

Risk Factors of Postpartum Depression at Dr. Moewardi Hospital, Surakarta

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ABSTRACT

Background: Postpartum depression is one of the emotional disturbances that results from failure to postpartum psychological adaptation process. The global prevalence of postpartum depression is 10-15%. This study aimed to analyze the risk factors of pregnancy on the incidence of postpartum depression.

Subjects and Method: This was an analytic and observational study with a cross-sectional design. The study was conducted at Dr. Moewardi hospital, from December 2017 to January 2018. A total sample of 150 postpartum mothers was selected for this study by exhaustive sampling. The dependent variable was postpartum depression (PPD). The independent variables were maternal age, stress, parity, unwanted pregnancy, type of labor, family income, family support, and domestic violence. The data were collected by questionnaire and analyzed by path analysis model.

Results: Postpartum depression was directly and positively affected by psychological stress ($b=2.15$; 95% CI= 1.17 to 3.13; $p<0.001$), delivery type ($b=1.27$; 95% CI= 0.32 to 2.21; $p=0.008$), and unwanted pregnancy ($b=1.57$; 95% CI= 0.57 to 2.58; $p=0.002$). Postpartum depression was directly but negatively affected by family income ($b=-1.52$; 95% CI= -2.51 to -0.54; $p=0.002$), parity ($b=-1.24$; 95% CI= -2.21 to -0.28; $p=0.011$), and family support ($b=-1.31$; 95% CI= -3.28 to -0.24; $p=0.016$). Psychological stress increased with domestic violence ($b=2.68$; 95% CI= 0.64 to 4.73; $p=0.010$) and decreased with maternal age ($b=-0.91$; 95% CI= -1.68 to -0.13; $p=0.022$). Parity increased with maternal age ($b=1.66$; 95% CI= 0.79 to 2.53; $p<0.001$). Domestic violence decreased with maternal age ($b=-1.34$; 95% CI= -2.85 to 0.16; $p=0.081$).

Conclusion: Psychological stress, delivery type, unwanted pregnancy, family income, parity, and family support, are direct risk factors for postpartum depression.

Keywords: Postpartum depression, unwanted pregnancy, domestic violence, family support

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BACKGROUND

Pregnancy, childbirth, and being a mother, is a physiological process. Most women consider this process to be a pleasant phase of transition at a new stage in its life cycle. But this phase can be an undesirable process as a result of emotional disturbance during the post-partum period. One of the emotional disturbances in postpartum women is postpartum depression. Postpartum depression is a disturbance of feelings

experienced by postpartum mothers as a result of failure in acceptance of psychological adaptation processes (Kenwa, Karkarta and Triyani, 2015).

The global prevalence of postpartum depression is 10-15%. The prevalence of postpartum depression in Asian countries is high and varies with incidence rates of 26-85%. Prevalence of postpartum depression in Indonesia is 50-70% of postpartum mothers (Taherifard *et al.*, 2013).

Postpartum depression can interfere with mother and infant interaction. Postpartum depression impairs maternal social function and quality of life. Postpartum depression can also result in short-term and long-term psychological disturbances that affect mother, child, husband, or other family members. In turn, it can impair mother and child love relationship, maternal attention in caring, nurturing, and raising children. Therefore, postpartum depression can adversely affect maternal and child health (Indriasari, 2017).

Depression can be easily recognized. But the mildest form of depression or slow appearance is often missed by patients and health workers because it is considered normal. Mothers with postpartum depression are often difficult to detect because they are reluctant to report symptoms of depression to health workers. A major problem in the treatment of postpartum depression is delayed early detection so that the patient does not receive adequate treatment (Patel *et al.*, 2012).

A person's age can affect pregnancy. Pregnant women in the reproductive period have a smaller likelihood of having complications than women who are pregnant below or above the reproductive age (Marmi, 2014).

Family income is the amount of income earned by all members of the house and is used to meet the needs of the household. Family income may have an effect on the incidence of postpartum depression (Suparyanto, 2014).

Family support is an emotional bond between the family and the people around the mother. Forms of family support are emotional, informational, instrumental, and appraisal support (Motzfeldt *et al.*, 2013).

Domestic violence is a maltreatment committed by husbands to their wives during pregnancy, whether physical, psychological, sexual, or economic violence (Janiwarty and Pieter, 2013).

The type of labor is divided into spontaneous/ normal labor and Caesarean section. Mothers with labor complication are at risk of developing postpartum depression (Oktarina, 2016; Ariyanti *et al.*, 2016).

