

# The Relationship Between Sleep Quality And Depression During The Third Trimester Of Pregnant Women In The Public Health Center In Bengkulu City

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**Abstract** — Sleep disturbance is one of the most frequent and persistent complaints about pregnant women. More than 72% of pregnant women reported frequent experience awakening during the night. Poorer sleep quality is more common in late pregnancy. According to conducted research, the poor quality of sleep in pregnancy is directly related to depressive symptoms. Risk of depression increased with the changes in sleep pattern. Depression is the fourth most serious health problem in the world. This study aims to know the relationship between sleep quality and depression during the third trimester of pregnant women.

The design used is a *cross-sectional* study with an observational, analytical approach. The subject group performed on 95 pregnant women with accidental sampling. The research instrument was a PSQI (Pittsburgh Sleep Quality Index) and a BDI (Beck's Depression Inventory) questionnaire.

The analysis used univariate, bivariate and multivariate. Factors associated with sleep quality and depression were analyzed with *the chi-square test*. The result showed that there was a significant relationship between the quality of sleep and depression in the third trimester of pregnant women ( $p=0,000$ ). This study reveals that sleep problems are prospective risk factors for increases in depressive symptoms in the third trimester of pregnancy, and it can cause depression. Screening for sleep quality disorders during pregnancy should be part of routine prenatal check-ups to prevent depression in pregnant women.

**Keywords** — *sleep quality, depression*

## I. INTRODUCTION

Pregnancy has special conditions that can affect sleep pattern, which about 2/3 of pregnant women have abnormal sleep pattern which can cause disorders during pregnancy and after delivery for the mother and fetus [1]. Changes in sleep patterns during pregnancy might range from 13% to 80% in the first trimester and from 66% to 97% in the third trimester [2].

According to the National Sleep Foundation (2007), 79% of pregnant women experience some form of sleep disorder. More than 72% of pregnant women reported frequent experience awakening during the night [3]. There are hormonal changes that happen in hormonal level during pregnancy, which affects the function of

different systems of mothers [4]. Hormonal changes not only directly affect the sleep-wake cycle and sleep structure, but it also causes specific physical and changes that may lead to sleep disorder [5].

Pien and Schwab said that sleep is an essential and significant behavior, which is affected by many physiological or pathological changes in the pregnancy period. Hormonal and physical changes that occur during pregnancy, increasing respiratory problems as a result of pressure that growing fetus makes to the diaphragm and some disease like nocturia, back pain, leg cramps, and restless leg syndrome effect sleep habits and sleep quality. Besides, other factors that affect sleep habits and sleep psychiatric conditions such as anxiety and depression [6].

Depression is a form of affective/mood disorder which is characterized by moodiness, lethargy, lack of passion, useless feelings, and despair. A person is said to be depressed if the person is experiencing a disruption in the physical (somatic) or psychic so that it interferes with daily life functions at home, school/campus, workplace or in the social environment [7].

Poor sleep quality is associated with depressive symptoms, because of physical symptoms at early to middle second trimester would predict depressive symptoms in the last trimester, both directly and via poor sleep quality [8]. Depression leads to complications in mother and neonate after delivery and is associated with the birth of premature and low birth weight infants [9].

Based on the background above makes researchers interested in identify the relationship sleep quality of pregnant women with depression in The Public Health Center in Bengkulu City.

**II. MATERIALS AND METHODS**

This study is a cross-sectional study carried out at the Public Health Center in Bengkulu City in January 2018. The population was all pregnant women of the third trimester (28-42 weeks of gestation). The sample size was determined by the Lemeshow formula, using accidental sampling technique. Finally, the sample size was determined 95. There is three variable in this research; dependent variable (depression), the independent variable (sleep quality) and confounding (age, parity, and work).

Subjective sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI), a self-rating questionnaire that measures sleep quality and disturbance retrospectively over one month. This PSQI scoring method produces an overall score between 0 and 21, with higher scores indicating poorer sleep quality [10]. Parameters to assess the severity of symptoms of depression was measured by Beck's Depression Inventory (BDI). The higher the score, the greater the depression with 30-63 is the highest level of depression.

