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**Website:**<http://jurnalobgin.fk.unand.ac.id/index.php/JOE>**RESEARCH**

## The Taylor Minnesota Anxiety Scale (TMAS) Maternal Anxiety Score Difference Between Preeclampsia And Normal Pregnancy

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**Abstract**

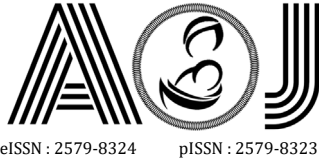
Management of preeclampsia is limited to blood pressure control and symptom relief in combination with close maternal/ fetal surveillance. Until recently, very little attention has been paid to preeclampsia's psychological consequences, especially maternal anxiety. Anxiety disorders can be identified using questionnaires instrument determining anxiety level, the Taylor Minnesota Anxiety Scale (TMAS) questionnaires is one among them. This study aimed to determine the TMAS maternal anxiety score difference between preeclampsia and normal pregnancy. This was an analytical study with a cross-sectional design conducted from March-August 2014 in 40 subjects, consisting of 20 women with preeclampsia and 20 women with normal pregnancy who met the inclusion and exclusion criteria. Anxiety was measured with the TMAS questionnaire. Statistical analysis to determine the TMAS maternal anxiety score difference between preeclampsia and normal pregnancy was t-test. In preeclampsia group, the mean of TMAS maternal anxiety score was  $30,45 \pm 9,65$ . While in the normal pregnancy group, the mean of TMAS maternal anxiety score was  $18,50 \pm 7,62$ . There was a significant TMAS maternal anxiety score difference between preeclampsia and normal pregnancy ( $p = 0,000$ ).

**Keywords:** TMAS maternal anxiety score, preeclampsia

**INTRODUCTION**

In everyday life, humans are often faced with situations that require adaptation. If this adaptation fails, stress and psychological disorders will arise. However, individual responses to the same stress stimulus differ, as does the degree of anxiety.<sup>1</sup> This condition also applies to pregnant women, where they are faced with stress factors such as physical changes, worry about the fetus's condition, and worry about childbirth.<sup>1,2</sup>

In obstetric and gynecological practice, the prevalence of psychiatric disorders, including substance abuse, is reported to be 20% to 48%. This figure is even higher in clinics that serve low-income pregnant women. This high prevalence is not surprising because women experience anxiety disorders and depression 2–3 times higher than men.<sup>3</sup> Being a mother, especially in primiparous, is a new role, with new people coming to life and new responsibilities. The anxiety that arises in this situation is normal and is an adaptation



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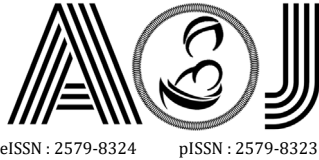
response to change. However, some mothers experience excessive anxiety during this prenatal period so that their anxiety levels are high.<sup>2</sup>

Preeclampsia is a hypertensive disorder in pregnancy that complicates 2-8% of pregnancies,<sup>4</sup> and is also one of the most important causes of maternal morbidity and mortality.<sup>5</sup> Preeclampsia greatly affects both the mother and the fetus's health and can cause multi-organ maternal dysfunction and placental insufficiency, followed by CHD and fetal asphyxia. The woman is faced with serious and often life-threatening conditions for both mother and fetus.<sup>6</sup> This stressful state induces a psychological response, which leads to depression and anxiety.<sup>7</sup>

The management of preeclampsia is still limited to controlling blood pressure and its symptoms and close maternal-fetal monitoring.<sup>8</sup> To date, very little attention has been paid to the psychological consequences of preeclampsia. This is evident from the lack of research conducted to assess preeclampsia's psychosocial consequences, although it appears that the condition can have a large impact.<sup>9</sup> Although stress is generally an adaptation response to dealing with an unfavorable environment, stressors that arise during pregnancy can harm both the mother and the fetus's health.<sup>10</sup> Psychiatric disorders, such as anxiety, are associated with the woman's inability to take care of herself, including participating in optimal antenatal care and proper nutritional intake. Besides, there is also an increased risk of substance abuse such as alcohol as well as smoking.<sup>3,11</sup> Anxiety in pregnancy is also associated with increased resistance to the uterine artery,<sup>12</sup> preterm delivery, and low birth weight (LBW). If this anxiety disorder is left untreated, it can develop into postpartum depression, reducing the initiation and duration of lactation.<sup>13,14</sup> Therefore, early recognition of psychiatric disorders during pregnancy and after childbirth is important for the mother and her baby's health.<sup>3,15,16</sup>

