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Prevalence of depression in 4-6 weeks postpartum period and related factors among mothers of infants in Neonatal Intensive Care Unit (NICU), King Chulalongkorn Memorial Hospital

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Objective : *To examine the prevalence of depression in 4-6 weeks postpartum period and related factors among mothers of infants in Neonatal Intensive Care Unit (NICU), King Chulalongkorn Memorial Hospital.*

Design : *Descriptive study*

Method : *This study was conducted at King Chulalongkorn Memorial Hospital from October 2004 to March 2005. A total of 97 women, with their mean age of 28.1 years old, whose children were admitted to NICU were recruited. Demographic and pregnancy delivery data were obtained. Edinburgh Postnatal Depression Scale (EPDS), Maternal Anxiety Questionnaire, Life Stress Event Questionnaire, Marital Adjustment Questionnaire and The Personal Resource Questionnaire (PRQ part II) were completed by the participants within 1st week after delivery to evaluate the less severity self-limiting condition called Postpartum Blues, and the related factors. The Edinburgh Postnatal Depression Scale and The Personal Resource Questionnaire were readministered in 4-6 weeks after delivery for assessment of Postpartum Depression that is more severe and needed intervention.*

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Results : *Thirty four percent of subjects had depression. There were 5 factors significantly associated with depression in 4-6 weeks postpartum period. History of anxiety in 1st week postpartum, poor personal resources and unfulfilled expectation of infant gender were significantly associated with depression in 4-6 week postpartum period ($p < 0.05$). History of medical illness and history of depression in 1st week postpartum were significantly associated with depression in 4-6 week postpartum period ($p < 0.01$). Logistic regression analysis showed that unfulfilled expectation of infant gender, poor personal resources, and history of depression in 1st week postpartum were statistically associated with depression in 4-6 week postpartum period with adjusted odd ratio = 4.7 (95 % CI=1.3-16.4), 5.3 (95 %CI=1.1- 26.1), and 7.7 (95 % CI= 2.4-24.3) respectively.*

Conclusion : *Unfulfilled expectation of infant gender, poor personal resources, and a history of depression in 1st week postpartum were associated with depression in 4-6 week postpartum period among mothers of infants at the Neonatal Intensive Care Unit.*

Keywords : *Depression, Postpartum period, Neonatal Intensive Care Unit.*

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วัตถุประสงค์ : *เพื่อศึกษาความชุกของภาวะซึมเศร้าในช่วง 4-6 สัปดาห์หลังคลอด และปัจจัยที่เกี่ยวข้องของมารดาที่บุตรเข้ารับการรักษาในตึกทารกแรกเกิดวิกฤต โรงพยาบาลจุฬาลงกรณ์*

ระเบียบวิธีการวิจัย : *การเก็บข้อมูลในมารดาที่บุตรเข้ารับการรักษาในตึกทารกแรกเกิดวิกฤต โรงพยาบาลจุฬาลงกรณ์ได้ดำเนินการในช่วงเดือนตุลาคม พ.ศ. 2547 ถึงเดือนมีนาคม พ.ศ. 2548 จำนวน 97 ราย โดยกลุ่มตัวอย่างที่ศึกษามีอายุเฉลี่ย 28.1 ปี ได้มีการเก็บข้อมูลส่วนตัว ข้อมูลการตั้งครรภ์และการคลอด และให้กลุ่มตัวอย่างทำแบบวัดภาวะซึมเศร้าหลังคลอด แบบวัดภาวะวิตกกังวลในมารดา แบบวัดเหตุการณ์ความเครียดในชีวิต แบบวัดสัมพันธ์ภาพของคู่สมรส และแบบวัดแรงสนับสนุนทางสังคมภายในสัปดาห์แรกหลังคลอดเพื่อประเมินภาวะ Postpartum Blues ซึ่งพบได้บ่อยในผู้ป่วยหลังคลอดและหายได้เองในเวลาไม่เกิน 1-2 สัปดาห์ และปัจจัยที่เกี่ยวข้อง และให้กลุ่มตัวอย่างทำแบบวัดภาวะซึมเศร้าหลังคลอดและแบบวัดแรงสนับสนุนทางสังคมซ้ำอีกครั้งในช่วง 4-6 สัปดาห์หลังคลอดเพื่อติดตามผู้ป่วยที่มีการเปลี่ยนแปลงไปเป็น Postpartum Depression ซึ่งเป็นอีกภาวะที่มีความรุนแรงมากกว่า และจำเป็นต้องได้รับการรักษา*

