# The Relationship between Anxiety, Depression, and Vital Signs among Postpartum Mothers in Yogyakarta

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## ABSTRACT

**Introduction**: After labor, mothers need good physiological and psychological adjustments. The inability to adapt to a new situation can result in mothers' psychological stress, eventually leading to postpartum crises and depression. If this incident is not handled, it can lead to serious mental health problems, especially postpartum psychosis to bipolar disorder. In depressed and anxious people, the body will secrete adrenal hormones, which cause vital signs such as blood pressure, body temperature, respiration, and pulse. **Objectives:** This study aims to find the relationship between anxiety, depression, and vital signs of postpartum mothers. **Method:** This study used qualitative with correlation cross-sectional design. The respondents were 60 postpartum mothers at 0-6 months postpartum in Yogyakarta recruited using purposive sampling techniques. The instrument used to measure postpartum maternal depression was The Back Depression Inventory version II and State Anxiety Inventory (STAI) to measure anxiety. Data analysis used Pearson to find the relationship between anxiety, depression, and vital signs. **Results:** The t-test analysis shows there were relationship between state and trait anxiety with a pulse (p-value = 0.00), respiration (p-value = 0.00), depression with a pulse (the p-value = 0.00) and respiration (p-value 0.00). **Discussion:** Anxiety and depression can be detected from the changes in the vital signs of postpartum mothers so that early detection by health workers can prevent anxiety and depression

**Keywords:** anxiety, depression, postpartum, and vital signs.

## ABSTRAK

***Pendahuluan:** Setelah melahirkan ibu membutuhkan adaptasi baik fisiologis maupun psikologis. Ketidak mampuan ibu beradaptasi dengan peran baru akan menyebabkan tekanan psikologis yang bisa menyebabkan kecemasan dan depresi postpartum. Jika kejadian ini tidak ditangani maka dapat mengakibatkan masalah kejiwaan yang serius khususnya postpartum psychosis hingga bipolar. Pada orang depresi dan cemas, tubuh akan mensekresikan hormon adrenal yang mengakibatkan tanda-tanda vital seperti tekanan darah, suhu tubuh, pernafasan, dan nadi. **Tujuan:** Tujuan dari penelitian ini adalah mengetahui hubungan antara ansietas dan tingkat depresi dengan vital signs ibu postpartum. **Metode:** Penelitian ini menggunakan kuantitatif dengan metode korelasi cross-sectional. Responden sebanyak 60 ibu postpartum 0-6 bulan yang berdomisili di Yogyakarta ditentukan dengan teknik purposive sampling. Instrumen yang digunakan untuk mengukur depresi ibu postpartum adalah The Back Depression Inventory versi II dan pengukuran kecemasan ibu postpartum menggunakan State Anxiety Inventory (STAI). Analisa data menggunakan pearson untuk mencari hubungan antara ansietas, depresi dengan tanda-tanda vital. **Hasil:** analisa t-test membuktikan terdapat hubungan antara ansietas dasar dan sesaat dengan nadi (p value 0.00) dan pernafasan (p value 0.00). Terdapat pula hubungan antara depresi dengan nadi ibu postpartum*

*(p value 0.00) dan pernafasan (p value 0.00).* **Diskusi:** *kecemasan dan depresi dapat dideteksi dari adanya perubahan tanda-tanda vital ibu postpartum, sehingga deteksi awal oleh petugas kesehatan dapat mencegah terjadinya kecemasa dan depresi.*

*Kata kunci: depresi, kecemasan, postpartum, dan tanda-tanda vital*

## INTRODUCTION

The maternal and child mortality rate in Indonesia decreased from 346 to 306 in 2019 due to the Indonesian government's effort to improve maternal and child health (Kemenkes, 2018). Equalizing Indonesian health care workers, improving health care workers' skills, and improving health research and development are the government's efforts to achieve the SGDs (Kemenkes, 2015).

