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The Efficacy of Combination of Prenatal Yoga and Self Hypnosis on Anxiety Level of Pregnant Women with Preeclampsia in Indonesia

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ABSTRACT Pregnancy and childbirth are natural processes, but they are not without risks. Health conditions, mental status and lifestyle can lead to complications, one of which is Preeclampsia. Preeclampsia complicates 2 to 8% of pregnancies worldwide and accounts for about 46,000 maternal deaths and 500,000 fetal or newborn deaths each year. Pregnant women with preeclampsia have high anxiety in facing childbirth, due to the great risks that will be faced by themselves and the baby who is born. An effective way to overcome anxiety is by doing physical exercise, such as prenatal yoga and self-hypnosis. The purpose of the study was to explain the effect of the combination of prenatal yoga and self-hypnosis on the anxiety level of pregnant women with Preeclampsia. Method: Quasi-experimental research, pretest-posttest with control group design. The study population was all pregnant women with Preeclampsia who visited Anna Medika Madura Hospital as many as 40 people, the sample size was 20 people each for the treatment group and control group. Sampling with consecutive sampling. Research instruments Anxiety of each group was measured before and after the intervention, using the State-Trait Anxiety Inventory (STAI) questionnaire. Statistical analysis Wilcoxon Signed Rank Test and Mann Whitney U Test. Results: There is an effect of the combination of prenatal yoga and self-hypnosis on anxiety levels before and after treatment, (ρ: 0.000) and there is a significant difference in momentary anxiety levels between the treatment group and the control group (ρ: 0.000). Discussion: It can be concluded that Prenatal Yoga Gymnastics and Self Hypnosis are very useful in reducing anxiety experienced by pregnant women with Preeclampsia. Movement and relaxation in prenatal yoga exercises can increase the activity of the para-sympathetic nervous system and GABA. It is recommended to provide training programmes in ANC services on methods of reducing anxiety with alternative therapies Prenatal Yoga and Self Hypnosis.

INDEX TERM Anxiety, Preeclampsia, Prenatal Yoga, Self Hypnosis

I. INTRODUCTION

Preeclampsia is the cause of significant maternal and foetal mortality and morbidity. That is estimated to be seven times higher in developing countries [1]. Preeclampsia is a syndrome that occurs during pregnancy, and its clinical symptoms arise in pregnancy after 20 weeks. Clinical symptoms of preeclampsia are characterized by an increase in systolic blood pressure greater than or equal to 140 mmHg or diastolic pressure greater than or equal to 90 mmHg and total proteinuria of 300 mg protein or more than 30 mg/dL per 24 hours [2]–[5].

The cause of preeclampsia is still unknown, some studies suggest that psychological disorders such as anxiety experienced by pregnant women can affect the occurrence of preeclampsia [6],[7]. Anxiety can increase the risk of preeclampsia in pregnancy [8]–[11]. Anxiety are the most common mental disorders. It is manifest by disturbances of mood, as well as of thinking, behavior, and physiological activity [12], [13].

Prenatal anxiety has negative short- and long-term effects on pre and postpartum maternal mental health, delivery, and mental health in subsequent pregnancies [8]. Women exposed to antidepressant and/or anxiolytic medication before the 16th week of pregnancy have a 3-fold increased risk for preeclampsia when compared to women unexposed to antidepressant/anxiolytic medication, depression and anxiety[14]. Based on preliminary studies conducted at Poli Obgyn Anna Husada Hospital Madura by means of direct interviews on 10 pregnant women with Preeclampsia, including 5 primigravida pregnant women and 5 multigravida pregnant women. Of the 5 primigravida

pregnant women, 4 of them experienced anxiety and of the 5 multigravida pregnant women, 2 experienced anxieties.
An effective way to overcome anxiety is by doing physical exercise, such as meditation/yoga [15]–[18]. Prenatal gentle yoga therapy effectively reduces anxiety levels in primigravid and multigravida pregnant women, yoga provides benefits in building a healthy balance between all aspects of the body and mind, increasing the inner bonds of mother and fetus, creating relaxed conditions, and giving a positive aura to the body [19]. Practicing self-independent physical stretching exercises , such as yoga are easier and safer for mild pre-eclamptic women with better fetomaternal outcomes [20].

