and PlGF so that it can cause systemic antiangiogenic effects. Systemic antiangiogenic conditions in the maternal circulation can cause hypertension and proteinuria,[3] besides age, parity, history of hypertension, history of preeclampsia and antenatal care (ANC) are associated with risk factors for the occurrence of preeclampsia.[4] According to the World Health Organization (WHO), there is a very high maternal mortality rate in the world, around 211 maternal deaths per 100,000 live births in 2017. It is estimated that in 2017, around 295,000 women died during and after pregnancy and childbirth.[5] The incidence of preeclampsia in 2015 in Indonesia was around 3.4-8.5%, in West Java 29.3%, and in Majalengka District was 50%, the increase from the previous year is 45%.[6]

The results of previous studies indicate that 5.3% of patients with preeclampsia and 0.7% of cases in the non-preeclampsia group suffer from very severe anxiety, so anxiety is considered a risk factor for preeclampsia.[2] Recommendations for primary and secondary prevention in preeclampsia in addition to screening for risk of preeclampsia also using the patient's medical history for every pregnant woman since the beginning of her pregnancy, the use of low-dose aspirin and calcium supplements (minimum 1g/day) is recommended as a preeclampsia prevention in women at high risk of preeclampsia.[7]

So far there have never been any preventive recommendations that use physical activity interventions, in this case antenatal yoga and relaxation techniques that involve spiritual elements such as Murratal al-Qur'an or a combination of both, whereas this technique can reduce or suppress anxiety in pregnant women which is one of precipitating factors for preeclampsia.

Yoga exercise interventions conducted at the prenatal stage of pregnant women affect the decrease in anxiety levels in pregnant women entering the third trimester phase.[8] This causes a physiological response characterized by a decrease in heart rate, blood pressure, metabolic rate, and oxygen consumption. Physiologically, antenatal yoga will cause a decrease in heart rate, breathing rhythm, blood pressure, muscle tension, metabolic rate, and production of stress-causing hormones, so that the whole body starts functioning at a healthier level with more energy,[9] Likewise, listening to the verses of the Koran shows 97% have the effect of bringing calm and decreasing the tension of the reflective nerves. Murattal al-Qur'an therapy can improve the immune response of the immune system because it contains aspects of meditation and relaxation that can be used for stress relief.[10]