The postpartum period can be a significant change for a woman. This period occurs in less than six weeks (Ratnawati, 2018). Postpartum is the period from the completion of labor to the return of the womb as it was before pregnancy. During the postpartum period, mothers will experience physical and psychological changes in dealing with a new family member (Johnson, 2014). Postpartum mothers experience changes that require both physical and psychological adaptations. Mothers who cannot adapt can suffer from psychological distress, including postpartum anxiety and depression (Nasri et al., 2017); (Elvira & Hadisukamto, 2017).

Depression is a natural disorder of feelings or emotions accompanied by psychological components such as feelings of discomfort, anxiety, moodiness, broken-heartedness, and somatic components such as unwillingness to eat, clammy skin, hypotension, and difficulty defecating (Yosep & Sutini, 2016). Fear, anger, anxiety, and lack of interest over the first few weeks after childbirth are not normal postpartum baby blues (Lowdermilk et al., 2013). Research involving 291 studies with 296,284 postpartum mothers from 56 countries using meta-analysis methods showed that an average of 17.7% of mothers experiences postpartum depression (Hahn-holbrook, 2018).

Anyone, including postpartum mothers, can experience depression. Several types of depression can occur among postpartum mothers, including baby blues, postpartum depression (PPD), and postpartum psychosis. The postpartum psychosis consequences such as suicide. A mother with postpartum psychosis could be related to the psychotic episode for future pregnancy. The psychotic episode was a critical underlying for bipolar disorder (VanderKruik et al., 2017). The initial symptom of PPD can be mild affective disorder syndrome that is baby blues; if not appropriately managed, PPD can develop into a more serious disorder called postpartum psychosis (Ardiyanti & Dinni, 2018). Postpartum depression or baby blues is an emotional disorder that commonly occurs among postpartum mothers (Ratnawati, 2018).

Mothers could suffer from anxiety after childbirth. Anxiety and discomfort accompanied by vague responses that threaten emotional states are characterized by stress, fear, and behavioral changes within normal limits (Herdman & Kamitsuru, 2014). When one is feeling anxious, one's body will secrete adrenal hormones causing an increased vital sign. Another hormone that can increase the body's metabolism is thyroxine. Increased metabolism can result in greater blood flow, and the heart will work harder (Arini et al., 2017). Mothers' inability to make adjustments can increase the risk of experiencing postpartum depression.

The previous research conducted by Ernawati et al. (2020) shows the incidence of postpartum blues in Yogyakarta at 53.3% at 30 births. In another study, the primiparous group of women experienced postpartum depression with a presentation of 70.59%, and the group of multiparous women was 58.82% (Kusuma, 2017). In Kusuma's research, postpartum depression can be formed as feeling pessimistic about the future,

self-blame, anxiety, fear for no apparent reason, feeling unhappy, and having trouble sleeping. One of the signs of anxiety and depression is the change in vital signs. Based on this, research on the relationship between anxiety, postpartum depression, and vital signs was carried out in postpartum mothers in Yogyakarta. The vital sign is an initial assessment that is always carried out by health workers so that this study can be a reference for health workers' awareness of the possibility of anxiety and postpartum depression.

## METHODS

### Research Design

This study used a correlation design with a cross-sectional method to find the relationship between anxiety, depression, and vital signs among postpartum mothers in Yogyakarta.

### Population and sample

The population of this study was mothers from primary health care centers in Yogyakarta. Researchers used two primary health centers in Yogyakarta. Respondents in this study were recruited using purposive sampling techniques with the inclusion criteria mothers at 0-6 months postpartum in Yogyakarta.

### Instrument

The independent variables examined in this study were anxiety and depression. Anxiety was measured using a total of 40 items of State Anxiety Inventory (STAI) developed by Charles Spielberger with four options: 1 for Not at All; 2 for Sometimes; 3 for Often; and 4 for Always. Meanwhile, research conducted by Restarina et al. (2017) using a total of 21 items of the Back Depression Inventory version II was developed by Aaron T. Beck, which were scored from 0 to 3 (from Not Experience to Severe Depression). The total scores were categorized into four: No Depression (0-13); Mild Depression (14-19); Moderate Depression (20-28); and Severe Depression (29-63). BDI-II already has international validity and reliability. In Indonesia,

the validity and reliability were tested by an academic lecturer at the Master of Public Health, University of Indonesia (UI). The dependent variables were vital signs, collected using a sphygmomanometer, stethoscope, thermometer, and a watch with calibration before use. Researchers measured the vital sign of each respondent who met the criteria until the target reached.