In addition to these treatments, anxiety can also be prevented by hypnosis or self-hypnosis. Perceived stress in mothers with preeclampsia is reduced by hypnosis [21]. Hypnosis is a state of focused attention with a decrease in environmental awareness in which the mind of the critic is temporarily suspended and the person tends to accept the expressions and suggestions [22]. Several studies have shown that hypnosis relaxation influences the change of fetal heart rate and vital signs of pregnant women with pre-eclampsia. Hypnosis gives positive effects on blood pressure decrease within pregnant mothers with preeclamsia [23].

II. METHOD

This study used quasi-experiments with pretest-posttest with a control group design. The population in this study was all pregnant women with Preeclampsia who were treated at Anna Medika Madura Hospital from October 2021 to February 2022. We used consecutive sampling, namely pregnant women with Preeclampsia who came sequentially and met the criteria were pregnant women Gestational age ≥ 22 weeks. The exclusion criteria are pregnant women with < 22 weeks gestation, Preeclampsia with severe symptoms, pregnant women with a history of bleeding during pregnancy, history of BBLR childbirth, and history of premature rupture of membranes. The sample as many as 40 people, the sample size was 20 people each for the treatment group and control group. The instruments for yoga and self-hypnosis are Standard Operating Procedures, while anxiety is measured by the State-Trait Anxiety Inventory (STAI) measurement tool consisting of 20 question items.

Respondents in the intervention group had their anxiety levels measured before being given the intervention. After that, respondents were asked to take part in yoga and self-hypnosis exercises held by researchers 3x in 12 days (once every four days). After gymnastics and take a rest for 30 minutes, anxiety levels from pregnant woman were measured using the STAI measuring instrument. The data were analyzed using the Wilcoxon Signed Rank Test and Mann-Whitney U Test.

III. RESULT

A. CHARACTERISTICS OF RESPONDENTS

The results of the research conducted by the researcher are in TABLE 1 that for the treatment group, most were in the healthy reproductive age group (20-35 years), namely 50%, as well as in the control group, most were in the healthy reproductive age group (20-35 years), namely 50%.

TABLE 1
Distribution of demographic characteristics of pregnant women with pe at Anna Medika Madura hospital in 2022

Characteristics of Respondents	Treatment Group		Control Group		Homoge neity
	n=20	%	n=20	%	
Age					0,575
< 20 th	3	75	1	25	
20-35 th	17	50	17	50	
> 35 th	-	-	2	100	
Education					0,492
Elementary	7	70	3	30	
Junior High School	7	41,2	10	58,8	
Sen. High School	5	55,6	4	44,4	
Academy / University	1	25	3	75	
No schooling	-	-	-	-	
Job					0,380
House wife	17	50	17	50	
Farmer / factory worker	2	50	2	50	
Trader / private					
Civil Servant					
Other	1	50	1	50	
Gravida					0,366
Primigravida	9	42,9	12	57,1	
Multigravida	11	57,9	8	42,1	

The last education in both the control and treatment groups was mostly junior high school education, 41.2% in the treatment group and 58.8% in the control group. The employment characteristics of the treatment and control groups were mostly working as housewives, 50% each. Parity in the treatment group was mostly multigravida, 57.9%, while in the control group most of the primigravida were 57.1%. Respondents of both groups were homogeneous (significance value >0.05).

