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MATERNAL STRESS AND ANXIETY AND THEIR ASSOCIATION AMONG PREGNANT WOMEN IN LIMBANGAN KENDAL

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ABSTRACT

Pregnant women often experience anxiety, which can be detrimental to the emotional, psychological, and social development of their unborn children. Perinatal problems for both mother and child are more common when anxiety is present during pregnancy. Furthermore, it has frequently been demonstrated that the onset of anxiety during these periods precedes the onset of depression. Antenatal depression has been linked to a higher incidence of surgical deliveries, pre-eclampsia, and spontaneous abortion. Mothers who suffer from depression have a higher probability of having preterm births, lower birth weights, lower Apgar scores, and less frequent and shorter breastfeeding sessions. This study aims to assess maternal stress and anxiety and their association among pregnant women. Purposive sampling was used to gather cross-sectional data from 172 pregnant women in Limbangan, Kendal, in June–August 2024. Women with stress and anxiety who were willing to participate in the survey and did not have communication problems met the inclusion criteria. Pregnant women using antidepressants and those in low-income circumstances were excluded. Maternal stress and anxiety during pregnancy were observed in this study. Participants completed the Overall Anxiety Severity and Impairment Scale and the Pregnancy-Related Anxiety Scale (PRAS), which are tools used to evaluate pregnant women's stress and anxiety levels. One-way ANOVA, Pearson correlation, frequency distribution, and measures of central tendency (mean, standard deviation, minimum, and maximum values) were used in the statistical analysis. The results of this study indicate that maternal anxiety is highest in Trimester I (mean 30.80 ± 6.21) and stress is highest in Trimester II (mean 7.29 ± 4.28). There was a significant correlation between maternal anxiety and stress (P-value = 0.016). The presence of anxiety during pregnancy has been associated with a higher incidence of perinatal complications for both mother and child. In addition, the appearance of anxiety during these periods has been shown to precede the development of depression on a high percentage of occasions. The causes of anxiety in pregnant women are related to concerns about giving birth to a disabled child and changes in appearance after delivery. Thus, multiple approaches to reducing anxiety are required.

Kata Kunci:

Kecemasan;
Stres;
Kehamilan;

ABSTRAK

Wanita hamil sering menderita kecemasan, yang dapat merugikan pertumbuhan emosional, psikologis, dan sosial anak-anak mereka yang belum lahir. Masalah perinatal untuk ibu dan anak terjadi ketika mengalami kecemasan selama masa kehamilan yang dapat berdampak timbulnya stres dan depresi. Ibu hamil yang menderita kecemasan dan stres beresiko lebih tinggi untuk melahirkan prematur, berat badan lahir lebih rendah, skor Apgar yang lebih rendah, dan sesi menyusui yang lebih jarang dan lebih pendek. Penelitian ini bertujuan untuk menilai stres dan kecemasan ibu dan hubungannya di antara wanita hamil. Data cross-sectional dikumpulkan dari 172 wanita hamil di Limbangan Kendal pada Juni 2024 dengan teknik purposive sampling. Adapaun kriteria inklusi, wanita hamil dengan stres, kecemasan, dan mereka yang bersedia berpartisipasi dan tidak memiliki masalah komunikasi. Wanita hamil yang berada dalam situasi buruk dan mengonsumsi antidepresan dieksklusikan. Penelitian ini mengobservasi maternal stres dan anxiety selama kehamilan. Kuesioner kecemasan dan stres menggunakan Skala Kecemasan Terkait Kehamilan (PRAS) dan the Overall Anxiety Severity and Impairment Scale. Analisis statistik dilakukan dengan menggunakan One-way ANOVA, korelasi Pearson, distribusi frekuensi, dan kecenderungan sentral (rata-rata, standar deviasi, nilai minimum dan maksimum). Hasil penelitian ini menunjukkan kecemasan ibu tertinggi pada trimester I (rata-rata 30,80 ± 6,21) dan stres tertinggi pada Trimester II (rata-rata 7,29± 4,28). Ada korelasi yang signifikan antara kecemasan dan stres ibu (Pvalue = 0,016).Adanya kecemasan selama kehamilan pada ibu telah dikaitkan dengan insiden komplikasi perinatal yang

lebih tinggi untuk ibu dan anak. Selain itu, munculnya kecemasan selama periode ini telah terbukti mendahului perkembangan depresi pada persentase kesempatan yang tinggi. Penyebab kecemasan bagi ibu hamil terkait dengan kekhawatiran tentang melahirkan anak cacat dan perubahan penampilan setelah melahirkan. Dengan demikian, diperlukan berbagai pendekatan untuk mengurangi kecemasan.