ผลการวิจัย : *มารดาหลังคลอดมีความชุกของภาวะซึมเศร้าในช่วง 4-6 สัปดาห์หลังคลอดเท่ากับ 34% โดยพบว่ามี 5 ปัจจัยที่เกี่ยวข้องได้แก่ การมีภาวะวิตกกังวลในช่วงสัปดาห์แรกหลังคลอด การที่มีแรงสนับสนุนทางสังคมต่ำ และการที่เพศของทารกไม่ตรงตามที่คาดหวัง มีความสัมพันธ์กับภาวะซึมเศร้าในช่วง 4-6 สัปดาห์หลังคลอดอย่างมีนัยสำคัญที่ $p< 0.05$ ส่วนประวัติโรคประจำตัวทางร่างกายของมารดา และการมีภาวะซึมเศร้าในช่วงสัปดาห์แรกหลังคลอดมีความสัมพันธ์กับภาวะซึมเศร้าในช่วง 4-6 สัปดาห์หลังคลอดอย่างมีนัยสำคัญที่ $p< 0.01$ จากการทำ Logistic Regression Analysis พบว่าการที่เพศของทารกไม่ตรงตามที่คาดหวัง การมีแรงสนับสนุนทางสังคมต่ำ และ การมีภาวะซึมเศร้าในช่วงสัปดาห์แรกหลังคลอด ยังคงมีความสัมพันธ์กับภาวะซึมเศร้าในช่วง 4-6 สัปดาห์หลังคลอดอย่างมีนัยสำคัญ โดยมีค่า adjusted odd ratio เท่ากับ 4.7 (95% CI=1.3- 16.4) , 5.3 (95%CI=1.1- 26.1), และ 7.7 (95% CI= 2.4 -24.3) ตามลำดับ*

สรุป : *การที่เพศของทารกไม่ตรงตามที่คาดหวัง การมีแรงสนับสนุนทางสังคมต่ำ และการมีภาวะซึมเศร้าในช่วงสัปดาห์แรกหลังคลอด มีความสัมพันธ์กับภาวะซึมเศร้าในช่วง 4-6 สัปดาห์หลังคลอดของมารดาที่บุตรเข้ารับการรักษาในตึกทารกแรกเกิดวิกฤต โรงพยาบาลจุฬาลงกรณ์อย่างมีนัยสำคัญ*

คำสำคัญ : *Depression, Postpartum period, Neonatal Intensive Care Unit.*

Postpartum depression (PPD) is a major depressive episode with clinical symptoms including anxiety, irritability, anhedonia, fatigue, and sleep disturbance. Symptoms onset of PPD usually occurs at 2-4 weeks postpartum period and tends to have a later onset than postpartum blues. Reported prevalence of PPD shows that 12-13 % of women have major depression in the postpartum period, an equal rate of depression found in general female population. [1] Postpartum depression is associated with negative consequences in the emotional and cognitive development of the infant [1] by increasing risk of negative parenting behaviors and placing children at risk for adverse outcomes in social, emotional, and behavioral development [2,3]. Children of the depressed mothers are more prone to develop helpless behaviors and demonstrates poor social competence, compared with children of nondepressed mothers.[4] Early interventions are critical, because the degree of risk to children were related to the duration of the depression of the mothers.[5]

Several studies demonstrated that risk factors for PPD were: family history of mood disorder [6,7], past history of PPD[8], depression or anxiety during pregnancy period, postpartum blues[8-11], marital discord, medical problems of infants, unwanted or unplanned pregnancies, lack of social support, and stressful life events during pregnancy.[9,11-14] Most studies focused only on female subjects with full-term healthy infants; few studies, however, were about postpartum depression in mothers of infant with severe medical illness in the Neonatal Intensive Care Unit (NICU).[15-17] Identification of risk factors in this group of women may be helpful for medical personnel and caregivers in early case detection and prompt intervention to prevent further morbidities in the mothers and their children during the postpartum period.