B. ANXIETY LEVEL OVERVIEW

TABLE 2
Frequency distribution of pre-test and post test results of anxiety levels of pregnant women with pe at anna medika madura hospital in 2022

Tingkat Kecemasan	Treatment		Control	
	n=20	%	n=20	%
Pre Test				
Momentary Anxiety				
Mild	2	10	1	5
Moderate	14	70	18	90
Severe	4	20	1	5
Basic anxiety				
Mild	2	10	1	5
Moderate	14	70	18	90
Severe	4	20	1	5
Post Test				
Momentary Anxiety				
Mild	14	70	2	10
Moderate	6	30	17	85
Severe	-	-	1	5

Basic anxiety				
Mild	15	75	2	10
Moderate	5	25	18	90
Severe	-	-	-	-

TABLE 2 shows that at the beginning of the study (pre-test) both the treatment group and the control group both showed the highest level of momentary anxiety and basic anxiety in the moderate category with a percentage of 70% and 90% respectively. While the level of momentary anxiety at the end of the study (post-test) in the treatment group was more at the mild anxiety level, which was 70%, in contrast to the control group, which was still more at the moderate anxiety level, which was 85.0%. Likewise, the basic anxiety level, in the treatment group, most of them were 75% at the mild anxiety level, in the control group most of them were 90% at the moderate anxiety level.

C. THE EFFECT OF THE COMBINATION OF PRENATAL YOGA AND SELF HYPNOSIS ON THE ANXIETY LEVEL OF PREGNANT WOMEN WITH PREECLAMPSIA

The control group have taken in yoga and self-hypnosis exercises held by researchers 3x in 12 days (once in 4 days). After gymnastics, anxiety levels were measured using the STAI measuring instrument. Here are the results of pretests and posts in the control and treatment groups:

TABLE 3
Results of normality test of momentary anxiety data of pregnant women with at anna medika madura hospital in 2022

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pre Test	Treatment	0,728	20	0,000
Post Test	Treatment	0,580	20	0,000
Pre Test	Control	0,448	20	0,000
Post Test	Control	0,545	20	0,000

TABLE 3 shows that the significant value at the beginning of the study (pre-test) obtained a p value of less than 0.05, namely 0.000 for the group given the intervention and the group that did not get the intervention. Likewise, at the end of the study (post-test), a significance value of less than 0.05 was obtained for the intervention group and the control group, namely 0.000. This means that the intervention and control groups at the beginning of the study and the intervention group at the end of the study have an abnormal data distribution. This indicates that the analysis used is non-parametric analysis because most of the data is not normally distributed.

TABLE 4
Results of Test Test Normality Data Basic Anxiety of Pregnant Women with in Anna Medika Madura Hospital in 2022

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pre Test	Treatment	0,728	20	0,000
Post Test	Treatment	0,544	20	0,000
Pre Test	Control	0,448	20	0,000
Post Test	Control	0,351	20	0,000

TABLE 4 shows that the significant value at the beginning of the study (pre-test) obtained a p value of less than 0.05, namely 0.000 for the group given the intervention and the group that did not get the intervention. Likewise, at the end of the study (post-test), a significance value of less than 0.05 was obtained for the intervention group and the control group, namely 0.000. This means that the intervention and control groups at the beginning of the study and the intervention group at the end of the study have an abnormal data distribution. This indicates that the analysis used is non-parametric analysis because most of the data is not normally distributed.

TABLE 5 shows the average pre-test anxiety score in the treatment group (51.55) is higher than the post-test anxiety score (38.75). Whereas in the control group, the pretest anxiety score (48.35) was almost the same as the posttest (48.55). The results of the Wilcoxon sign rank test with a significance level of $\alpha = 0.05$ obtained a value of $\rho = 0.000$ ($0.000 < 0.05$), so Ho is rejected, which means that there is an effect of the combination of prenatal yoga and self-hypnosis on the level of momentary anxiety of pregnant women with preeclampsia. The table above also shows the average pre-test baseline anxiety score in the treatment group (50.85) is higher than the post-test anxiety score (37.90). While in the

TABLE 5
Effect of combination of prenatal yoga and self-hypnosis on anxiety level of pregnant women with in anna medika madura hospital in 2022