The aim of this study to identify the effectiveness of Antenatal Yoga, Murottal Al-Qur'an Therapy and the combination of its to reduce the risk of preeclampsia on pregnant woman.
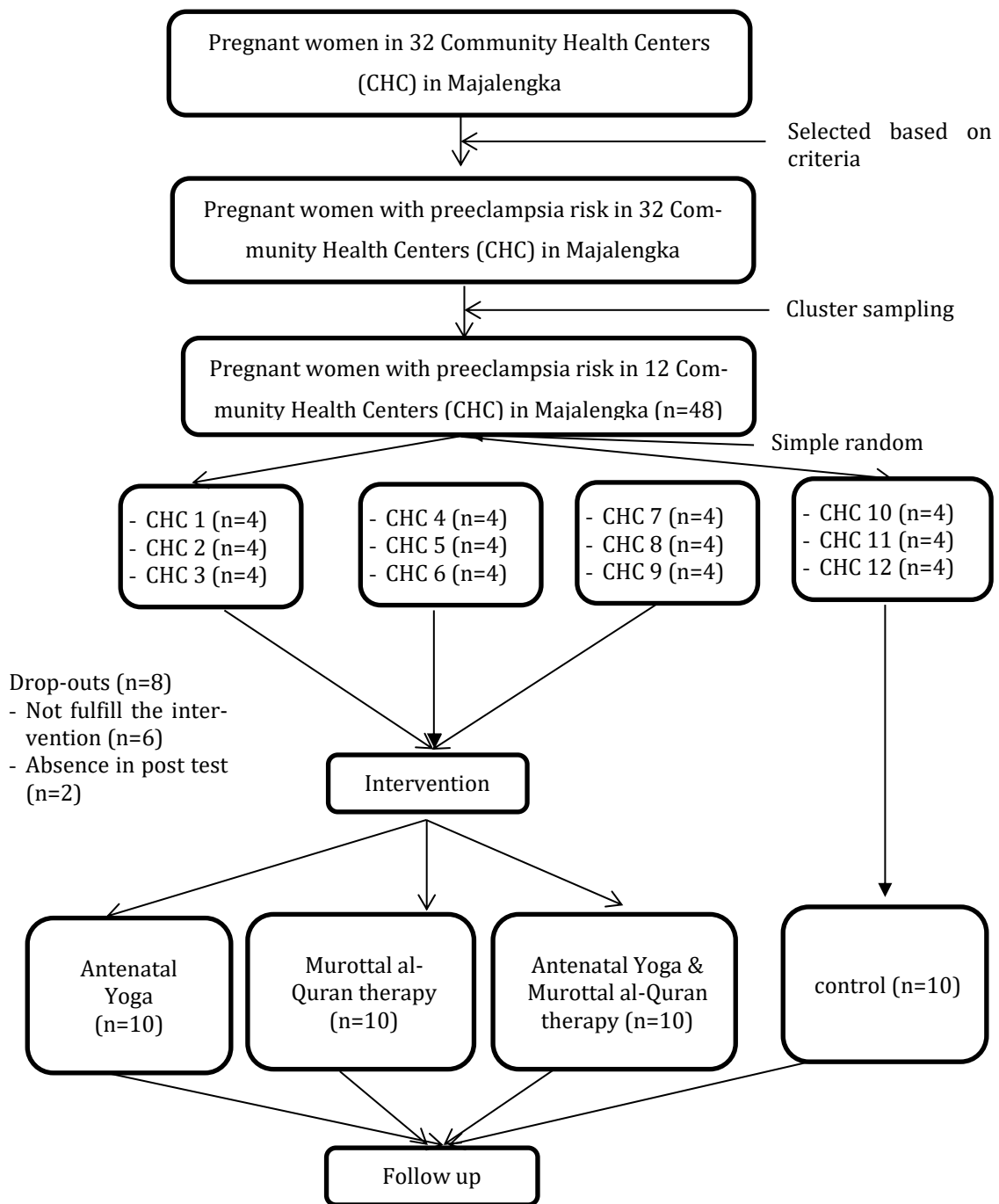
MATERIAL AND METHOD

This study uses the true experiment design (pretest-posttest control group design). The cluster sampling model was used to retrieve 12 from 32 existing Community Health Centers in Majalengka. Respondents in this study were pregnant women in the second trimester who had a risk of pre-eclampsia. Respondents were selected based on criteria including: presence of proteinuria and high blood pressure. If pregnant women already suffer from preeclampsia, then they will not be selected as respondents. Determination of the intervention group was carried out randomly using a closed envelope selected by the respondent, after the informed consent was signed. The selection of samples in each Community Health Center by a simple random sampling technique with close envelopes to select four groups after the informed consent was signed by the respondent. Respondents divided into four groups: the antenatal yoga intervention group, the Murottal Al-Quran therapy intervention group, the modification of antenatal yoga and the Murottal Al-Quran therapy group, and the control group. The Murottal Al-Qur'an was given to the respondent by reading it directly by the *Ustadzah,* a teacher of Islam (female)[11]. The surah that is read is: Al-Fateha, Al-Anbiya, Yunus and Ar-Rahman. This is done so that the respondent can focus more in following interventions given without being distracted by other activities.

During the study period, eight respondents had dropped out, 6 respondents in the intervention group did not take the intervention until the end of 12 times, while 2 two respondents from the control group were not willing to take the posttest, thus the results of the 4 groups were 40 respondents pregnant with the risk of preeclampsia (Diagram 1). Thirty respondents were given the interventions for 12 times twice a week for 6 weeks with a duration of 1 hour per session. Data were analyzed with Fisher Exact Test, Kruskall-wallis and One-way Anova. This study has been registered in the Health Research Ethics Commission of Medicine Faculty, Universitas Padjadjaran, Indonesia, with the Ethical Clearance number: 15/UN6.C10/PN/2018. The study was conducted from January to April 2018 at the Community Health Centers in Majalengka.