Method

This study had been review by the Ethical Committee of the Faculty of Medicine, Chulalongkorn University. All cases of the mothers of a critically illed infant who were admitted in the Neonatal Intensive Care Unit, King Chulalongkorn Memorial Hospital, from October 2004 to February 2005 were recruited. The subjects who had previous psychiatric illness were verbally screened out and excluded by well-trained interviewer, who worked as a nurse in Out-Patient of Orthopedics Department, King Chulalongkorn Memorial Hospital, The Thai Red Cross Society.

A total of 114 subjects were recruited to assess for their postpartum condition and complete all self-rating questionnaires including Edinburgh Postnatal Depression Scale (EPDS)[18-23] which is used to diagnose postnatal depression with the cut-off score more than 10[18-19], Life Stress Event in the past year[24], Marital Adjustment Questionnaire [25] and The Personal Resource Questionnaire (PRQ) part II. All questionnaires were performed by the subjects within the first 2-7 days of the postpartum period to detect postpartum mood problems, including Postpartum Blues which is self limited condition found within the first week of postpartum period.

Other medical condition of the infants and their mother include the mother's age, history of abortion, history of fetal death, type of delivery, duration of labour, birth weight, and duration of NICU admission were collected from medical record.

Ninety-seven subjects were followed-up at 4-6 weeks postpartum period and reassessed with

EPDS and PRQ part II for the diagnosis of Postpartum Depression and supporting system re-evaluation.

The data were analyzed by using SPSS for Windows version 11.5. Descriptive statistics were reported as mean, SD and percentage. Univariate analysis was performed to demonstrate various possible associated factors among the patients in terms of chi-square test, t-test, and Pearson's correlation coefficient. Logistic Regression Analysis was used to show significant risk factors for depression in 4-6 weeks postpartum period and presented as adjusted OR with 95% CI.

Results

The results showed that 97 patients had mean age of 28.1 $\pm$ 6.4years. Ninety-four patients (96.9 %) were Buddhist; 70 cases (72.1 %) had wedding ceremony and 31 cases had marriage registration before the time of the study. Ten patients (11.4 %) had a history of medical illness; 28 patients (28.8 %) had a history of abortion; and 4 patients had a history of fetal death. All patients do not have a family history of psychiatric illness.

Concerning pregnancy and delivery information, 38 patients (39.1 %) reported unplanned pregnancy, whereas 24 patients (24.7 %) reported unwanted pregnancy; 36 % of the patients have normal labor; 56.7 % received caesarian section. The mean duration of labor was 3.5 $\pm$ 5.1 hours. The mean birth weight of the infants is 2013 $\pm$ 815 grams; the mean duration of admission of their infants in NICU is 15.9 $\pm$ 18.8 days; 57.7 % of the patients had male infant; 24.7 % of the patients reported unfulfilled expectation of the infant gender. Additionally, 12.3 % of the patients had poor social support, 16.4 % had anxiety in the 1st week postpartum, and 43.2 % had depression in the 1st week postpartum. The mean Stressful Life Events score was 37.2 $\pm$ 24.1 and the mean Marital Adjustment Score was 118.5 $\pm$ 24.6, as shown in table 1.

