Original Research Article

Therapeutic effect of al-Quran murattal on anxiety, sFlt-1, PIGF and sFlt-1/PIGF ratio in pregnant women with risk of preeclampsia

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ABSTRACT

Background: Pregnancy was a critical period. This study aimed to examine the effect of murattal al-Quran therapy on the level of anxiety, sFlt-1, and PIGF level in pregnant women with preeclampsia risk.
Methods: A quasi-experimental study was conducted in February, 2018. Ten participants received routine midwifery care were combined with murattal of the Qur'an therapy, the rests as control group. Variables were measured at pre and post 12 interventions. Interviews were conducted after the intervention.
Results: There was a mean difference of anxiety of 5.250 (SD of 11.021, 95% CI: 0.092-10,408, p-0.046), sFlt-1 p=0.411, PIGF p=0.002, sFlt-1/PIGF ratio p=0.001.
Conclusions: This study found a decrease in the level of anxiety, increase score of PIGF and decrease of sFlt-1/PIGF ratio among pregnant women with the risk of preeclampsia who received routine midwifery care plus al-Quran Murattal therapy.

Keywords: Anxiety, PIGF, Pregnant, Murattal al-Qur'an therapy, sFlt-1

INTRODUCTION

Pregnancy was critical period that also involves psychological factors, hormonal changes cause the mother's emotions become unstable. In addition to physical factors, psychosocial factors can increase anxiety in pregnant women.[1] High stress in pregnancy can increase stress hormones, can also cause increased blood pressure and weight loss.[2,3] Stress during pregnancy may directly or indirectly cause an increase in pregnancy complications.[4,5] One of the pregnancy complications is caused by anxiety is preeclampsia.(6, 7) Preeclampsia is a condition in pregnancy characterized by hypertension and proteinuria.[8,9] Previous study showed that 5.3% of patients with preeclampsis and 0.7% of patients in non-stress during pregnancy increase pregnancy complications directly or indirectly preeclampsia group suffered from severe anxiety, anxiety was considered a risk factor for preeclampsia.[10] The psychological aspect leads improvement of the

sympathetic nervous system (SNS) activity due to one of risk factor of preeclampsia is stimulation of the autonomic nervous system.[11] Likewise Endoglin levels, sFlt-1 and sFlt-1/PlGF ratio were found higher in the preeclampsia group in both trimesters.[12] One of preeclampsia etiology theory stated there is hypoxic and ischemic condition of the placenta which is caused by lack of perfusion to the placenta which in turn causes endothelial dysfunction. Some of the markers proven to be specific and sensitive for the prediction and/or diagnosis of preeclampsia are specifically related to placental hypoxia and endothelial dysfunction, one of which is the measurement of serum soluble levels of Fms-like tyrosine kinase-1 (sFlt-1). Examination of sFlt-1 in the second and third trimester of pregnancy has a sensitivity and specificity between 80-90%.[13] Antiangiogenic such as soluble fms-like tyrosine kinase-1 (sFlt-1) and also soluble endoglin (sEng) that appear in the placenta are the cause of hypertension, proteinuria and other clinical manifestations, along with decreased of angiogenic factors include VEGF and PlGF.[14]

Murattal al-Qur'an is main Dhikr. Some previous studies showed the relationship between religious coping with anxiety that also showed the importance of spiritual and religious elements in the handling of anxiety.[15-17] Relaxation techniques in pregnant women involving the elements of spiritual are still rarely, whereas spiritual factors are important for the healing process and psychological intervention.[18,19]

This study was purposed to analyze the effect of Al-Quran murattal therapy on the level of anxiety, blood pressure, sFlt-1, PIGF and sFlt-1/PIGF ratio in pregnant women with risk of preeclampsia at primary health care in Majalengka.

METHODS

This study used quasi experiment design (pretest-posttest control design) was divided into two groups: treatment and control group. The subjects of this study were pregnant women with risk of preeclampsia at primary health care in Majalengka, West Java. Primary health care was chosen by cluster sampling or area sampling technique.

Pregnant women who met the following inclusion criteria were included in the study (minimum of three criterias): Muslim, second trimester of pregnancy, primipara, multiple pregnancy, age <20 or >35 years, history of pre-eclampsia/eclampsia in previous pregnancy, family history had suffered from hypertension, pre-eclampsia, kidney disease, hypertension and diabetes mellitus that existed before pregnancy, obesity, willing to be respondent in this study, conscious and communicable.