Unwanted pregnancy is one that is out of the will of the mother for a cause, whose existence is not desired by either party or both (Dewi and Sunarsih 2011).

Psychological stress is an event that forces a person to make adjustments or adaptations to the conditions experienced (Mashudi, 2013). Postpartum depression is a disturbance of feelings experienced by postpartum mothers as a result of failure in acceptance of the process of psychological adaptation (Kenwa *et al.*, 2015).

The purpose of this study was to analyze the effects of age, family support during pregnancy, family income, domestic violence during pregnancy, type of labor, parity, unwanted pregnancy, and psychological stress on the incidence of postpartum depression.

SUBJECTS AND METHOD

1. Study Design

This was an analytic observational study with cross-sectional design.

2. Study Population and Sample

The study was conducted at Dr. Moewardi Hospital, Surakarta, from December 2017 to January 2018. A total sample of 150 postpartum mothers day 1-10 was selected for this study by exhaustive sampling.

3. Study Variables

The dependent variable was postpartum depression. The independent variables were maternal age, psychological stress,

parity, unwanted pregnancy, delivery type, family income, domestic violence, and family support.

4. Operational Definition of Variable

Maternal age was defined as the length of time the study subject lived from birth to the time of the study. Data on maternal age was collected by questionnaire. Measurement scale was continuous, but for the purpose of data analysis it was transformed into dichotomous coded as follows, i.e. 0 for age <35 years old and 1 for age ≥35 years old.

Family income was defined as the amount of income (in Rupiah) earned by all family members used for the fulfillment of daily needs, derived from self-employment, work on others, or other sources. Data on family income was collected by questionnaire. The measurement scale was continuous, but for the purpose of data analysis it was transformed into dichotomous coded as follows, i.e. 0 for low family income <Rp 1,534,985 and 1 for high family income ≥Rp 1,534,985.

Family support was defined as an emotional bond between the family and the people around the mother. Forms of family support are emotional, informational, instrumental, and appraisal support. The data was collected by questionnaire. Measurement scale was continuous, but for the purpose of data analysis it was transformed into dichotomous coded as follows, i.e. 0 for weak family support and 1 for strong family support.

Domestic violence was defined as the persecution perpetrated by husbands against wives during pregnancy, whether physical, psychological, sexual, or economic violence. Measurement scale was continuous, but for the purpose of data analysis it was transformed into dichotomous coded as follows, i.e. 0 for not experiencing domestic violence and 1 for experiencing domestic violence.

Delivery type was defined as the type of delivery process of a baby and the placenta, membranes, and umbilical cord from the uterus. The data were taken from the maternal and child monitoring book. Measurement scale was dichotomous, i.e. 0 for normal labor and 1 for Caesarean section.

Parity was defined as the number of children born by study subject. Parity was measured by questionnaire. The measurement scale was dichotomous, i.e. 0 for primipara and 1 for multipara.

Unwanted pregnancy was defined as one that is out of the will of the mother for a cause, whose existence is not desired by either party or both. The data was collected by questionnaire. The measurement scale was dichotomous, i.e. 0 for wanted pregnancy and 1 for unwanted pregnancy.

Psychological stress was defined as a condition experienced by postpartum mother when there was a discrepancy between the demands received with the ability to overcome it, resulting in psychological pressure. Psychological stress was measured by Kessler Psychological Distress Scale. The measurement scale was continuous, but for the purpose of data analysis it was transformed into dichotomous coded as follows, i.e. 0 for not experiencing psychological stress (score <20) and 1 for experiencing psychological stress (score ≥20).

Postnatal depression was defined as a psychological adaptation disorder that occurs in postpartum mothers within seven days to one month after delivery. Postpartum depression would result in postpartum mothers being unable to care for themselves and their babies, even to commit suicide. Postpartum depression was measured by Edinburgh Postnatal Depression Scale questionnaire. The measurement scale was continuous, but for

the purpose of data analysis it was transformed into dichotomous coded as follows, i.e. 0 for not experiencing postpartum depression (score <10) and 1 for experiencing postpartum depression (score ≥10).

5. Study Instrument

The data were collected by questionnaire and maternal and child health monitoring book.

6. Data Analysis

The data were analyzed using univariate, bivariate by Chi Square test, and multivariate path analysis.

7. Research Ethics

The research ethics clearance for this study was obtained from the Research Committee at Dr. Moewardi Hospital. Research ethics included informed consent, anonymity, and confidentiality.

RESULTS

1. Study subject characteristics

Table 1 showed that 111 mothers (74.0%) aged <35 years. As many as 78 mothers (52.0%) were multiparous. As many as 122 mothers (81.3%) were in the puerperium (the first to the second day).