Thirty-three patients (34 %) had depression according to the Edinburgh Postnatal Depression Scale (EPDS) at week 4-6 postpartum (as shown in table 2). The history of medical illness and history of depression in 1st week postpartum were found statistically associated with depression in 4-6 weeks postpartum period ($p < 0.01$). A history of anxiety in 1st week postpartum, poor personal resources and unfulfilled expectation of infant gender were significantly associated with depression in 4-6 week postpartum period ($p < 0.05$) as shown in table 3.

EPDS score in 1st week postpartum, Life Stress Events score, Marital adjustment score, and Anxiety score were strongly correlated with EPDS score at week 4-6 postpartum period ($R = 0.542$, 0.331, -0.267, and 0.436, respectively). The total Personal Resource score was correlated with EPDS score at week 4-6 postpartum period ($R = -0.243$, $p=0.017$). After analyzing in subscales, it was revealed that 2 of 5 subscales, social integration and intimacy subscale, were significantly correlated with EPDS score at week 4-6 postpartum period as shown in table 4.

Logistic regression analysis found only 3 factors that are statistically significant risk factors for depression in 4-6 weeks postpartum period, namely: unfulfilled expectation of infant gender, poor personal resource and depression in 1st week postpartum, as shown in Table 5.

Table 1. Patients' characteristic.

Character	N (%) or Mean ± SD	Character	N (%) or Mean ± SD
Age	28.1 ±6.4	History of fetal death	
Religious		- Yes	4 (4.1)
- Bhuddhism	94 (96.9)	- No	93 (95.9)
- Muslim	3 (3.1)	Unplanned pregnancy	
Education		- Yes	38 (39.1)
- primary school	18 (18.6)	- No	59 (60.9)
- secondary school	21 (21.6)	Unwanted pregnancy	
- high school	15 (15.4)	- Yes	24 (24.7)
- college	9 (9.2)	- No	73 (75.3)
- graduated and higher	34 (36.2)	Infant sex	
Personal income (Bht /month)	7665 ±8509	- Male	56 (57.7)
Family income	23,629 ± 24,743	- Female	41 (42.3)
Wedding ceremony		Unfulfilled expectation of infant gender	
- Yes	70 (72.1)	- Yes	24 (24.7)
- No	27 (27.9)	- No	73 (75.3)
Marriage registration		Mode of delivery	
- Yes	31 (31.9)	- normal labour	35 (36.0)
- No	66 (68.1)	- caecarian section	55 (56.7)
History of medical illness		- forceps extraction	3 (3.1)
- Yes	11 (11.4)	- vacuum	4 (4.2)
- No	86 (88.6)	Duration of labour (hrs)	3.5 ±5.1
History of abortion		Birth weight (gm)	2,013 ± 815
- Yes	28 (28.8)	Duration of NICU admission (days)	15.9 ± 18.8
- No	69 (71.2)	Stressful life events score	37.2 ± 24.1
		Marital Adjustment score	118.5 ± 24.6

Table 2. Prevalence of anxiety and depression in postpartum period.

Mental condition in postpartum period (Total N = 97)	% (N)
Anxiety in 1st week postpartum	16.4 (16)
Depression in 1st week postpartum	43.2 (42)
Depression in 4-6 weeks postpartum	34 (33)

Table 3. Factor associated with Depression in 4-6 weeks postpartum period.