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INTRODUCTION

Pregnancy is a vulnerable period of physical, emotional, and social changes for women. On the other hand, this period also causes anxiety and stress, which can continue and develop into depression (McLean et al., 2018). Maternal stress and anxiety are the most common mental health disorders in many high-income countries (Bekkhus et al., 2022; A. M. Rogers et al., 2023; Zhou et al., 2023). They can occur more frequently during the perinatal period (from conception to 12 months after childbirth) than at other times in a woman's life. Furthermore, perinatal anxiety and related disorders are linked to negative outcomes for both the mother and the child (Grigoriadis et al., 2018; Vizzini et al., 2019). Preterm birth, poor neurocognitive development, and longer-term outcomes, such as an increased risk of cardiovascular disease and mental illness in adulthood, are among the negative consequences for the offspring (Guo et al., 2022; Slade et al., 2021). The prevalence of anxiety during pregnancy is 7.7–36.5%, the period before childbirth is 13.7%, and the breastfeeding period in the first 6 months is 16.7–25.4% (Cena et al., 2020). In low- and middle-income countries, the prevalence is much higher at 34.4% and 25.9%, respectively (Grigoriadis et al., 2018; McLean et al., 2018). For women, perinatal anxiety disorders are linked to substance use disorders, recurrent mental illness, and suicide (Bekkhus et al., 2022; Dunkel Schetter & Tanner, 2012). Anxiety and related disorders, including generalized anxiety disorder, obsessive-compulsive disorder, social anxiety disorder, panic disorder, and adjustment disorder, are associated with a high burden of disease and financial costs.

Anxiety-causing factors include a lack of knowledge about pregnancy, childbirth, and breastfeeding, hormonal and physical changes, concerns about the baby's health, lack of sleep, lack of social support, financial difficulties, and even demographic problems (Mahini et al., 2023; A. M. Rogers et al., 2023). The effects of excessive anxiety and stress can affect maternal and infant health, such as an increased risk of premature labor, postpartum depression, impaired infant growth and development, and difficulty breastfeeding (Accortt et al., 2022; A. M. Rogers et al., 2023). Several treatments have been attempted to address complaints of nausea and vomiting, sleep disturbances, low back pain, and anxiety in pregnant and lactating women (Campbell et al., 2016; Pires et al., 2021). The importance of maternal welfare in the perinatal period emphasizes the need to ensure that mothers receive quality maternal health services at each stage to reduce maternal and infant mortality. Indonesia has a program to reduce the maternal mortality rate to 183 per 100,000 live births by 2025. Poor maternal and newborn outcomes are linked to anxiety disorders. Although their incidence is unknown, women in low- and middle-income countries (LMICs) are assumed to be disproportionately affected by these illnesses (Dunkel Schetter & Tanner, 2012; Slade et al., 2021).

Data from Limbangan Kendal in 2023–2024 show that 4.45% of pregnant women experienced anxiety and stress. These anxiety factors include the labor process (45%), fetal disorders (30%), physical changes (10%), breast milk not coming out (10%), and anxiety during an ultrasound examination (5%). The impact of anxiety can affect sleep patterns and quality, concentration, and restlessness. This study intends to explore the description of maternal stress and anxiety and its associated factors among pregnant women in Limbangan, Kendal, as no questionnaire has previously been used to evaluate maternal stress and anxiety.

METHOD

Type of Research

This study was quantitative, using a correlational design to examine maternal stress and anxiety and their association among pregnant women in Limbangan, Kendal. The independent variables included in the study were the mother's age, education level, and employment. Ethical clearance was obtained on June 15th, 2024, with number 139/KEP/UNKAHA/SLE/VI/2024 from the Ethical Clearance Committee of the University of Karya Husada Semarang.

Place and Time of Research

This study was conducted at the Limbangan Health Center in Kendal City between June and August 2024.

Population and Sample

There were 197 pregnant women in the population in June 2024, ranging from trimester I through trimester III. In this study, purposive sampling was used. A total of 172 samples that fulfilled the following criteria were included in the study using the Slovin Formula: pregnant women with stress and anxiety, who were willing to participate in the survey, and did not have communication issues met the inclusion criteria. Pregnant women who were in poor circumstances and those who consumed antidepressants were excluded.