Table 1. Study subject characteristics

Characteristics	n	%
Maternal age		
< 35 years	111	74.0
≥ 35 years	39	26.0
Parity		
< 2 (primiparous)	72	48.0
≥ 2 orang (multiparous)	78	52.0
Puerperium day		
Day 1 - 2 (taking in phase)	122	81.3
Day 3 - 10 (letting go phase)	28	18.7
Maternal education		
< Senior high school	68	45.3
≥ Senior high school	82	54.7
Maternal employment		
Working at home	89	59.3
Working outside the house	61	40.7
Maternal religion		
Muslim	150	100.0
Non-muslim	0	0
Family income		
< minimum regional wage	99	66.0
≥ minimum regional wage	51	34.0

Table 2 showed that most of the study subjects had high education level ≥senior high school (54.7%), 89 mothers (59.3%) working at home, and family income <minimum regional wage (66.0%). All of the mothers were Muslim (100%). Half of the study subjects did not experience postpartum depression (52%) and multiparous

78 (52.0%). As many as 89 (59.3%) mothers wanted their pregnancy, 90 (60%) mothers had psychological stress, 128 (85.3%) mothers did not experience domestic violence, mothers labor with complication 84 (56.0%), and 103 (68.7%) mothers received strong family support during pregnancy.

2. Univariate analysis

Tabel 2. Univariate analysis of study subjects

Variable	Category	Frequency	Percentage (%)
Maternal age	< 35 years	111	74.0
	≥ 35 years	39	26.0
Family income	<Minimum regional wage	99	66.0
	≥Minimum regional wage	51	34.0
Family support	Weak	47	31.3
	Strong	103	68.7
Domestic violence	Not experiencing domestic violence	128	85.3
	Experiencing violence	22	14.7
Delivery type	Normal	66	44.0
	Sectio caesarea	84	56.0
Parity	Primipara	72	48.0
	Multipara	78	52.0
Unwanted Pregnancy	No	89	59.3
	Yes	61	40.7
Psychological stress	Low	60	40.0
	High	90	60.0
Postpartum depression	No	72	48.0
	Yes	78	52.0

2. Bivariate analysis

Table 3 showed the results of bivariate analysis on the effect of each independent

variable on the dependent variable using Chi-Square test.

Tabel 3. Bivariate analysis on the effect of each independent variable during pregnancy on postpartum depression

Variable	Category	Postpartum depression				OR	95% CI		p
		No		Yes			Lower limit	Upper limit	
		n	%	n	%				
Maternal age	<35 years	52	46.8	59	53.2	0.44	0.21	0.95	0.033
	≥35 years	26	66.7	13	33.3				
Family income	<minimum regional wage	42	42.4	57	57.6	0.31	0.15	0.63	0.001
	≥minimum regional wage	36	70.6	15	29.4				
Family support	Weak	14	29.8	33	70.2	0.26	0.12	0.54	<0.001
	Strong	64	62.1	39	37.9				
Domestic violence	No	77	60.2	51	39.8	31.71	4.14	243.12	<0.001
	Yes	1	4.5	21	95.5				
Delivery type	Normal labor	46	69.7	20	30.3	3.74	1.88	7.42	<0.001
	With complication	32	38.1	52	61.9				
Parity	Primipara	30	41.7	42	58.3	0.45	0.23	0.86	0.015
	Multipara	48	61.5	30	38.5				
Unwanted Pregnancy	Yes	61	68.5	28	31.5	5.64	2.76	11.54	<0.001
	No	17	27.9	44	72.1				
Psychological stress	Low	50	83.3	10	16.7	11.07	4.91	24.95	<0.001
	High	28	31.1	62	68.9				

The result of bivariate analysis showed that postpartum depression decreased with maternal age, family income, family

support, and parity. Postpartum depression increased with domestic violence, delivery

type, unwanted pregnancy, and psychological stress.

2. Multivariate Analysis

Figure 1 showed the goodness of fit of the model after respecification on the path

analysis using the Stata 13 program. Statistics of path analysis can be seen in Table 4.