Anxiety disorder in a person can be identified using an anxiety measuring questionnaire, one of which is the Taylor Minnesota Anxiety Scale (TMAS) questionnaire made by Janet Taylor in 1953. The TMAS questionnaire has a fairly high degree of reliability and validity. The level of anxiety will be known from the high and low scores obtained. The greater the score, the higher the anxiety level, and the smaller the score, the lower the anxiety level.<sup>17</sup>

Little is known about the relationship between psychosocial factors and preeclampsia. The studies that have been conducted in various populations on the relationship between psychosocial stress and preeclampsia have separately obtained different results.<sup>18</sup> Engelhard et al. (2002) and Blom et al. (2010) in their study reported an increase in rates for depression and anxiety or post-traumatic stress disorder in patients suffering from preeclampsia with or without HELLP syndrome (hemolysis, elevated liver enzymes and low platelet counts).<sup>19</sup> In line with this study, Gaugler-Senden et al. (2012) also found a significant difference in anxiety between preeclamptic patients and normal pregnancies.<sup>7</sup> Whereas in a prospective study conducted by Sikkema et al. (2001) and Andersson et al. (2004), there was no relationship



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between depression and anxiety and preeclampsia, and there was no significant relationship between maternal psychopathology and preeclampsia.<sup>18</sup> Another study conducted by Brusse et al. (2008) also did not find a relationship between anxiety and preeclampsia.

To date, most research on psychiatric issues in pregnancy has been on depression, but few have looked at anxiety. (20) Besides, research on differences in maternal Taylor Minnesota Anxiety Score (TMAS) scores in pregnancies with preeclampsia and normal pregnancies has never been conducted in Dr. M. Djamil Padang. Therefore, researchers are interested in examining the differences in maternal Taylor Minnesota Anxiety Score (TMAS) scores in pregnancies with preeclampsia and normal pregnancies. This study investigates the differences in maternal Taylor Minnesota Anxiety Score (TMAS) scores in pregnancies with preeclampsia and normal pregnancies.

## METHOD

This study is a cross-sectional study to determine whether there is a difference in the maternal Taylor Minnesota Anxiety Scale (TMAS) anxiety score in pregnancies with preeclampsia and normal pregnancy. The research was conducted in the delivery room and clinic Dr. M. Djamil Padang and the educational network hospital. The research was conducted from March 2014 to August 2014.

This study's population was all single pregnant women  $\geq 20$  weeks of gestation diagnosed with severe preeclampsia and normal pregnant women who were hospitalized in the delivery room and who were controls to Dr. M. Djamil Padang and the educational network hospital. The study's independent variables were normal pregnancy and preeclampsia, while the dependent variable was the maternal antenatal anxiety score. The study inclusion criteria were single pregnancy with gestational age  $\geq 20$  weeks and willingness to attend the study. The study exclusion criteria were obesity, a history of psychiatric disorders before pregnancy, multiple pregnancies, a chronic illness before pregnancy, impaired consciousness, labor, intrauterine fetal death, a fetus with congenital abnormalities, unwanted pregnancy, and a previous bad obstetric history.

The sample consisted of 2 groups, namely: the preeclampsia group that met the study criteria, and the normal pregnancy group that met the study criteria as a control. The total sample was 40 people, namely 20 pregnant women with preeclampsia and 20 normal pregnant women who met the inclusion and exclusion criteria.

Sampling was carried out in the delivery room and polyclinic of Dr. M. Djamil Padang and the educational network hospital for patients who met the inclusion criteria. They had received a detailed explanation of the research procedure and signed a letter of consent to participate in the study voluntarily. Samples were interviewed to assess anxiety scores based on the Taylor Minnesota Anxiety Scale (TMAS) questionnaire. Then, the matching between



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control and sample was performed. The analysis used to determine the differences in maternal Taylor Minnesota Anxiety Score (TMAS) scores in pregnancies with preeclampsia and normal pregnancies was the t-test.

## RESULTS

### Characteristics of Respondents

The distribution of the characteristics of research subjects (mothers) based on age and parity can be seen in table 1.

Table 1. Characteristics of Research Subjects based on Age and Parity

Variable		Preeclampsia	Normal Pregnancy
Age (years old)	Mean	27,80	27,80
	SD	6,25	6,25
	Min	18	18
	Max	37	37
Parity	Mean	2,05	2,05
	SD	1,10	1,10
	Min	1	1
	Max	4	4

From table 1, for both the preeclampsia and normal pregnancy groups, the mean age of the study subjects (mothers) was  $27.80 \pm 6.25$  years and the age range was between 18 years and 37 years. Meanwhile, the mean parity of the research subjects (mothers) was  $2.05 \pm 1.10$ . The lowest parity is one, and the highest parity is 4.