RESULTS

There were no differences in respondent characteristics between groups. The respondents were primarily in the low-risk age (25-35 years), low education, not working, and household income was less than 1.500 million IDR (Table 1).

Table 2 showed that the mean differences between groups. There were no differences in all variables mean at the pre interventions. At post-intervention, 3 variables have a mean difference, namely diastole (p=0.001), anxiety (p=0.0001), and sFlt-1 p-value=0.018.

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┌─────────────────────────────────────────┐
│  Pregnant women in 32 Community Health   │
│       Centers (CHC) in Majalengka        │
└─────────────────────────────────────────┘
                    │              Selected based on
                    ▼              criteria
┌─────────────────────────────────────────┐
│ Pregnant women with preeclampsia risk in │
│ 32 Community Health Centers (CHC) in     │
│              Majalengka                  │
└─────────────────────────────────────────┘
                    │              Cluster sampling
                    ▼
┌─────────────────────────────────────────┐
│ Pregnant women with preeclampsia risk in │
│ 12 Community Health Centers (CHC) in     │
│         Majalengka (n=48)                │
└─────────────────────────────────────────┘
                                   Simple random
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- CHC 1 (n=4)   - CHC 4 (n=4)   - CHC 7 (n=4)   - CHC 10 (n=4)
- CHC 2 (n=4)   - CHC 5 (n=4)   - CHC 8 (n=4)   - CHC 11 (n=4)
- CHC 3 (n=4)   - CHC 6 (n=4)   - CHC 9 (n=4)   - CHC 12 (n=4)

Drop-outs (n=8)
- Not fulfill the inter-
  vention (n=6)
- Absence in post test
  (n=2)

Intervention

Antenatal Yoga (n=10)

Murottal al-Quran therapy (n=10)

Antenatal Yoga & Murottal al-Quran therapy (n=10)

control (n=10)

Follow up

Source: Primary Data, 2018

Diagram 1. CONSORT (*Consolidated Standards of Reporting Trials)*

Table 1. Characteristics of Respondents

Characteristics	Groups				p
	X1 (n = 10)	X2 (n = 10)	X3 (n = 10)	C (n = 10)	
Ages (Year)					
<20 or >35,	3 (25)	3 (25)	3 (25)	3 (25)	1.000
25-35	7 (25)	7 (25)	7 (25)	7 (25)	
Education					
Low	8 (29.6)	7 (25.9)	6 (22.2)	6 (22.2)	0.700[a]
High	2 (15.4)	3 (23.1)	4 (30.8)	4 (30.8)	
Employee					
Unemployee	5 (17.9)	7 (25)	8 (28.6)	8 (28.6)	0.693[a]
Employee	5 (41.7)	3 (25)	2 (16.7)	2 (16.7)	
Income					
< 1.5 Million	5 (22.7)	4 (18.2)	7 (31.8)	6 (27.3)	1.000[a]
> 1.5 Million	5 (27.8)	6 (33.3)	3 (16.7)	4 (12.2)	
Parity					
Primipara	4 (25)	5 (31.2)	4 (25)	3 (18.8)	0.851[b]
Multipara	6 (26.1)	5 (21.7)	5 (21.7)	7 (30.4)	
Grandemultipara	0 (0)	0 (0)	1 (100)	0 (0)	
Systolic, Mean (SD)	113 (10.6)	108.5 (5.8)	115 (9.72)	104 (8.4)	0.079[b]
Diastolic, Mean (SD)	72 (9.2)	69 (5.7)	74 (11.7)	66 (5.2)	0.209[b]
Anxiety					
Very heavy	1 (10)	1 (10)	1 (10)	1 (10)	
Heavy	5 (50)	7 (70)	5 (50)	7 (70)	0.312[b]
Medium	2 (20)	1 (10)	1 (10)	2 (20)	
Light	2 (20)	1 (10)	3 (30)	0 (0)	
Proteinuria					
Positive	1 (12.5)	1 (12.5)	2 (25)	4 (50)	0.089[a]
Negative	9 (28.1)	9 (28.1)	8 (25)	6 (18.8)	
SFLT-1, Mean (SD)	14611.7 (4598.9)	17527 (5090.9)	14507.1 (6182.5)	11384.3 (4710.5)	0.018*[b]
PlGF, Mean (SD)	403.6 (198.4)	626 (543.2)	611.4 (519.3)	1140.3 (2111.7)	0.986[b]
sFLT-1/PlGF Ratio, Mean (SD)	41.61 (21.6)	38.5 (20.04)	129.5 (297.5)	55.9 (69.9)	0.870[b]