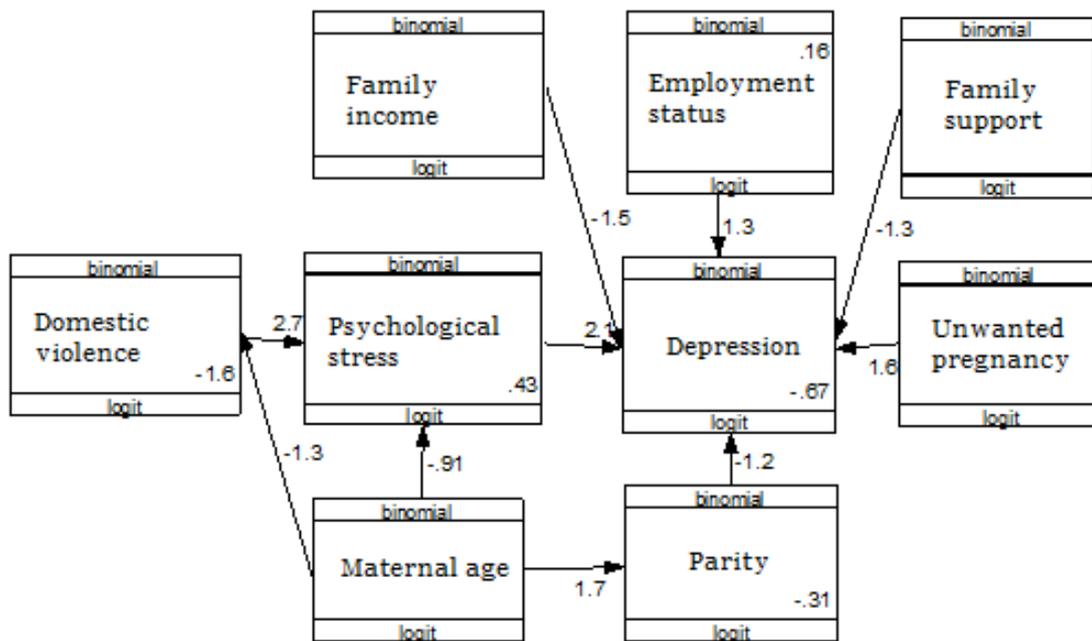


Figure 1. Fit model and parameter estimation of path analysis

Table 4. Path analysis on the effect of risk factors during pregnancy in postpartum depression

Dependent Variable	Independent Variable	b	95% CI		p
			Lower limit	Upper limit	
Direct effect					
Postpartum depression	← Psychological stress	2.15	1.17	3.13	<0.001
Postpartum depression	← Family income	-1.52	-2.51	-0.54	0.002
Postpartum depression	← Parity	-1.24	-2.21	-0.28	0.011
Postpartum depression	← Delivery type	1.27	0.32	2.21	0.008
Postpartum depression	← Family support	-1.31	-2.38	-0.24	0.016
Postpartum depression	← Unwanted pregnancy	1.57	0.57	2.58	0.002
Indirect effect					
Psychological stress	← Maternal age	-0.91	-1.68	-0.13	0.022
Psychological stress	← Domestic violence	2.68	0.64	4.73	0.010
Parity	← Maternal age	1.66	0.79	2.53	<0.001
Domestic violence	← Maternal age	-1.34	-2.85	0.16	0.081

Postpartum depression increased with psychological stress (b= 2.15; 95% CI= 1.17 to 3.13; p<0.001), unwanted pregnancy (b= 1.57; 95% CI= 0.57 to 2.58; p= 0.002),

and delivery type (b= 1.27; 95% CI= 0.32 to 2.21; p= 0.008).

Postpartum depression decreased with maternal age (b= -0.91; 95% CI= -1.68 to -0.13; p= 0.022), parity (b= -1.24; 95%

CI= -2.21 to -0.28; $p= 0.011$), higher family income ($b= -1.52$; 95% CI= -2.51 to -0.54; $p= 0.002$), and stronger family support ($b= -1.31$; 95% CI= -3.28 to -0.24; $p= 0.016$).

Psychological stress increased with domestic violence ($b= 2.68$; CI 95%= 0.64 hingga 4.73; $p= 0.010$). Parity increased with maternal age ($b= 1.66$; 95% CI= 0.79 to 2.53; $p<0.001$). Domestic violence decreased with maternal age ($b= -1.34$; 95% CI= -2.85 to 0.16; $p= 0.081$).

DISCUSSION

1. The effect of maternal age on postpartum depression

The results of path analysis in this study showed the relationship between maternal age and postpartum depression through parity. The effect is positive and statistically significant.

The higher maternal age, the higher the parity. The higher the parity, the lower the postpartum depression, because multiparous mothers have more experience in taking care of children than primiparous mothers. In addition, mothers aged ≥ 35 years have a better coping mechanism to manage psychological stress so as to reduce psychological stress.