The distribution of characteristics of research subjects (mothers) based on gestational age can be seen in table 2.

Table 2. Characteristics of Research Subjects (Mothers) Based On Gestational Age

Gestational Age (weeks)	Preeclampsia		Normal Pregnancy	
	n	%	n	%
28 – 30	3	15	3	15
30 – 32	1	5	1	5
32 – 34	-	-	-	-
34 – 36	2	10	2	10
37 – 42 (term)	13	65	13	65
42 – 43	1	5	1	5
Total	20		20	

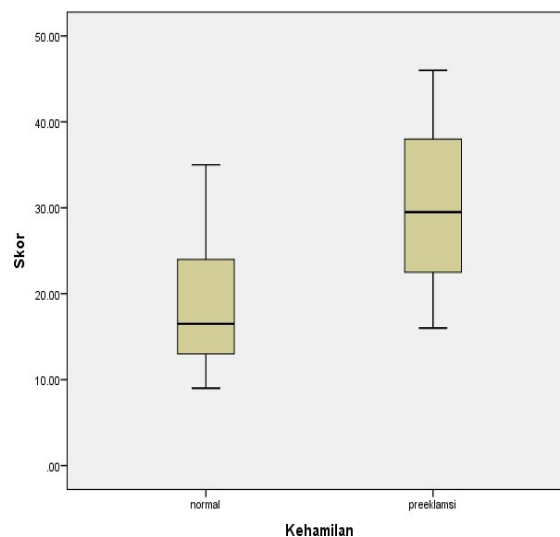
The gestational age range in this study, for both normal and preeclamptic pregnancy groups, was between 28 weeks and 43 weeks. At 28 - 30 weeks of gestation, a sample of 3

people (15%) was obtained for each sample group, while at 30 - 32 weeks of gestation, 1 sample (5%) was obtained. None of the samples in this study were aged 32-34 weeks. At 34 - 36 weeks of gestation, 2 samples (10%) were obtained, while at term (37 - 42 weeks) there were 13 samples (65%). There is 1 sample (15%) with a gestational age of 42 - 43 weeks.

### Comparison of Taylor Minnesota Anxiety Scale (TMAS) Maternal Anxiety Scores in Pregnancies with Preeclampsia and Normal Pregnancy

Anxiety as a condition in research subjects was measured by the Taylor Minnesota Anxiety Scale (TMAS) questionnaire. The higher the score, the higher the level of anxiety. The normality test was carried out in this study on the characteristics of the samples in both groups using the Shapiro-Wilk test because the data were less than 50. The data was said to be normal if  $p > 0.05$ . In this study, the value of  $p > 0.05$  was obtained. This means that there is no significant difference in the characteristics of the sample between the treatment group and the control group, so that based on these data, this research can be continued with the t test. The difference is said to be significant if it is obtained  $p < 0.05$ .

An overview of the maternal Taylor Minnesota Anxiety Scale (TMAS) score in pregnancies with preeclampsia and normal pregnancies can be seen in Figure 1.



**Figure 1.** Taylor Minnesota Anxiety Scale (TMAS) Maternal Anxiety Score in Pregnancies with Preeclampsia and Normal Pregnancy.

Figure 1 shows that in this study, the maternal TMAS anxiety score in preeclamptic pregnancies was higher than the maternal TMAS anxiety score in normal pregnancies. In the preeclamptic pregnancy group, the lowest maternal TMAS anxiety score was 16, and the highest was 46. Whereas in the normal pregnancy group, the lowest maternal TMAS anxiety score was nine, and the highest was 35. Both in the preeclamptic pregnancy group and the



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pregnancy group normal has no extreme value. The range of maternal TMAS anxiety scores in the preeclamptic pregnancy group was 30, while in the normal pregnancy group, it was 26.

A comparison of maternal TMAS anxiety scores in pregnancy with preeclampsia and normal pregnancy in this study can be seen in table 6.

**Table 3.** Comparison of Taylor Minnesota Anxiety Scale (TMAS) Maternal Anxiety Scores in Pregnancies with Preeclampsia and Normal Pregnancy

Subject	Mean	SD	Min	Max	P
Preeclampsia	30,45	9,65	16	46	0,000
Normal Pregnancy	18,50	7,62	9	35	

In the preeclamptic pregnancy group, the mean maternal TMAS anxiety score was 30.45  $\pm$  9.65. Whereas in the normal pregnancy group, the mean maternal TMAS anxiety score was 18.50  $\pm$  7.62. After the statistical test was carried out, there was a significant difference in the mean score of maternal TMAS anxiety between the preeclampsia and normal pregnancy groups ( $p = 0.000$ ).