Source: Primary Data, 2018
X1 : Antenatal Yoga (AY); X2 : Murottal Al-Qur'an Therapy (MAT); X3 : Combination; C: Control
[a]Fischer Exact Test; [b]Kruskall-Wallis; *Significance level: 0.05

The Antenatal Yoga (AY) affects decreasing anxiety and blood pressure, and does not affect decreasing sFlt-1, increasing PlGF, and decreasing the sFlt-1/PlGF ratio. In pregnant women with a risk of preeclampsia in Majalengka. However, the AY could decrease sFlt-1 by (-901.6+2645.3), increase PIGF by (615.7+477.5), and decrease the sFlt-1/PlGF ratio by (-67.3+170.98). Changes of sFlt-1 and PIGF levels in the AY groups were the highest compared to other groups (Table 3).

The Murottal Al-Qur'an Therapy (MAT) affects decreasing anxiety and blood pressure, and does not affect decreasing sFlt-1, increasing PlGF, and decreasing sFlt-1/PlGF ratio in the pregnant women with a risk of preeclampsia in Majalengka. However, the MTA could increase PlGF by (426.1+428.3), and decrease the sFlt-1/PlGF ratio by (-l19.3+17.3).

The combination of AY and MAT affects decreasing anxiety and blood pressure, and does not affect levels of decreased sFlt-1, increase in

PlGF, and decreased ratio of sFlt-1/PlGF in pregnant women with a risk of preeclampsia. However, the combination of AY and MAT increase PlGF by (392.6+387.2), and decrease sFlt-1/PlGF ratio by (-67.3+170.98). The decrease of sFlt-1 PIGF ratio is the highest if compared to other intervention groups.

DISCUSSION

The results of this study are in line with previous research which states that Murattal Al-Qur'an Therapy can reduce anxiety and blood pressure in pregnant women with preeclampsia.[10] Yoga exercises will inhibit the increase in sympathetic nerves, so the hormones that cause the body's dysregulation can be reduced. The parasympathetic nervous system, which has a work function as opposed to the sympathetic nerve, will slow down or weaken the workings of the internal organs of the body. As a result, there is a decrease in heart rate, breathing rhythm, blood pressure. The results of this study are also in line with similar studies that combine physical activity with murattal al-Qur'an therapy in elderly hypertension.[12]

Table 2. Mean differences of variables (Pre-Post Intervention)