Variable	Group	Pre Test (Mean±SD)	Min-Max	Post Test (Mean±SD)	Min-Max	ρ
Momentary Anxiety	Treatment	51.55±8.823	32-67	38,75±7,496	-52	0,000
	Control	48,35±6,746	36-61	48,55±5,501	-58	
Basic Anxiety	Treatment	50,85±10,343	24-66	37,90±8,705	-55	0,000
	Control	48,55±5,501	37-58	48,35±6,746	-61	

control group, the pretest anxiety score (48.55) was almost the same as the posttest (48.35). The results of the Wilcoxon sign rank test with a significance level of α = 0.05 obtained a value of ρ = 0.000 (0.000 <0.05), so Ho is rejected, which means that there is a combination effect of prenatal yoga and selfhypnosis on the level of momentary anxiety of pregnant women with preeclampsia.

D. *DIFFERENCES IN ANXIETY LEVELS OF PREGNANT WOMEN WITH PREECLAMPSIA IN THE TREATMENT GROUP AND CONTROL GROUP*

Data on the level of anxiety of pregnant women obtained were analyzed using the Mann Whitney U Test. Results differences in anxiety levels of pregnant women with preeclampsia in the treatment group and control group are presented in the TABLE 6 that showed the average pre-test instantaneous anxiety score in the treatment group and control group (49.95) is higher than the post-test anxiety score in the treatment group and control group (43.65). The results of the analysis using the Mann Whitney U Test, before the intervention obtained a significance value of 0.461 (p>0.05), meaning that there was no difference in the level of momentary anxiety between the treatment group and the control group, but after the intervention obtained a significance value of 0.000 (p<0.05), meaning that there was a significant difference in the level of momentary anxiety between the treatment group and the control group.

TABLE 6
Differences in instantaneous anxiety levels of pregnant women with preeclampsia in the treatment group and control group

Group	Mean±SD	ρ value
Before Intervention		
Treatment	49,95±7,919	0,461
Control		
After Intervention	43,65±8,170	
Intervention		0,000
Control		

TABLE 7
Differences in basic anxiety levels of pregnant women with preeclampsia pada kelompok perlakuan dan kelompok kontrol

Group	Mean±SD	ρ value
Before Intervention		
Treatment	49,70±8,259	0,461
Control		
After Intervention	43,23±8,986	
Treatment		0,000
Control		

TABLE 7 shows the average pre-test basic anxiety score in the treatment group and control group (49.70) is higher than the post-test anxiety score in the treatment group and control group (43.23). The results of the analysis using the Mann Whitney U Test, before the intervention obtained a significance value of 0.461 (p>0.05), meaning that there was no difference in the level of basic anxiety between the treatment group and the control group, but after the intervention obtained a significance value of 0.000 (p<0.05), meaning that there was a significant difference in the level of basic anxiety between the treatment group and the control group.

IV. DISCUSSION

A. *OVERVIEW OF ANXIETY LEVEL*

The results showed that moderate to severe anxiety levels dominated pregnant women with Preeclampsia before being given prenatal yoga and self-hypnosis. Anxiety is a basic emotion that individuals have. Anxiety is divided into two, namely momentary anxiety (state anxiety) and basic anxiety (trait anxiety). Momentary anxiety is a momentary anxiety that makes individuals feel threatened, while basic anxiety (trait anxiety) is anxiety that persists in individuals based on perceived experiences. Momentary anxiety tends to be experienced by primigravida pregnant women who are newly exposed to Preeclampsia, while trait anxiety is experienced by multigravida women who have had unpleasant experiences in previous pregnancies experiencing PE and recurring in the current pregnancy. A study reported that mothers with a history of preeclampsia were at risk of developing recurrent preeclampsia in subsequent pregnancies, before 34 weeks' gestation by 25.2 times, at 34-46 weeks' gestation by 19.7 times and at >36 weeks' gestation by 10.3 times compared with pregnant women who did not have a history of preeclampsia [24].