Exclusion criteria in this research were: mother severe disease and was diagnosed as preeclampsia/eclampsia. The minimum sample size for each group was 10 pregnant women. Total participants from 2 groups was 20 pregnant women with risk of preeclampsia.

Data collection was assisted by 6 enumerators who had similar perceptions by attending the training twice before. In order to obtain the basic similarity of materials and methods of intervention, the training was conducted twice; each took 60 minutes and was guided by Moslem scholar who gave explanations on the intervention-based modules. The modules include several letters in the Qur'an: Al-Fateha, AR-Rohman, Al-Anbiya and Yunus.

The intervention group was given two types of intervention: routine obstetric care based on national guidelines and Qur'an murattal therapy. Participants received twelve times of Qur'an murattal treatment, guided by woman scholar using compact disks and modules. Each session for 60minutes. The control group was given routine midwifery care interventions. Posttest is taken after twelve interventions to measure anxiety, blood pressure proteinuria.

The study began in the second trimester of pregnancy during six weeks, anxiety level of participants were measured by the Hamilton Anxiety Rating Scale (HARS). Blood pressure was measured by sphygmomanometer, and biomarker of preeclampsia (sFlt-1, PIGF) were measured by Elisa.

Statistical analysis

Data were tested by comparing mean of the two variables before and after interventions in two groups. Statistical analysis was done using SPSS IBM version 22.

RESULTS

Participants demographics

Participants were primarily in the low-risk age, elementary school graduates, not working, and household income was less than the regional minimum wage (Table 1).

Based on the t-dependent test it was found that the mean difference of anxiety pre and post the intervention was 5,250 (95% CI: 0,092-10,408) with SD 11,021. This result also showed the value of p = 0.046 (df:19). Because of the p value <α (0.05) it can be inferred that null hypothesis (H0) was rejected, it meant statistically there was a difference of anxiety before and after intervention.

Based on Wilcoxon rank test was found that sFlt-1 score decreased in 10 participants and increase in 10 participants. From the statistical test results obtained p value 0.411, it can be interpreted that null hypothesis (H0) was accepted, it meant statistically there was no difference of sFlt-1 score before and after intervention (Table 2).

Table 1: Characteristic of participants.

Variables (N = 20)	Amount	Percentage (%)
Ages		
< 20	8	40
25-35	9	45
> 35	3	15
Education		
Elementary	9	45
Junior	4	20
Senior high	3	15
University	4	20
Work		
Unemployee	15	75
Teacher	2	10
Midwife	1	5
Enterpreneurs	2	10
Income		
< 1,5 juta	13	65
> 1,5 juta	7	35
Parity		
Primipara	8	40
Multipara	12	60
Anxiety level		
Light	1	5
Mild	5	25
Severe	14	70

Table 2: Differences of anxiety (pre-post intervention).

Variable	Mean difference	SD	95% confidence level of difference		Sig.
			Lower	Upper	
Anxiety pre-post intervention	5.250	11.021	0.092	10.408	0.046

Table 3: Differences of variables (pre-post intervention).

Variable	Frequency	P value
sFlt-1		
pre < post	10	
pre > post	10	0.411
pre = post	0	
PIGF		
pre < post	2	
pre > post	18	0.002
pre = post	0	
sFlt-1/PIGF ratio		
pre < post	17	
pre > post	3	0.001
pre = post	0	

Based on Wilcoxon rank test, it was found that PIGF score decreased in 2 participants and increased in 18 participants. From the statistical test results obtained p value 0.002, it can be interpreted that null hypothesis (H0) was rejected, it meant statistically there was difference of PIGF score before and after intervention (Table 3).

Based on wilcoxon rank test, was found that sFlt-1/PIGF ratio decreased in 17 participants and increase in 3 participants. From the statistical test results obtained p value 0.001, it can be interpreted that null hypothesis (H0) was rejected, it meant statistically there was difference of sFlt-1/PIGF ratio before and after intervention (Table 3).

DISCUSSION

This study found a decrease in normal anxiety levels conditions in pregnant women with preeclamptia risk who received routine midwifery care that was combined with Al-Qur'an muratal therapy. This study supported previous studies that correlated religiosity and spirituality with better physical and mental health especially for pregnant women.