Data Collection

Demographic data on pregnant women were assessed: age, gestational age, trimester, occupation, and education. The Pregnancy-Related Anxiety Scale (PRAS) and the Overall Anxiety Severity and Impairment Scale (OASIS) are the instruments used to measure the anxiety and stress levels of pregnant women. One frequently used tool for evaluating and identifying pregnancy-specific anxiety in nulliparous women is the 10-item Pregnancy-Related Anxiety Questionnaire–Revised2 (PRAQ-R2). On a Likert scale, there are five possible responses: 1. Completely irrelevant; 2. Rarely relevant; 3. Relevant occasionally; 4. Reasonably relevant; and 5. Very relevant. OASIS consists of 5 items using a Likert scale of 0–4. The questionnaire was translated into Indonesian from English. The validity and reliability of the questionnaire were assessed using Cronbach's alpha coefficient and product-moment correlation, respectively. In general, validity values ranged between 0.499 and 0.879. All items were consistently reliable, indicating that the r-count was greater than the r-table, ranging between 0.668 and 0.850 in Cronbach's alpha testing.

Data Analysis and Processing

The study population's characteristics, including age, gestational age, occupation, education, and the level of maternal stress and anxiety among pregnant women, were described using descriptive statistics. Calculating the overall score for each anxiety and stress component is necessary for grouping. First, a normality test is performed on the data. Following that, the data set is analyzed using one-way ANOVA, Pearson correlation, frequency distribution, and measures of central tendency (mean, standard deviation, minimum, and maximum values).

RESULT

Table 1. Frequency Distribution of Respondent Characteristics (n=172)

Characteristics of Pregnant Women	Maternal Stress Anxiety (n=172)			P-value
	F (%)	Mean ± SD	Min-Max	
Mother's Age (years)		27.51±4.74	15-44	0.434*
Gestation Ages (Week)		23.43±11.46	1-41	0.000*
Trimester				
a. Trimester 1	41 (23.80)			
b. Trimester 2	42 (24.40)			
c. Trimester 3	89 (51.70)			

	Occupation	
a.	Yes	56 (32.60)
b.	None	116 (67.40)
	Education	
a.	None	15 (8.70)
b.	Elementary School	6 (3.50)
c.	Junior High School	16 (9.30)
d.	Senior High School	79 (45.90)
e.	University	56 (32.6)

*One-Way ANOVA

In Table 1, it is illustrated that among the demographic and background variables of the study, maternal age (P = 0.434) and gestational age (P = 0.000) show statistically tested values. The majority of mothers do not have a job (67.4%) and have a senior high school education (45.9%). Most pregnant women are in the third trimester (51.7%). An overview of maternal stress and anxiety is shown in Table 2 below.

Table 2. Description of Stress And Anxiety In Pregnant Women (n=172)

Variable	Maternal Stress Anxiety (n=172)		P-value	Test Homogeneity
	Mean ± SD	(Min-Max)		
Stress	6.53 ± 4.08	0 - 15	**0.390**	**0.047**
Anxiety	26.48 ± 8.78	10 - 47	**0.000**	**0.685**
a. Fear of giving birth	7.60 ± 3.00	3 – 15	**0.359**	**0.004**
b. Worries about bearing a handicapped child	7.67 ± 3.12	3 – 15	**0.359**	**0.309**
c. Concern about own appearance	11.29 ± 5.37	4 - 20	**0.000**	**0.185**

Table 2 shows that there is no difference in anxiety and stress among pregnant women across trimesters. Pregnant women experience anxiety related to bearing a handicapped child and concern about their appearance (P-value 0.309 and 0.185).

Table 3. Description of Stress And Anxiety Each Trimester In Pregnant Women (n=172)

Variables	Trimester I (n=41)		Trimester II (n=42)		Trimester III (n=89)		Pvalue
	Mean ± SD	(Min-Max)	Mean ± SD	(Min-Max)	Mean ± SD	(Min-Max)	
Stress	6.22 ± 4.11	0 - 14	7.29± 4.28	0 - 15	6.33± 3.98	0 - 15	**0.390**
Anxiety	30.80 ± 6.21	15 - 44	28.05± 8.52	10 - 43	23.48± 9.01	11 - 47	**0.000**
a. Fear of giving birth	8.17 ± 2.37	3 – 14	7.57± 2.83	3 – 14	7.36± 3.31	3 – 15	**0.359**
b. Worries about bearing a handicapped child	7.76 ± 2.89	3 – 14	8.21 ± 2.88	3 – 13	7.38 ± 3.32	3 – 15	**0.359**
c. Concern about own appearance	14.88 ± 4.67	4 - 20	12.26 ± 5.29	4 - 20	9.00 ± 4.62	4 - 20	**0.000**

* One Way ANOVA

According to Table 3, pregnant women's typical anxiety levels peak in the first trimester, whereas their highest stress levels occur in the second trimester and slightly decline in the third trimester. Concern about appearance is the largest source of anxiety in the early stages of pregnancy (mean 14.88), whereas fear of giving birth to a child with a disability is the highest in the later stages of pregnancy (mean 7.38).