### Research Procedure

Researchers gave the questionnaires to respondents who came to the primary health center according to the inclusion criteria and got 60 respondents between January and February 2020.

### Data Analysis

The data were analyzed using univariate analysis and bivariate analysis to determine the relationship between the independent and dependent variables. The relationship between anxiety and vital signs and the relationship between depression and vital signs were analyzed using Pearson.

### Ethics Clearance

Researchers carried out the management of ethics permits in the Ethics Committee of Health Polytechnic of Health Ministry Yogyakarta with the number e-KEPK/POLKESYO/0016/I/2020.

## RESULTS

Table 1 shows that most respondents gave birth through spontaneous delivery (80%), followed by cesarean procedure (20%). The majority of the respondents had given birth to their first (36.7%) and second (35%) children. More than half of the respondents (80%) were housewives, while 9% worked in the private sector. All postpartum mothers (100%) were married.

The vital signs of postpartum mothers were systolic and diastolic blood pressure, pulse, respiratory, and temperature. The systolic mean of postpartum mothers was 116.08 mmHg, while the maximum was 160 mmHg. The diastolic mean was 81.50 mmHg, while the minimum was 60 mmHg.

The mean of the pulse was 78.05 beats per minute, while the maximum was 110 beats per minute. The mean of respiration was 20.03 breaths per minute. The mean temperature was 36.38ºC, while the maximum was 36.9ºC (Table 2).

**Table 1. Characteristics of the Respondents**

| Categories | n | % |
|---|---|---|
| **Type of Labor** | | |
| Spontaneous | 48 | 80 |
| Caesarean | 12 | 20 |
| **Parity** | | |
| 1 | 22 | 36.7 |
| 2 | 21 | 35 |
| 3 | 10 | 16.7 |
| 4 | 5 | 8.3 |
| 5 | 1 | 1.7 |
| 6 | 1 | 1.7 |
| **Job** | | |
| Housewife | 48 | 80 |
| Student | 3 | 5 |
| Private sector | 9 | 15 |
| **Marriage Status** | | |
| Marriage | 60 | 100 |
| Not marriage | 0 | 0 |

**Table 2. Analysis Univariate of Anxiety and Vital Signs among Postpartum Mothers**

| | Mean | SD | Min | Max |
|---|---|---|---|---|
| **Anxiety** | | | | |
| State anxiety | 65.9 | 5.6 | 52 | 81 |
| Trait anxiety | 50.4 | 8.8 | 36 | 76 |
| **Vital Signs** | | | | |
| Systolic | 116 | 10.8 | 100 | 160 |
| Diastolic | 81.5 | 7.3 | 60 | 100 |
| Temperature | 36,3 | 36.3 | 35 | 36.9 |
| Pulse | 83.8 | 11.5 | 64 | 110 |
| Respiration | 21 | 2.4 | 18 | 28 |

The mean of state anxiety was 65.9, while its median was 66, with a standard deviation of 5.6. The maximum score of state anxiety was 81,

indicating that anxiety among postpartum mothers was above the average of 40. On the other hand, the mean of trait anxiety was 50.4, and its median was 49, with a standard deviation of 8.8. The postpartum mothers' trait anxiety was also above the average of 40 (Table 2).

Table 3 shows the frequency distribution of depression among postpartum mothers. It can be seen from the table that most postpartum mothers (63.3%) were not depressed, followed by 12 postpartum mothers (20%) with mild depression, six postpartum mothers (10%) with moderate depression, and four postpartum mothers (6.7%) with severe depression. However, after a year, postpartum mothers did not experience depression.