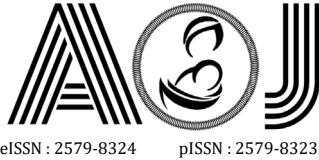
## DISCUSSION

### Characteristics of Respondents

Based on age, it was found that the mean age of the research subject (mother) was 27.80 years, while in the characteristics of the research subject (mother) based on parity, the mean age of the research subject (mother) was 2.05. Based on gestational age, the largest sample is at term of gestation (37 - 42 weeks) as many as 13 samples (65%), at 28-30 gestational age three samples (15%), 1 sample (5%) at 30 - 32 weeks, no sample aged 32 - 34 weeks, two samples (10%) at 34 - 36 weeks' gestation, and 1 sample (15%) with a gestational age of 42 - 43 weeks.

### Comparison of Taylor Minnesota Anxiety Scale (TMAS) Maternal Anxiety Scores in Pregnancies with Preeclampsia and Normal Pregnancy

From Figure 1, it can be seen that there is also anxiety in the normal pregnancy group. This is because the concept of pregnancy is physiological stress. When a woman is pregnant, there are physical changes, such as no menstruation, enlarged breasts, changes in the shape of the uterus, changes in the work system of the organs, enlargement of the stomach, weight gain, weakening of the relaxation of the digestive tract muscles, sensitivity to sensation, and feet and hands begin enlarged.<sup>21</sup> As a response to these situations, anxiety is common and is an adaptation response to the changes that occur. However, during this prenatal period, some mothers experience excessive anxiety so that their anxiety levels are high.<sup>2</sup>



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Based on the results obtained, it can be seen that the mean score of maternal TMAS anxiety in pregnancies with preeclampsia is higher than those in normal pregnancies. In preeclamptic pregnancies, the mean maternal TMAS anxiety score was  $30.45 \pm 9.65$ , while in the normal pregnancy group, the mean maternal TMAS anxiety score was  $18.50 \pm 7.62$ . Statistically, this difference was significant ( $p < 0.05$ ). Thus the hypothesis in this study can be accepted, namely that there is a difference in the maternal Taylor Minnesota Anxiety Score (TMAS) score in pregnancies with preeclampsia and normal pregnancy.

This situation is in accordance with the literature where the condition of pregnancy with preeclampsia is at high risk for anxiety. Women who experience pregnancy complications are at high risk for anxiety and depression. One of these pregnancy complications is preeclampsia.<sup>19,22</sup> In severe cases, it is not uncommon for these women to be referred to a tertiary hospital where sub-specialist obstetric and intensive care unit (ICU) services are available. At the extremes of preterm gestation, the patient must be admitted to a special care room or ICU for days to weeks. In some cases, based on the consideration of the mother and fetus's condition, the pregnancy must be terminated by caesarean section even though the gestational age is still preterm.<sup>7</sup> This stressful and unclear condition caused by the severity of preeclampsia and this experience that threatens the mother and fetus's safety induces a psychological response and ultimately causes anxiety in the woman.<sup>19,23</sup>

This explanation is in line with research conducted in the Netherlands by Gaugler-Senden et al. (2012). They conducted a study to evaluate the impact of early-onset severe preeclampsia on long-term psychosocial outcomes in women undergoing preterm labor. The study results, from 104 cases and 78 controls, stated that there was a significant difference in anxiety between patients with early-onset severe preeclampsia and normal pregnancy ( $28.7 \pm 8.6$  vs  $25.7 \pm 7.9$ ).<sup>7</sup>

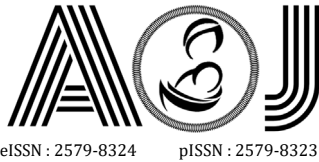
The weakness of this research is that it does not consider socioeconomic differences. This is due to difficulties in collecting data on the total income of respondents.

## CONCLUSION

The mean maternal Taylor Minnesota Anxiety Scale (TMAS) score in preeclamptic pregnancies was higher than in normal pregnancies ( $30.45 \pm 9.65$  vs.  $18.50 \pm 7.62$ ), and this difference was statistically significant.

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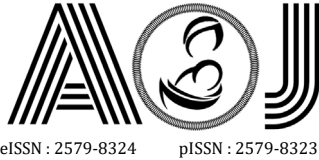
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