**Table 1**  
**Frequency Distribution of Sleep Quality, Depression, Age, Parity and Occupation of Pregnant Women in the Public Health Center in Bengkulu City**

Variable	Frequency (n=95)	Percentage (%)
<b>Sleep quality</b>		
Poor	58	61.1%
Good	37	38.9%
<b>Depression</b>		
Yes	66	69.5%
No	29	30.5%
<b>Age</b>		
Risk	36	37.9%
Not risk	59	62.1%
<b>Parity</b>		
Primiparous/grandemulti	81	85.3%
Multiparous	14	14.7%
<b>Work</b>		
Yes	60	63.2%
No	35	36.8%

**III. RESULTS**

Based on table 1 the univariate analysis of sleep quality variables from 95 the third trimester of pregnant women is 58 (61.1%) experienced poor sleep quality. While the univariate analysis of depression is 66 people (69.5%), women at risk age are 36 people (37.9), primiparous women are 81 people (85.3%), and working women are 60 people (63.2%).

Univariate analysis was carried out to obtain an overview of the frequency distribution of the frequency of sleep quality, depression, age, parity and employment in pregnant women.

**Table 2**  
**The Relationship Sleep Quality, Age, Parity and Work with depression in Third Trimester of Pregnant Women in the Public Health Center in Bengkulu City**

Variable Independen	Category	Depression		
		N	%	p
<b>Sleep quality</b>	Poor	55	94.8%	0,000
	Good	11	29.7%	
<b>Age</b>	Risk	35	97,2%	0,000
	Not risk	31	52,5%	
<b>Parity</b>	Primiparous/grandemulti	60	74,1%	0,024
	Multiparous	6	42,9%	
<b>Work</b>	Yes	49	81,7%	0,001
	No	17	48,6%	

Based on table 2, the result of the bivariate analysis that most of the pregnant women who had poor sleep quality (94.8%) is depressed with results showed  $p = 0.000 < 0.05$  so it can be concluded that there were significant relations in sleep quality and depressions. While the result showed that more than half pregnant women in risk age, (<20 and >35 old) (97.2%) is depressed with

$p = 0.000 < 0.05$ ; primiparous (74.1%) is depressed with  $p = 0.024 < 0.05$ ; and working women (81.7%) is depressed with  $p = 0.001 < 0.05$ . There was significant relations in risk age, primiparous and working women with the incident of depressions.

In table 3, the result of the multivariate analysis in stage 1, there is one variable which does not have a meaningful relationship. The variable of work has p-value = 0.382 > 0.25.

While the result of the multivariate analysis in stage 2, there is a meaningful relationship in sleep quality, age, and parity with the incidence of depression.

**Table 3**  
**Analysis of Factors that Influence the Incidence of depression in the Third Trimester of Pregnant Women in the Public Health Center in Bengkulu City**

Stage 1	Variable	p	Exp(B)	CI 95%	
				Lower	Upper
	Sleep quality	0,000	98,856	10,782	906,367
	Age	0,013	17,815	1,827	173,755
	Parity	0,036	17,734	1,212	259,560
	Work	0,382	2,113	0,395	11,305

  

Stage 2	Variable	p	Exp(B)	CI 95%	
				Lower	Upper
	Sleep quality	0,000	88,314	10,207	764,142
	Age	0,006	22,046	2,380	204,246
	Parity	0,016	24,039	1,806	319,954

**IV. DISCUSSION**

**1. Characteristic of Variables in the third trimester of pregnant women in the Public Health Center in Bengkulu City**

The results of the univariate analysis of sleep quality variable indicate that from 95 third trimester of pregnant women is 58 people (61.1%) experienced poor sleep quality. This study was supported by the study of Da Costa [11] which states that sleep disorders begin to occur early in pregnancy and worsen at the end of pregnancy. The cause of poor sleep quality is due to an increase in the frequency of urination, difficulty in breathing, overheating or stifling. It is supported by research according to the National Sleep Foundation that the third trimester is the most challenging stage of sleep from pregnancy.