Table 4. The Association Between Anxiety and Stress in Pregnant Mothers (n=172)

Variables	Maternal m-Health Education (n=172)		P-value
	Mean ± SD	(Min-Max)	
Anxiety	26.48 ± 8.78	10 -47	**0.016****
Stress	6.53 ± 4.08	0 - 15	

**Correlation Pearson

Table 4 explains that there is a relationship between anxiety and stress in pregnant women (P-value 0.016). The correlation statistic between stress and anxiety was 0.284, which indicates a weak but positive correlation.

DISCUSSION

According to the results, 20.9% of pregnant women had anxiety. Anxiety related to antenatal stress occurs mentally during pregnancy. Most expectant mothers deal with mild-to-moderate anxiety daily, which can last anywhere from a few hours to several days. Pregnancy-related physiological changes, increased urination, maternal age, whether too young or too old, and the nearness of the delivery process all contribute to mild-to-moderate stress (Bekkhus et al., 2022; Davis & Narayan, 2020). Irritability, sensitivity, and uncontrollable emotions are hallmarks of moderate-to-mild stress, making it difficult to concentrate and interfering with daily activities and interpersonal connections (Vizzini et al., 2019). Anxiety can impact fetal development and cause mood swings, physical changes, and sleep difficulties. Anxious pregnant women are more likely to experience stress and possibly depression. Maternal age is one factor that influences anxiety; pregnant women under the age of 20 typically have higher levels of anxiety than those between the ages of 25 and 35. The average age of the respondents was 27.51 years, ranging from 15 to 44 years. A one-way ANOVA test was performed to examine the relationship between maternal age and levels of maternal stress and anxiety. The resulting P-value of 0.434 is not statistically significant. This finding shows that a mother's age does not have a significant association with her reported stress and anxiety levels during pregnancy. This challenges the common assumption that younger or older mothers might experience universally higher levels of psychological distress. On the other hand, there was a highly significant relationship between the trimester of pregnancy and maternal stress and anxiety, with a P-value of 0.000.

This is consistent with previous research: as many as 57.1% of pregnant women experience stress, and 60.7% have poor sleep quality (Pires et al., 2021). The age of pregnant women affects anxiety; pregnant women under 20 years may experience anxiety because their bodies are not fully prepared, while those over 35 are at risk of obstetric complications and perinatal morbidity and mortality. The safe age for pregnancy and childbirth is over 20 years and less than 35 years, when a woman's physical condition is generally optimal. The lowest anxiety score relates to concerns about the fetus having poor health, as pregnant women commonly try to reassure themselves. Pregnant women in the third trimester often face frightening situations related to childbirth, but most take care of themselves and try to remain confident. The largest proportion of respondents was in the third trimester (51.7%), followed by the second (24.4%) and first (23.8%). This result indicates that stress and anxiety levels are not uniform throughout pregnancy. Instead, they depend heavily on the stage of gestation. Unique physical and psychological stressors in each trimester, such as adapting to early pregnancy or preparing for childbirth, have distinct impacts on maternal mental well-being. This is linked to the body's readiness for pregnancy and the possibility of complications ranging from low birth weight, preterm birth, and delayed delivery to fetal and maternal death. The indicators of anxiety experienced by pregnant women include fear of childbirth, worries about giving birth to a disabled child, and concerns about self-appearance (Martini et al., 2015; Silva et al., 2017).