Variable			Groups				p
			X1 (n = 10)	X2 (n = 10)	X3 (n = 10)	C (n = 10)	
Systole	Pre	Mean (SD)	113 (10.6)	108.5 (5.8)	115 (9.72)	104 (8.4)	0.079a
		Min-Max	100 – 130	100 – 120	100 – 130	90 – 110	
	Post	Mean (SD)	110 (8.2)	106 (5.2)	108 (14.9)	121 (15.2)	0.100a
		Min-Max	100 – 120	100 – 110	90 – 135	100 – 140	
Diastole	Pre	Mean (SD)	72 (9.2)	69 (5.7)	74 (11.7)	66 (5.2)	0.209a
		Min-Max	60 – 80	60 – 80	60 – 110	60 – 70	
	Post	Mean (SD)	69 (7.4)	62 (4.2)	72.5 (9.8)	81 (9.9)	0.00*a
		Min-Max	60 – 80	60 – 70	60 – 90	60 – 90	
Anxiety (HARS)	Pre	Mean (SD)	30.8 (9.96)	27.2 (7.8)	31.9 (7.37)	34.1 (7.39)	0.312b
		Min-Max	15 – 42	17 – 42	16 – 43	22 – 48	
	Post	Mean (SD)	20.4 (6.99)	20.8 (4.64)	17.5 (7.74)	34 (7.73)	0.000*b
		Min-Max	8 – 31	13 – 28	8 – 30	23 – 48	
sFlt-1	Pre	Mean (SD)	14611.7 (4598.95)	17527 (5090.9)	14507.1 (6182.5)	11384.3 (4710.5)	0.105a
		Min-Max	4041-20088	6381-21808	5868-22027	6485-21571	
	Post	Mean (SD)	13710.1 (4114.98)	18065.6 (4736.7)	15798 (4817.9)	11198.9 (4312.7)	0.018*a
		Min-Max	4293-18584	7307-21775	7369-20356	7420-20988	
PlGF	Pre	Mean (SD)	403.62 (198.43)	626.02 (543.27)	611.4 (519.3)	1140.3 (2111.7)	0.682a
		Min-Max	248.1-809.7	301.3-2078.7	19.1-1532.6	72.1-7047	
	Post	Mean (SD)	1019.3 (528.41)	1052.1 (383.8)	1003.9 (676.9) 44.6-1870.6	1119.8 (643) 224.4-2229.8	0.986a
		Min-Max	232.9-1771.1	565.3-1843.7			
sFlt-1/ PlGF Ratio	Pre	Mean (SD)	42.61 (21.6)	38.5 (20.04)	129.5 (297.5)	55.9 (69.9)	0.870a
		Min-Max	12.17-79.59	10.49-66.23	7.45-971.2	1-221.5	
	Post	Mean (SD)	20.18 (17.998) 3.71-65.13	19.26 (8.72)	62.13 (128.37) 4.01-423.99	14.5 (11.3) 3.62-36.28	0.471a
		Min-Max		6.34-34.65		0.017	

Source: Primary Data, 2018
X1 : Antenatal Yoga (AY); X2 : Murottal Al-Qur'an Therapy (MAT); X3 : Combination; C : Control
aKruskall-Wallis; bOne-way Anova; *Significance level: 0.05

Table 3. Mean Differences of Variables Among Groups

Variable		Groups				p	p-value among Groups					
		X1 (n = 10)	X2 (n = 10)	X3 (n = 10)	C (n = 10)		X1 vs C	X2 vs C	X3 vs C	X1 vs X2	X1 vs X3	X2 vs X3
Systole	Mean (SD)	-3.00 (6.8)	-2.5 (9.8)	-7.00 (9.8)	17 (16.4)	0.006*a	0.007	0.013	0.003	0.779	0.303	0.312
	p-value (normality)	0.015	0.394	0.394	0.487							
Diastole	Mean (SD)	-3.00 (13.4)	-7.00 (6.74)	-1.5 (10.6)	15 (8.5)	0.001*a	0.005	0.000	0.002	0.552	0.727	0.177
	p-value (normality)	0.466	0.015	0.183	0.258							
Anxiety (HARS)	Mean (SD)	-10.4 (11.4)	-6.4 (5.72)	-14.4 (9)	-0.1 (8.2)	0.007*b	0.079	0.714	0.005	1.000	1.000	0.300
	p-value (normality)	0.523	0.714	0.534	0.163							
sFlt-1	Mean (SD)	-901.6 (2645.3)	538.6 (994.1)	1290.9 (2672.8)	-185.4 (1716.7)	0.286*a	0.762	0.257	0.174	0.199	0.131	0.597
	p-value (normality)	0.842	0.363	0.004	0.734							
PlGF	Mean (SD)	615.7 (477.5)	426.1 (428.3)	392.6 (387.2)	-20.5 (2065.4)	0.680*a	0.880	0.597	0.450	0.326	0.290	0.880
	p-value (normality)	0.319	0.358	0.587	0.0001							
sFlt-1/ PlGF Ratio	Mean (SD)	-22.4 (20.7)	-19.3 (17.3)	-67.3 (170.98)	-41.4 (60)	0.969*a	0.940	0.880	0.762	0.650	0.650	0.940
	p-value (normality)	0.512	0.472	0.0001	0.005							