This study showed that postpartum depression was affected by maternal age and psychological stress. Mothers aged ≥ 35 years were less likely to experience domestic violence, because young mothers are unable to make good decision, so that the husbands dominate the family. If domestic violence is persistent without treatment, the mother will experience postpartum depression.

This finding is consistent with Kusuma (2017) which reported that primiparous mother had a higher risk of postpartum depression than multiparous mother. A total of 47.1% study subjects

aged 21-35 years had the risk of postpartum depression.

2. The effect of family income on postpartum depression

This study indicated that postpartum depression was directly and negatively affected by family income. Mothers with higher family income are less likely to have depression postpartum. Family income is a crucial thing that can affect a person's health. The higher family income, the better health condition.

Likewise, family income affects the health of postpartum mothers. Postpartum mothers with high family income are more able to meet their needs. Conversely, postpartum mothers with low family income have difficulty meeting their daily needs, which in turn impact on postpartum depression.

This study supported Dewi and Sunarsih (2011) that the financial factors affect the health of pregnant women. Pregnant women with low incomes are prone to illness, stress, and postpartum depression.

3. The effect of family support on postpartum depression

This study showed that postpartum depression was affected by family support. Mothers who received strong family support were less likely to experience postpartum depression than women who received weak family support.

In this study, most mothers under study received strong family support. Most mothers were less likely to experience postpartum depression because they got motivation from the family so that they felt calm and comfortable.

Support is the most powerful and consistent personal predictor of personal adjustment. The family is the primary source of support for postpartum women's health (Reid and Taylor, 2015).

4. The effect of domestic violence on postpartum depression

This study indicated that postpartum depression was indirectly affected by domestic violence through psychological stress. Mothers who experienced domestic violence were more likely to experience postpartum depression than those who did not experience domestic violence.

Mothers who experience domestic violence during pregnancy will experience physical and psychological stress. If left untreated until delivery time, they may experience postpartum depression.

Domestic violence occurs about 7-11% of pregnant women. Its effect on pregnant women can be either direct or indirect. Direct forms of domestic violence include trauma and physical injury to the mother and baby, for example, placental abruption, bone fracture, uterine rupture, and bleeding. Indirect forms of domestic violence are emotional reaction, anxiety, depression, and susceptibility to disease. Domestic violence can be a stressor either before or after childbirth, which may lead to postpartum depression (Dewi and Sunarsih, 2011).

5. The effect of delivery type on postpartum depression

This study showed that postpartum depression was directly and positively affected by delivery type. Mothers with labor complications were more likely to develop postpartum depression than those with normal delivery.

Mothers at risk of complicated pregnancy are encouraged to give Caesarian delivery. But Caesarean delivery heals longer than normal delivery, which can delay maternal recovery to daily activity and in turn increase the likelihood of stress and postpartum depression.

This finding is consistent with Mathisen et al. (2013), which put that

mothers tend to assume that Caesarean delivery is a source of fear, stress, and trauma that can cause postpartum depression.

6. The effect of parity on postpartum depression

The study showed that postpartum depression was affected by parity. Multiparous mothers were less likely to experience postpartum depression than primiparous mother. This finding is consistent with Ibrahim et al. (2012), which reported that primiparous mothers experience higher postpartum depression than multiparous mothers. It is because multiparous mothers have experienced previous labor that reduces postpartum depression. On the other hand, labor event and being a mother with an infant caring role are new to primiparous mothers (Rusli et al., 2011). According to Dira and Wahyuni (2016), approximately 50-60% of mothers experience postpartum depression when they have their first child.

7. The effect of unwanted pregnancy on postpartum depression

This study showed that postpartum depression was affected by unwanted pregnancy. Mothers who underwent unwanted pregnancy were more likely to experience postpartum depression. Mother will become more indifferent to her pregnancy if it is not expected, which can increase the risk of postpartum depression (Alligood, 2013).

8. The effect of psychological stress on postpartum depression

Postpartum depression was positively affected by psychological stress during pregnancy. Pregnant mothers with psychological stress were more likely to experience postpartum depression. The psychological stress causes mothers to become incapable of adjusting her new role as a mother, which if left untreated can lead to

postpartum depression.

Herlina (2014) found that psychological stress during pregnancy arises due to family problems, such as changes in the living environment, family income hardship, and excessive workload. Excessive stress condition increases production of stress hormone, increases anxiety, reduces the coping mechanism, and increases postpartum depression (Fairus *et al.*, 2014).

This study concludes that the risk of postpartum depression is affected by maternal age, parity, psychological stress, type of labor, unwanted pregnancy, family income, domestic violence, and family support.

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