Pregnant women who experience complications in their pregnancy (Preeclampsia) tend to experience anxiety. In line with the research of Kharaghani et al. reported that pregnant women with preeclampsia experienced moderate to severe depression by 31.2% [25]. Anxiety in pregnant women with Preeclampsia is due to concerns about the conditions experienced by her and the baby she is carrying.

Risk factors that cause anxiety in pregnant women include the characteristics of respondents, one of which is the low level of education. Based on the results of the study, it can be seen that the last education in both the control group and the treatment group was mostly junior high school education, namely 41.2% in the treatment group and 58.8% in the control group. A person's level of education determines whether or not it is easy to absorb the information obtained. A study from Rachmah, *et al*, in Jombang reported that there is a relationship between education level and anxiety in third trimester pregnant women. The lower a person's education, the lower the quality of knowledge. The lack of knowledge of pregnant women about preeclampsia and its effect on her condition and her foetus will cause psychological disorders, namely anxiety[26].

B. *THE EFFECT OF THE COMBINATION OF PRENATAL YOGA AND SELF HYPNOSIS ON THE ANXIETY LEVEL OF PREGNANT WOMEN WITH PREECLAMPSIA (PRE TEST POST TEST)*

The manifest of anxiety are disturbances of mood, thinking, behaviour, and physiological activity and accompanying disturbances of sleep, concentration, social and/or occupational functioning. Also, it is associated with restlessness, feeling keyed up or on edge, being easily

fatigued, difficulty in concentrating or mind going blank, irritability, muscle tension, and irritability [12]. Pregnant women who experience complications in their pregnancy (Preeclampsia) tend to experience anxiety.

Efforts can be made to reduce anxiety through the practice of prenatal yoga and self hypnosis. Prenatal yoga and self-hypnosis practice play a very important role in reducing the anxiety level of pregnant women with Preeclampsia. This study proves that at the beginning of the study (pre-test) both the treatment group and the control group both showed the highest level of momentary anxiety and basic anxiety in the moderate category with a percentage of 70% and 90% respectively. After the intervention was carried out three times for each pregnant woman, there was a significant difference in the decrease in the mean score of momentary anxiety and basic anxiety in the treatment group, while for the control group the difference in the mean score was not significant. The results of the analysis with the Mann Whitney U Test showed significant results (p=0.000) between the treatment group and the control group at the end of the study.

This study is in line with research conducted on high-risk pregnant women who were hospitalised in the hospital. Yoga, even just three sessions, showed a significant impact in reducing anxiety and depression. The overall score of perceived anxiety and depression was lower in the intervention group than in the control group ($p < 0.001$) [16]. This study reinforces previous research conducted by Sulastri, et al in the Bara Baraya Health Center, Antang Health Center, Kapasa Health Center, Mamajang Health Center from February to June 2020. The results showed a decrease of anxiety level after respondents were given prenatal gentle yoga treatment eight times, combined with physical exercise, mental exercise, spiritual exercise, breathing exercise, and positive affirmation exercise [19].

The difference with this study is seen in the anxiety measurement tool using the Hamilton Anxiety Rating Scale (HARS) questionnaire while this study uses the State-Trait Anxiety Inventory (STAI) method. in measuring overall anxiety levels. Yoga exercise is a light exercise, a type of body, mind and mental exercise whose movements combine the principles of yoga, namely stretching exercises, breathing exercises, concentration exercises and meditation.

The study from Sari and Herawati showed that yoga can reducing anxiety in pregnant women in facing labor because when doing yoga, the hypothalamus will affect the autonomic nervous system, namely reducing sympathetic nerve activity and increasing parasympathetic nerve activity. Yoga will inhibit the increase in sympathetic nerves so that the amount of hormones that cause body dysregulation can be reduced. The parasympathetic nervous system signals to influence catecholamine release. As a result, there is a decrease in heart rate, breathing rhythm, blood pressure, muscle tension, metabolic rate, and the production of hormones that cause anxiety or stress [15].