Source: Primary Data, 2018

X1 : Antenatal Yoga (AY); X2 : Murottal Al-Qur'an Therapy (MAT); X3 : Combination; C : Control

aKruskall-Wallis; bOne-way Anova; *Significance level: 0.05

The results of this study also support other research findings that antenatal yoga is one of the relaxation techniques that has been proven to reduce anxiety in pregnant women, causing a decrease in heart rate, breathing rhythm, blood pressure, muscle tension, metabolic rate, and production of stress-causing hormones, increasing concentration, and oxygen levels in the blood, and it is recommended to reduce anxiety during the second and third trimesters, and as an effective activity and convenient tool.[9] This is in line with previous study which indicates that antenatal yoga may improve psychological and pregnancy outcome.[13] The results of this study prove that relaxation techniques are more effective combined with spiritual elements.

Significant decrease in sFlt-1 in the antenatal yoga group compared to the Murattal al-Qur'an therapy group and the combination of antenatal yoga with Murattal al-Qur'an therapy which actually experienced an increase is likely due to antenatal yoga is a low-impact, manageable exercise, and easily modified which makes it a proper exercise for pregnant women. The antenatal yoga group was more able to reduce sflt-1 levels due to the possibility that the physical exercise and breathing took longer than the combination group or the Murattal al-Qur'an group. Thus, yoga is one method that can be safely administered to control oxidative stress in pregnant women, [14] but the results of this study are also incompatible with previous studies which show that the central pathophysiology of preeclampsia is an imbalance between the circulation of angiogenic factors (VEGF and PlGF), and antiangiogenic factors (sFlt-1 and so-luble endoglin (sEng).[12]

In this study the results showed an increase in PlGF levels in all intervention groups, this is in line with previous studies that a decrease in PlGF levels in maternal serum causes disruption of trophoblast proliferation and vascular formation so that it causes an increase in blood pressure which is one of the clinical manifestations of preeclarnpsia.[15]

The results showed that of the 30 respondents in the intervention group the ratio of sFlt-1 / PlGF levels before the intervention 13 respondents included in the early onset category and 3 respondents were in the late onset category, and after intervention 1 respondent was still in the early onset category and 1 respondent was still in the late onset category, whereas in the control group of 10 respondents before the intervention the sFlt-1/PlGF ratio level 1 respondent was in the early onset category and 3 respondents were in the late onset category, but after the intervention post of 10 respondents none were included in the early onset category and late onset, this is in accordance with studies that state that this sFlt-1 protein is an anti-angiogenic factor that acts as a VEGF and PlGF antagonist, inhibiting its binding to receptors on the cell surface. This causes the function of PlGF and VEGF as proangiogenic factors are inhibited, and blood vessel growth does not occur.[16]

Increased serum sFlt-1 and decreased PlGF not only occur in pregnant women with preeclampsia, but can also be detected in second trimester pregnant women who experience

other placental disorders that cause fetal developmental disorders (Intra uterine growth restriction/IUGR), therefore measurement of concentration plasma antiangiogenic or proangiogenic factors alone are not sufficient to predict the occurrence of preeclampsia in pregnant women. The combination of a rise in serum sFlt-1 and a decrease in PlGF does not only occur in pregnant women with preeclampsia, but can also be detected in second trimester pregnant women who experience other placental disorders that cause impaired fetal development (Intra-uterine growth restriction/IUGR).[16]

The results of this study are in line with previous research which states that Murattal al-Qur'an therapy can reduce anxiety and blood pressure in pregnant women with preeclampsia.[10] Occurrence of decreased levels of anxiety in the Antenatal Yoga group, Murattal Al-Qur'an Therapy, and its combination occur because yoga exercises will reduce the effects of stress involving the parasympathetic part of the central nervous system. Yoga exercises will inhibit the increase in sympathetic nerves, so the hormones that cause body dysregulation can be reduced. The parasympathetic nervous system, which has a work function as opposed to the sympathetic nerve, will slow down or weaken the workings of the internal organs of the body. As a result, there is a decrease in heart rate, breathing rhythm, blood pressure.