**Table 3. The Frequency Distribution of Depression among Postpartum Mothers**

| Variable | Frequency | % |
|---|---|---|
| No Depression | 38 | 63.3 |
| Mild Depression | 12 | 20 |
| Moderate Depression | 6 | 10 |
| Severe Depression | 4 | 6.7 |
| **Total** | **60** | **100** |

The results of the analysis signify that there is a relationship between trait/state anxiety, pulse, and respiration with the p value < 0.05. There is no relationship between state anxiety and systolic (the p value = 0.71, SD 10.8, CI -0.03-0.36), diastolic (the p value = 0.58, SD 7.3, CI 0.02-0.47), and temperature (the p value = 0.48, SD 42.9, CI -0.34-0.18). However, there is no relationship between trait axiety with systolic (the p value = 0.66, SD 10.8, CI -0.18-0.26), diastolic (the p value = 0.60, SD 7.3, CI -0.96-0.22), and temperature (the p value = 0.28, SD 42.9, CI -0.32-0.52) (Table 4).

**Table 4. The Relationships between Anxiety, Depression and Vital Signs**

| | Systolic | | | Diastolic | | | Temperature | | | Pulse | | | Respiration | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P-value | SD | CI | P-value | SD | CI | P-value | SD | CI | P-value | SD | CI | P-value | SD | CI |
| **Anxiety** | | | | | | | | | | | | | | | |
| State anxiety | 0.71 | 10.8 | -0.03–0.36 | 0.58 | 7.3 | 0.02–0.47 | 0.48 | 42.9 | -0.34–-0.18 | 0.00 | 10.8 | 0.20–0.56 | 0.00 | 5.6 | 0.27–0.59 |
| Trait anxiety | 0.66 | 0.8 | -0.18–0.26 | 0.60 | 7.3 | -0.96–0.22 | 0.28 | 42.9 | -0.32–0.52 | 0.00 | 10.8 | 0.16–0.61 | 0.00 | 2.4 | 0.18–0.68 |
| **Depression** | 0.03 | 10.8 | -0.14–0.58 | 0.37 | 7.3 | -0.13–0.33 | 0.60 | 42.9 | -0.92–0.11 | 0.00 | 10.8 | 0.30–0.73 | 0.00 | 2.4 | 0.15–0.68 |

It is also found that there is no relationship between anxiety and blood pressure and between anxiety and temperature. However, there is a relationship between state/trait anxiety and pulse and between state/trait anxiety and respiration.

In addition, there is a relationship between depression and pulse (the p value = 0.00, SD 10.8 and CI 0.30-0.73) and depression with respiration (the p value = 0.03, SD 10.8, CI -0.14-0.58) (Table 4). It is found that there is no relationship between depression among postpartum mothers and systolic (the p value = 0.03, SD 10.8, CI -0.14-0.58); diastolic (the p value = 0.37, SD 7.3, CI -0.13-0.33); temperature (the p value = 0.60, SD 42.9, CI -0.92-0.11).

Moreover, there is a relationship between anxiety, depression with pulse and respiration. However, no relationship is found between anxiety, depression with blood pressure, and temperature.

## DISCUSSION

The study's data show that in terms of parity, most respondents, as many as 22 mothers (36.7%), had given birth once, slightly followed by 21 mothers (35%) who had given birth twice. This is closely related to the Indonesian Family Planning Program designed by National Population and Family Planning Board with the campaign "Two Children Are Enough". The research conducted by Wibisono (2018) found that more pregnancies mean more anxiety. It also found that most postpartum mothers experience moderate anxiety with the first and second children, and postpartum mothers' anxiety is often associated with their job. Housewives are pressured by working on multiple tasks at home and becoming role models for their children (Dibaji et al., 2017), and the support from family can help a postpartum mother (Natalia & Rustina, 2020).