Yoga has been shown to regulate the central nervous system associated with anxiety through primary peripheral pathways with increased activity of the para-sympathetic nervous system and Gamma Amino Butyric Acid (GABA) [27], [28]. GABA is a neurotransmitter that plays an important role in the symptoms of mental disorders. The main function of GABA is to reduce aurosal and reduce aggression, anxiety and is active in the excitation function [(1)]. The parasympathetic nervous system, which has the opposite function of sympathetic nerves, will slow down or weaken the work of the body's internal organs. As a result, there is a decrease in heart rate, breathing rhythm, blood pressure, muscle tension, metabolic rate, and production of the stress-causing hormone cortisol. In addition, yoga also causes increased brain activity through alpha brain waves that correlate with the release of serotonin, so pregnant women will feel more relaxed after yoga practice [27], [28].

In addition to prenatal yoga, an alternative therapy recommended to reduce anxiety in pregnant women who experience preeclampsia, is Self hypnosis. In this study, self-hypnosis showed that have significant value to decrease anxiety. Self-hypnosis refers to a person being able to alter their own state of consciousness so that normally perceived experiences, such as pain, do not reach awareness or do so with less force. Hypnosis uses focused attention and relaxation, to develop increased receptivity to verbal and non-verbal communications which are commonly referred to as 'suggestions'[29].

In line with study from Khuzaiyah, *et al* concluded that Hypnosis gives positive effects on blood pressure decrease and influences the change of fetal heart rate of pregnant women with preeclampsia. Clinical hypnosis-called hypnotherapy also makes a mother more relax, stabilizes the pulse frequency, respiratory rate, and fetus heart rate frequency. Hypnosis relaxation creates a depth rest, either physical rest or spiritual and emotional rest. Relaxation is a technique used to support and obtain depth relaxation to low the unwanted signs and the symptoms in the body [23].

Study from Vahdat, et al showed that perceived stress score in pregnant women with mild preeclampsia decreased positively and significantly with hypnosis treatment. They concluded that the use of hypnosis as an effective, simple, and cost-effective intervention can reduce perceived stress in women with preeclampsia [21].

Hypnosis stimulates parasympathetic nerves and affects the smooth wall of blood vessels of the arteries so made up of smooth muscle and increases in diameter with parasympathetic stimulation. Therefore, blood flow increases and eventually reduces blood pressure and reduces perceived stress. Self-hypnosis was effectively applied to increase comfort, reduce anxiety, and prevent recurring contractions [30]. The weaknesses and limitations of this study are the many confounding factors that cause stress for pregnant women. This is because stress can be caused by many factors. Besides that, the number of samples in this study still needs to be increased for further research.

V. CONCLUSION

The conclusion from our study is that there is an effect of the combination of prenatal yoga and self-hypnosis on the level of momentary anxiety in pregnant women with preeclampsia. Prenatal Yoga Gymnastics and Self Hypnosis are very useful in reducing anxiety experienced by pregnant women with Preeclampsia. Movement and relaxation in prenatal yoga exercises can increase the activity of the para-sympathetic nervous system and GABA, which causes a decrease in heart rate, breathing rhythm, blood pressure, muscle tension, metabolic rate, and production of the hormone cortisol which causes anxiety. While the hypnosis method helps focus attention based on the belief that pregnant women who experience complications can go through their pregnancy and childbirth calmly, comfortably, confidently. Pregnancy with Preeclampsia is a stressful situation for most women and women react differently in this regard. Therefore, it is recommended to provide training programs in ANC services on methods of reducing anxiety with alternative therapies such as Prenatal Yoga and Self Hypnosis. Preeclampsia is a serious complication during pregnancy that not only influences maternal and fetal physical health, but also has maternal mental health outcomes such as anxiety. Further studies are needed to see if combining yoga and self-hypnosis can lower blood pressure in pregnant women with preeclampsia.

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