The results of the univariate analysis of the depression variable indicate that pregnant women are 66 people (69.5%) experienced depression. This study was supported by the study of Field [12] states that babies born to mothers who experience depression due to sleep disturbances during pregnancy have little deep sleep. It can cause depression and stress that affect the fetus they contain. Mild stress causes the fetus to experience an increase in heart rate, but stress that is classified as severe and long will make the fetus hyperactive.

The results of the univariate analysis of the age variable indicate that pregnant women are 36 people (37.9%) experienced risk age. This study was supported by a study of Ariani AV [13] that age is one of the factors that influence maternal health status during pregnancy. Pregnant women with a relatively young age or too old tend to be easier to experience health complications compared to mothers with a healthy reproductive period of 20-35 years. Closely related to the maturity of reproductive cells, the level of work of reproductive organs, the level of stress and depression and the level of knowledge and understanding of mothers regarding nutrition fulfillment during pregnancy.

The results of the univariate analysis of parity variable indicate that pregnant women are 81 people (85.3%) in primiparous. This study was supported by the study of Ariani AV [13] which states that primigravida parity was the first time experience so that the third trimester was felt more worrying because it was closer to the labor process than there was a significant relationship between gravidity and stress and depression levels of pregnant women.

The results of the univariate analysis of the work variable indicate that from 95 third trimester of pregnant women is 60 people (63.2%) in primiparous. This study was supported by the study of Ariani AV [13] which states that various work demands cannot be avoided by pregnant women who decide to keep working. Pregnant women who work must still complete the work, while babies in the womb and themselves need to be taken care. It can cause psychological stress or stress for pregnant women.

**2. The relationship of research variables with depression in the third trimester of pregnant women in the Public Health Center in Bengkulu City**

The relationship of research result showed that variables with depression and obtained poor sleep quality p-value = 0.000 < 0.05 meaning that there were significant relations with depressions. While the result showed more than half pregnant women in risk age p-value = 0.000 < 0.05; primiparous p-value = 0.024 < 0.05; and working women p-value = 0.001 < 0.05. There were significant relations in risk age, primiparous and working women with the incident of depressions. The results of the study supported by the study of Hua Ko [14] from 150 third trimester of pregnant women in Taiwan that 27.3%-36.0% of the highest prevalence of depression occurred in pregnant women who had poor sleep quality. Pregnant women suffer more from poor sleep quality than non-pregnant mothers. Poor sleep quality of pregnant women is associated with stress and depression.

### 3. Factors that influence the incidence of depression

From the results of research that has been done to find out factors that influence the incidence of depression are sleep quality with  $p = 0,000$ ; age  $p = 0.006$  and parity  $p = 0.016$ . Impaired sleep quality in the third trimester of pregnant women can occur as a result of various pregnancy problems such as lumbago, heartburn, and the desire to urinate continuously. Besides, disturbances in sleep patterns in pregnant women are also caused by psychological conditions and fetal activity in the womb. The fetus that continues to develop every month will reach the peak of development at the gestational age of the third trimester.

### V. CONCLUSION

The result of this study indicates that sleep problem happened in the third trimester of pregnant women in the Public Health Center in Bengkulu City. Sleep disturbances had relations with the incidence of depression. However, further investigations are needed to determine whether poor sleep may be associated with depression and pregnancy outcomes.

In our study evaluating sleep quality and related factors in the incidence of depression, we hope that there will be screening to prevent sleep disorder and its unpleasant physical and mental consequences.

### ACKNOWLEDGMENT

We express thank the mothers who participated in this survey and Public Health Center in Bengkulu City which has given a chance to collect the data. The authors would also like to acknowledge the midwives in Bengkulu City, for their help in data collection.

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