Character	Non Depress (N= 64)	Depress (N= 33)	Character	Non Depress (N= 64)	Depress (N= 33)
Age (Mean, SD)	28.2 (6.1)	27.8 (7.0)	History of abortion (%)	17 (26.5)	11 (33.3)
Religious (% Bhuddhism)	61 (95.3)	33 (100)	History of fetal death (%)	3 (4.6)	1 (3.0)
Personal income (Mean, SD)	8731 (9161)	5598 (6732)	Unplanned pregnancy (%)	24 (37.5)	14 (42.4)
Family income (Mean, SD)	24165 (22461)	22590 (29011)	Unwanted pregnancy (%)	13 (20.3)	11 (33.3)
Wedding ceremony (%)	49 (76.6)	21 (63.6)	Infant sex (% male)	39 (60.9)	17 (51.5)
Marriage registration(%)	19 (29.6)	12 (36.3)	Unfulfilled expectation of infant gender (%)*	11 (17.2)	13 (39.4)
History of medical illness(%) **	2 (3.1)	8 (24.2)	Normal labour (%)	19 (29.7)	16 (48.5)
History of depression in 1st week postpartum(%) **	18 (28.1)	24 (72.7)	Duration of labour (hrs, Mean, SD)	3.33 (4.9)	3.97 (5.4)
			Birth weight (g, Mean, SD)	2078 (851)	1888 (736)
Poor Personal Resource (%)*	4 (6.2)	8 (24.2)	Duration of NICU admission (days)	15.6 (17.2)	16.7 (22.1)
Anxiety in 1st week postpartum (%) *	6 (9.3)	10 (30.3)	(Mean, SD)		
			Stressful life events score (Mean, SD)	33.6 (23.0)	44.19(25.2)
			Marital Adjustment score (Mean, SD)	120.9 (24.7)	113.9(24.0)

* $p<0.05$, ** $p< 0.01$

Table 4. Correlations.

Score	Pearson's Correlation Coefficient	P value
Depressive score in 1st week postpartum	0.542	0.000**
Stressful Life Events	0.331	0.001**
Marital Adjustment Test	-0.267	0.008**
Anxiety score	0.436	0.000**
Personal resource questionnaire	-0.243	0.017*
- social integration subscale	-0.322	0.001**
- assistance & guidance subscale	-0.167	0.103
- opportunity for nurturance subscale	-0.011	0.917
- self worth subscale	-0.160	0.118
- intimacy subscale	-0.263	0.009**

* $p<0.05$, ** $p< 0.01$

Table 5. Stepwise multiple regression analysis.

Factors	Adjusted OR	95% CI	P value
Unfulfilled expectation of infant gender	4.7	1.3- 16.4	0.015 *
Depression in 1st wk postpartum	7.7	2.4- 24.3	0.000 **
Poor personal resource	5.3	1.1-26.1	0.042 *

* $p<0.05$, ** $p< 0.01$

Discussion

This study found that 34 % of the subjects had depression in 4-6 week postpartum period and there were 5 factors significantly associated with depression, namely: history of anxiety in 1st week postpartum, poor personal resources, unfulfilled expectation of infant gender, history of medical illness, and history of depression in 1st week postpartum. Logistic regression analysis showed that unfulfilled expectation of infant gender, poor personal resources, and history of depression in 1st week postpartum may be risk factors for depression in 4-6 week postpartum period.

The prevalence of depression in this study is higher than the prevalence of depression conducted in mothers of normal and healthy infant[22-23] and similar to those conducted in mothers of preterm infant at NICU.[16]

Suffering from medical illness may cause negative emotion in pregnant women, leading to self-blaming attitude when the infant has severe medical illness.[26-27] Expectation of infant gender may be related to cultural attitude and expectation toward infant gender; mothers of the infants may be pressurized by these expectations. Support form others gives direct effects on emotional stability, attenuated effects of stressful life events, and prevents depression.[29] Poor personal resources predispose persons, making them vulnerable to stress, worthlessness, and hopelessness.[30-32]

Depression in 1st week postpartum may be found as a condition so-called "Postpartum Blues", which has early onset with mild severity and self-remitting condition that occurs up to 85 % of postpartum women. The prevalence of depression in 4-6 weeks postpartum period in this study seemed to decrease from the prevalence of depression in 1st week postpartum. It may be related to spontaneous remission of Postpartum Blues before the time of the study at week 4-6. Moreover, the patients who had depression in 1st week postpartum period and then develop postpartum depression in 4-6 weeks may loss follow-up because of their illness.

Identification of these risk factors in postpartum women may be helpful for obstetricians and other medical personnel to render early detection and prompt intervention. Providing psychoeducation for caregivers is also helpful in increasing awareness of this illness and in creating positive attitude toward the patients, leading to supportive manner in the care of these patients.

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