Maternal Stress Anxiety refers to stress and anxiety occurring during pregnancy. The study showed that the majority of pregnant women experienced mild to moderate anxiety. Mild stress is a stressor commonly faced daily, such as lack of sleep, traffic jams, or criticism from others. Mild stress conditions last a few minutes or hours. Mild stress occurs due to physiological changes during pregnancy, a very young maternal age, and a closely approaching birth process. It is characterized by irritability, difficulty concentrating, overreaction to small things, and uncontrollable emotions that disrupt the stability of daily life (Grigoriadis et al., 2018; Kinsella & Monk, 2009). The results indicate that the average level of Anxiety (Mean = 26.48) is substantially higher and more variable (SD = ± 8.78) than the average level of Stress (Mean = 6.53, SD = ± 4.08). The wide range of anxiety scores (10–47) compared to stress scores (0–15) also suggests that anxiety is a more pervasive and significant concern. This highlights the importance of distinguishing between general stress and anxiety in this population. The highest average score among the specific anxiety variables is Concern about own appearance (Mean = 11.29). This variable also has a highly significant P-value of 0.000, confirming its prominent role. In contrast, Fear of giving birth (Mean = 7.60) and Worries about bearing a handicapped child (Mean = 7.67) have lower average scores and statistically non-significant P-values (0.359). These results indicate that although these concerns are present, their impact is not as pronounced or varied as concerns about appearance. The primary cause of Maternal Stress Anxiety in pregnant women is the tendency to focus on appearance, especially in the first trimester. Pregnant women take care of themselves to increase confidence. The second highest concern was worry about pregnancy and body weight. Excess weight affects physical appearance and increases risks of gestational diabetes, preeclampsia, heart disease, and hypertension (He et al., 2020; Zehravi et al., 2021). Anxiety can result in physical changes, sleep disturbances, mood fluctuations, and effects on fetal development (Guo et al., 2022; Martini et al., 2015).

Although stress and anxiety have different physiological pathways, they are closely related and have a reciprocal impact during pregnancy. A more nuanced understanding of their combined effects helps clarify their influence on maternal and newborn health. Anxiety can result from continuous or chronic stress, while stress is typically a transient response to an external stimulus (Bergeron et al., 2024). Anxiety is characterized by persistent, excessive worry about the future, which may arise during pregnancy due to financial difficulties, relationship issues, or discomforts of pregnancy. Someone with high anxiety or sensitivity may perceive common stressors as overwhelming (Meng et al., 2025). This can cause stress hormones to be released more frequently or intensely, exacerbating both physical and psychological symptoms. Compared to either element acting alone, this reinforcing cycle may have a greater negative effect on health. By producing stress hormones like cortisol and adrenaline, stress and anxiety both trigger the body's fight-or-flight response (Jalal et al., 2024). This shared physiological reaction may influence fetal development, affecting the baby's brain and possibly making the child more likely to develop anxiety in the future (A. Rogers et al., 2020; A. M. Rogers et al., 2023).

Maternal Stress Anxiety can be managed with good stress management. Stress management in pregnant women includes massage, pregnancy exercises, spiritual support, and partner support (Carlson et al., 2019). Pregnancy massage is beneficial for relieving anxiety, reducing symptoms of depression, and alleviating myalgia and arthritis (Field et al., 2012; Pachtman Shetty & Fogarty, 2021) . Pregnancy exercises help promote physical and mental relaxation, reducing anxiety and fear. Spiritual support can alleviate psychological conditions such as fear, shock, hopelessness, anger, anxiety, and depression (Majeed et al., 2018). Spiritual support and partner support can be used to cope with stress, spiritual support can alleviate the patient's psychological conditions, such as fear, surprise, hopelessness, anger, anxiety, and depression (Martini et al., 2015). Partner support is particularly needed by primigravida mothers, who may experience higher anxiety when facing pregnancy and childbirth for the first time (Grigoriadis et al., 2018). Biaggi et al. conducted a systematic review of 97 papers and found that lack of spousal or social support, history of abuse or domestic violence, personal psychological history, unplanned pregnancy, traumatic life events, high perceived stress, complications in current or previous pregnancies, history of abortion or preterm delivery, and pregnancy loss were significant risk factors for

depression or anxiety during pregnancy (Davis & Narayan, 2020). The frequency of state anxiety was 58.5% and trait anxiety was 53.2% in a study by Ferreira et al. involving 207 pregnant women (Ferreira et al., 2015). In southern Millas Gris, Brazil, Silva et al. assessed 209 pregnant women and found that 62.8% experienced anxiety, with the highest prevalence in the third trimester (42.9%) (Silva et al., 2017).

CONCLUSION AND SUGGESTION

Stress levels rise in the second trimester of pregnancy, although anxiety levels progressively decline as gestational age increases. Compared to worries about having a child with a disability or fear of giving birth, pregnant women are more concerned about their physical appearance. Anxiety and stress levels in pregnant women are interrelated. Maternal stress-related anxiety is shown to be considerably present throughout pregnancy; therefore, efforts must be made to address it to improve the well-being of both the mother and the fetus. For further research, we suggest conducting studies on interventions or treatments to reduce maternal stress-related anxiety during pregnancy.

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