The results of this study are also consistent with similar studies that combine physical activity with Murottal Al-Qur'an Therapy in elderly hypertension.[12] The results of this study also support the results of other studies that antenatal yoga is one of the relaxation techniques that has been proven to reduce anxiety in pregnant women, causes a decrease in heart rate, breathing rhythm, blood pressure, muscle tension, metabolic rate, and production of stress-causing hormones, increases concentration, and oxygen levels in the blood, and is recommended for reducing anxiety during the second and third trimesters, and as an effective and effective activity, convenient tool. The results of this study prove that relaxation techniques are more effective combined with spiritual elements.

Significant decrease in sFlt-1 in the antenatal yoga group compared to the group that was only given Murattal al-Qur'an therapy, and the combination of antenatal yoga and Murattal al-Qur'an therapy which actually experienced an increase is likely due to antenatal yoga is a low impact exercise, can be arranged and easily modified which makes it the right exercise for pregnant women. The antenatal yoga group was more able to reduce sFlt-1 levels due to the possibility that the physical exercise and breathing took longer than the combination group or the Murottal Al-Qur'an Therapy group. Thus, yoga is one method that can be safely given to control oxidative stress in pregnant women.

The decrease in blood pressure occurs after the respondent is given antenatal yoga treatment, Murattal al-Qur'an therapy and a combination of both, in addition to lowering it also makes the respondent's blood pressure stable and in normal conditions during an

intervention that is less than 140/90 mmHg. This study is in line with previous studies that measure the effect of antenatal yoga and Murattal al-Qur'an therapy on blood pressure, namely antenatal yoga is one of the relaxation techniques that has been proven to reduce anxiety in pregnant women, causing a decrease in heart rate, breathing rhythm, blood pressure, muscle tension, metabolic rate, and stress-producing hormone production, increasing concentration, and oxygen levels in the blood.[9]

One of the factors that can increase blood pressure is emotional instability. Emotional instability can stimulate the vasomotor center in the medulla, so that the sympathetic nervous system is activated. This causes a vasoconstrictor in blood vessels which causes an increase in blood. In addition, there is also excitation of the adrenal glands in the form of epinephrine secretion which can lead to increased vasoconstriction of blood vessels. Vascular vasoconstriction reduces blood flow to the renal. This stimulates the formation of angiotensin I, which is converted to angiotensin II, which stimulates aldosterone secretion. There is an increase in intravascular volume due to retention of sodium and water by the renal tubules which can increase blood pressure.[17] Murattal al-Qur'an provides calm and a feeling of peace for those who listen, thereby creating emotional stability which can prevent vasoconstriction of blood vessels and lower blood pressure.

This is relevant in the results of the interviews. All informants stated that various types of interventions provided benefits for them. In the yoga group and their combination, the two informants stated that they felt that their body condition was much more fit after doing yoga. The group that got the Murattal al-Qur'an intervention felt much calmer after getting the intervention. One informant expressed his joy at following this intervention because he felt bored at home and was happy to meet other pregnant women. The sFlt1/PlGF comparison does not add diagnostic information, but can serve to determine the prognosis.

A limitation of this study is that preeclampsia does not develop in all women with high sFlt-1 levels or low PlGF levels, and preeclampsia can also occur in some women with low sFlt-1 levels and high PlGF. The results of this study are also in line with similar studies combining physical activity with Murattal al-Qur'an therapy in elderly hypertension.[12] Hypertension is the main cause of preeclampsia in pregnant women. Therefore, by preventing hypertension, preeclampsia in pregnant women does not occur.

CONCLUSION AND RECOMMENDATION

The antenatal yoga, the Murottal Al-Qur'an Therapy, and its combination reduce level of anxiety (p=0.007) and blood pressure (p=0.006 for Systole and 0.001 for Dyastole). Therefor, midwives and nurses need to add spiritual aspects to providing midwifery care and comprehensive nursing care for pregnant women.

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REFERENCES

1. Ghoghre S, Singh T. Relationship of Maternal Depression during Pregnancy and Risk of Preeclampsia. *IRA-International Journal of Applied Sciences*. 2016;4(3):541-552.