Anxiety during second trimester of pregnancy

Anxiety during pregnancy in this study was represented by a HARS score. There was a decrease in HARS scores during the second trimester of pregnancy in pregnant women with a risk of preeclampsia who was received routine obstetric care plus Al-Qur'an murattal therapy. This result was consistent with previous findings which found that participants' stress levels decreased gradually during the second trimester.[20] Several other studies showed the relationship between religious coping with anxiety that also indicated the importance of spiritual and religious elements in the treatment of anxiety.[15-17] Spiritual beliefs and religious practices contribute to positive emotions and are an important way in which people cope with stress and could help the patient to improve emotional adjustment and maintain hope, purpose and meaning.[20]

sFlt-1 during second trimester of pregnancy

The results showed no significant effect of murattal al-Qur'an therapy on sFlt-1 levels during the second trimester of preeclamptic risk pregnancies who received routine midwifery care plus murattal al-Qur'an therapy. Although murattal al-Qur'an therapy has no statistically effect on sFlt-1 levels of pregnant women, if we see at the intervention group, showed fairly high mean reduction followed by the control group. sFlt-1 is VEGF receptor variant that loses transmembrane and cytoplasmic domain. sFlt-1 is quantity higher in the placenta for 5 weeks before the onset of preeclampsia. It is believed to be an adjustment to the angiogenesis process that binds to VEGF and PlGF and inhibits mitogenic and homeostatic effects on endothelial cells. In previous study with animals pregnant mice injected with exogenous sFlt-1

showed symptoms of preeclampsia including hypertension, proteinuria and glomerular endotheliosis. Other study in animal testing of non-pregnant mice injected with VEGF antibodies showed glomerular endothelial damage and proteinuria. In vitro studies show that exogenous sFlt-1 antibodies can reverse antiangiogenic conditions in human blood plasma with preeclampsia.[21]

SFlt-1 levels are higher and PlGF is lower than in normal pregnancies. When endothelium lacks angiogenic factors (VEGF and PlGF) and excess antiangiogenic conditions such as sFlt-1, the endothelium becomes dysfunctional and leads to the clinical syndrome of hypertension and proteinuria.[22] Other studies have also shown that when sFlt-1 encoded from recombinant adenovirus is injected into pregnant mice, lead to hypertension and proteinuria, and glomerular endotheliosis, one of the typical pathological lesions seen in preeclampsia.[23]

PIGF during second trimester of pregnancy

These results indicate that murattal al-Qur'an therapy is statistically influential on PLGF levels. Its angiogenetic ability is played an important role in normal pregnancy and changes in PIGF levels or inhibitory receptors influence the development of PE (Preeclampsia). PE is associated with decreased production of PIGF placenta and several studies have reported that during the clinical phase of PE, maternal serum PIGF concentration decreases. A decrease in serum PIGF levels precedes the appearance of the disease clinically and evident in pregnancy in Trimester I and II. The new biomarkers such as placental growth factor (PIGF) are able to distinguish populations with high preeclampsia risk and those at low. PIGF could improve predictive capabilities in mathematical models that combine various risk factors. However, it is quite disappointing that the sensitivity and probability of the post-test were not able to guarantee their use in clinical practice.[24]

sFlt-1/PIGF ratio during second trimester of pregnancy

These results indicate that murattal al-Qur'an therapy has statistically effect on the sFlt-1/PLGF ratio. Other studies have shown that the use of the tyrosine-kinase 1 ratio test similar to dissolved Fms/placental growth factor (sFlt-1/PIGF ratio) influences the clinical decision of hospitalization that is appropriate in the proportion of women with suspected preeclampsia. Amount 16.9% of women (20/118) the decision of hospitalization changed after the ratio was known, while 13 women (11.0%), the initial decision of hospitalize changed to not hospitalization and 7 women (5.9%), improvements were made to hospitalization. All these changed decisions are seen as appropriate by panel decision makers.[25]

Many of the biomarkers are proposed to detect preeclampsia at an earlier level in normal pregnancy that will make accurate biomarker for preeclampsia findings

more difficult. However, if the abnormal placenta sign and endothelial dysfunction could be detected before the onset of clinical disease, will represent the target for making therapeutic strategy. In addition, any treatment will be effective if started early in pregnancy.[23]

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