Thermoregulation is the physiological function of the body to maintain a constant body temperature. A mild rise in temperature may occur in the first 24 hours after labor, but mothers' temperature is still within normal limits during puerperium (Debora, 2017). The average temperature for postpartum mothers is 36.3, and this temperature is still in the normal range of 36.5°C - 37.5°C. According to (Debora, 2017), normal blood pressure is 120/80 mmHg with cysteine in the range of 100-140 mmHg and diastole in the range of 60-90 mmHg. This study found that the systolic mean was 116 mmHg, and the diastolic mean 81,4 mmHg. A few days after the labor, blood pressure, heart rate, oxygen consumption, and the total amount of fluid will generally return to normal (Reeder et al., 2011). This study shows that mean of the pulse was 83,3 times per minute, and the respiration rate mean was 21 times per minute.

This study found that postpartum mothers feel anxiety shows worry, confusion, sadness, and a problem with sleep patterns. Anxiety is divided into two types, namely state anxiety and trait anxiety. State anxiety occurs when one is experiencing a threatening situation. The longer one feels threatened, the more prolonged state anxiety occurs. Thus, its duration will depend on how one feels.

On the other hand, trait anxiety is commonly considered natural because it is part of one's personality. If trait anxiety is high, one can feel highly threatened by things that can make one fail. One's self-esteem can also be threatened. Meanwhile, maternal state anxiety arises when a woman is pregnant. She may feel worried about the delivery, the readiness to be a parent, and the baby's health (Budiyono, 2018). Anxiety is often linked to assumptions about motherhood, as evidenced by avoidance and inhibition (Stuart, 2016). Women may also worry about the possibility of having a child with special needs (Mulya et al., 2019).

Some conditions of postpartum mothers above affect the psychology of the mother. These psychological factors potentially cause depression among postpartum mothers, affecting their brains. Mothers with spontaneous delivery have a higher increase in oxygen levels than mothers with cesarean delivery (Pawluski et al., 2017). The

increased oxygen levels can be caused by smooth blood flow. With increased oxygen levels, postpartum mothers will become more relaxed. Increased respiration can also be affected by stressors. The endocrine system activated by the body releases the thyroxin hormone and results in increased respiration (Arini et al., 2017). Respiration, pulse, and oxygen level distributed through the body are influenced by mothers' tension  (Wahyuni & Putri Parendrawati, 2013).

Women who experience stress and pressure during pregnancy have a risk of suffering from depression after labor. Additionally, violence, smoking before and during pregnancy, and child death can also lead to depression during pregnancy or after childbirth (Bauman et al., 2020).

Postpartum depression can be caused by various aspects, namely biological, psychosocial and situational stress, personal or family depression background, and social support both during pregnancy and after childbirth (Mitayani, 2009). Another research found that women with postpartum depression were two times more likely to experience depression four years after childbirth and significantly more likely to experience chronic diseases (Abdollahi & Zarghami, 2018).

Based on this study, the effects of anxiety and postpartum depression can be long-term and affect daily life, and then health workers need to anticipate these cases by monitoring the initial vital signs. Kuo's research (2016) showed that acupressure affects postpartum mothers' anxiety levels and blood pressure, either systolic or diastolic, especially postpartum mothers who are given acupressure interventions after cesarean procedure. Permana et al. (2020) also found that yoga exercise can reduce vital signs. However, in this study, researchers only collected the vital sign of postpartum mothers without any intervention. This confirms that additional complementary therapy can reduce the incidence of anxiety and depression in postpartum mothers.

## CONCLUSION

There is a relationship between anxiety, depression, and vital signs among postpartum mothers. The majority of postpartum mothers in Yogyakarta experienced state and trait anxiety. Postpartum mothers are highly recommended to continue regular control physically and psychologically to prevent postpartum anxiety and depression.

Health services through primary health care centers or regional hospitals need to monitor vital signs to anticipate anxiety and depression in postpartum mothers. This can be more possible if they are given additional complementary therapy. Researchers can further research postpartum mothers' psychosocial factors, situational stress, and social and family support, which are not observed in this study.

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