2. Kordi M, Vahed A, Rezaee Talab F, Mazloum SR, Lotfalizadeh M. Anxiety during Pregnancy and Preeclampsia: a Case-Control Study. *Journal of Midwifery and Reproductive Health*. 2017;5(1):814–820.

3. Hu R, Li Y, Zhang Z, Yan W. Antenatal Depressive Symptoms and the Risk of Preeclampsia or Operative Deliveries: a Meta-Analysis. *PloS One*. 2015;10(3):1-16.

4. Bere PID, Sinaga M, Fernandez H. Faktor Risiko Kejadian Pre-Eklamsia pada Ibu Hamil di Kabupaten Belu. *Media Kesehatan Masyarakat Indonesia*. 2017;13(2):176–182.

5. WHO. Trends in Maternal Mortality 2000 to 2017: Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: World Health Organization; 2019.

6. Dinas Kesehatan Kab. Majalengka. Profil Kesehatan Kab. Majalengka Tahun 2015. Majalengka: Dinas Kesehatan Kab. Majalengka; 2016.

7. POGI HKFM. Pedoman Nasional Pelayanan Kedokteran: Diagnosis dan Tata Laksana Pre-Eklamsia. Perkumpulan Obstetri dan Ginekologi Indonesia Himpunan Kedokteran Feto Maternal; 2016.

8. Ashari A, Pongsibidang GS, Mikhrunnisai A. Pengaruh Senam Prenatal Yoga terhadap Penurunan Kecemasan Ibu Hamil Trimester III. *Media Kesehatan Masyarakat Indonesia*. 2019;15(1):55–62.

9. Gong H, Ni C, Shen X, Wu T, Jiang C. Yoga for Prenatal Depression: a Systematic Review and Meta-Analysis. *BMC Psychiatry*. 2015;15(14):1-8.

10. Kartini K, Fratidhina Y, Kurniyati H. Pengaruh Mendengarkan Murottal terhadap Penurunan Tekanan Darah pada Ibu Hamil Preeklamsi di RSIA. PKU Muhammadiyah Tangerang. *Jurnal JKFT*. 2016;1(2):40–50.

11. KBBI. Arti kata Ustazah - Kamus Besar Bahasa Indonesia (KBBI) Online [Internet]. 2020. Available from: https://kbbi.web.id/ustazah.

12. Hernawan AD, Alamsyah D, Sari MM. Efektivitas Kombinasi Senam Aerobik Low Impact dan Terapi Murottal Quran terhadap Perubahan Tekanan Darah pada Lansia Hipertensi di UPT Panti Sosial Tresna Werdha Mulia Dharma Kabupaten Kubu Raya. JUMANTIK (Jurnal Mahasiswa dan Peneliti Kesehatan). 2017;4(1):1-15.

13. Kwon R, Kasper K, London S, Haas DM. A Systematic Review: The Effects of Yoga on Pregnancy. *European Journal of Obstetrics and Gynecology and Reproductive Biology*. 2020;250:171–177.

14. Saudia BEP, Kisid KM, Andarini S, Mustofa E. The Effects of Yoga Exercise on Lipid Peroxidation and Antioxidant Status in Pregnant Women. *Indian Journal of Medical Specialities*. 2018;9(2):65–68.

15. Andersen LB, Frederiksen-Møller B, Havelund KW, Dechend R, Jørgensen JS, Jensen BL, et al. Diagnosis of Preeclampsia with Soluble Fms–Like Tyrosine Kinase 1/Placental Growth Factor Ratio: an Inter–Assay Comparison. *Journal of the American Society of Hypertension*. 2015;9(2):86–96.

16. Klein E, Schlembach D, Ramoni A, Langer E, Bahlmann F, Grill S, et al. Influence of the sFlt-1/PlGF Ratio on Clinical Decision-Making in Women with Suspected Preeclampsia. PloS One. 2016;11(5).

17. Smeltzer SCO, Bare BG. Brunner and Suddarth's Textbook of Medical-Surgical Nursing. 10th ed. Brunner LS, Suddarth DS, Editors. Philadelphia: Lippincott Williams & Wilkins; 2003.