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Original article

Bipolarity among pregnant women at King Chulalongkorn Memorial Hospital and relationship with depression score during pregnancy and postpartum periods

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Background: Previous studies demonstrated associations between bipolarity and perinatal depression. However, there is still no study on this issue in Thailand.

Objectives: To examine the prevalence of bipolarity and associations with depressive symptoms during pregnancy and postpartum periods.

Methods: We recruited 165 pregnant women who were in their third trimester (gestational age ≥ 28 weeks). The self-rated questionnaires used include the Edinburgh Postnatal Depression Scale (EPDS) - Thai version, Mood Disorder Questionnaire scales (MDQ) - Thai version, the Personal Resource Questionnaire (PRQ)-Part II and the Dyadic Adjustment Scale (DAS). Then we followed up EPDS scores at 2 - 7 days after delivery. Univariate and multivariate statistics were used to examine the associated factors of bipolarity.

Results: The prevalence of bipolarity was 3%. Unemployment, inadequacy of income, history of lifetime smoking, and smoking during pregnancy, were found to be significantly associated with bipolarity ($P < 0.05$). Bipolarity was also associated with lower PRQ scores (assistance and guidance subscale) and lower marital satisfaction scores (dyadic cohesion subscale) ($r = 0.507$, $P < 0.05$). Moreover, bipolarity was also associated with higher EPDS total score during pregnancy, and in the item of anxiety/ worry, sad/ miserable, crying, and suicidal thoughts, lower PRQ scores (social integration subscale), lower marital satisfaction scores (dyadic satisfaction subscale), higher marital satisfaction scores (dyadic consensus subscale) when compared to those without bipolarity ($P < 0.01$).

Conclusions: The prevalence of bipolarity in this study is somewhat higher than in the general population. Bipolarity was significantly associated with substance abused during pregnancy, poorer functions (work/ financial), higher severity of antenatal depression, especially in the symptoms of anxiety/ worry, sad/ miserable, crying, and suicidal thoughts. They also significantly have lower social support and lower marital satisfaction when compared to those without bipolarity.

Keywords: Bipolarity, pregnant women, postpartum period, depression score.

According to data from the World Health Organization (WHO), there are more than 350 million people with depression around the world and women had been demonstrated to have twice the risk for depressive disorder when compared men, especially during the perinatal period. Recent studies have shown the relationship of bipolarity and perinatal depression

e.g. 22.6 % of women with antenatal depression and 17.5 % of women with postpartum depression have a history of bipolarity, and those with bipolarity have been demonstrated to have higher depressive scores during pregnancy and postpartum periods.⁽¹⁾ Moreover, a number of postpartum women (9.6 - 20.4 %) experienced manic symptoms immediately after birth.⁽²⁾ Thus, it is possible that perinatal depression might be related to bipolarity. However, there is still no study about this issue in Thailand. The objective of this study was to examine the prevalence, as well as the relationship of bipolarity and changes in depressive scores during pregnancy and the postpartum period to attain more knowledge in this relationship.

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Materials and methods

This is an observational prospective study, conducted at the antenatal care clinic (ANC), King Chulalongkorn Memorial Hospital. We recruited 165 pregnant women who were in their third trimester (gestational age ≥ 28 weeks). All of them must have been able to communicate in Thai and cooperate well. This study was approved by the Institutional Review Board (IRB) of Faculty of Medicine, Chulalongkorn University (COA No. 653/2017). All subjects were informed of the objectives and methods of the present study. All subjects were asked to complete 6 questionnaires including:

1. Demographic data questionnaires which consist of age, marital status, education level, income, current occupation, family status, history of physical illness, and history of substance abused.
2. Obstetrics information questionnaire.
3. The Edinburgh Postnatal Depression Scale (EPDS) - Thai version. The self-reported questionnaire comprises 10 items rated on a 4-point scale, from 0 to 3, and a maximum total score of 30 points with higher scores indicating a greater severity of depression. The cut-off value ≥ 11 indicates depression (sensitivity of 100 percent and a specificity of 88 percent). The Cronbach's Alpha coefficient in the previous study was 0.80.
4. Mood Disorder Questionnaire scales (MDQ) - Thai version (Thai MDQ), which was adapted by Thisayakorn P, et al (2016). the Thai MDQ is a 3-part, self-report questionnaire that screens for a lifetime history of manic or hypomanic episodes. Part 1 is composed of 13 questions regarding manic symptoms. In this study, we defined a positive Thai MDQ screen as a minimum of 7 symptoms in Part 1. The Cronbach's Alpha coefficient of the Thai MDQ was 0.8825. Compared to the diagnosis of bipolar spectrum disorder using M.I.N.I. with clinical diagnosis by experienced psychiatrists as a gold standard, the Thai MDQ at the cut score of 7 had the sensitivity = 0.64, specificity = 0.96.
5. The Personal Resource Questionnaire (PRQ) - Part II, which was developed by Sataporn Anankunupakahn (1996), consisting of 5 subscales with 25 items, divided into positive and negative perceptive questions, gives total scores of 25 - 125 points. The previous validation study in 36 postpartum women whose babies were separated for care found that Cronbach' Alpha coefficient = 0.77.

6. The Dyadic Adjustment Scale (DAS) which was developed by Spanier (1976) and the Thai version which was adapted by Soomlek S., consisting of 4 subscales with 28 items, is divided into 3 levels: high moderate and low. Higher scores indicated a higher marital relationship quality.

Statistical analysis

The data were analyzed using SPSS for Windows version 22.0. Descriptive statistics including percentage, mean and standard deviation were used to identify participants' characteristics and inferential statistics such as Chi-square, and *t* - test were used to determine the prevalence of bipolarity in pregnant women and the association between bipolarity and depression scores during pregnancy and postpartum periods. $P < 0.05$ was considered statistically significant.

Results

There were 165 participants, with a mean age of 29.6 ± 6.0 years. Most subjects were married (73.9%), no marriage registration (61.2%), traditional wedding ceremony (70.9%), with a mean educational level of 13.7 ± 2.9 years, private sector (46.1%), native habitat was North East (36.4%), present habitat was Bangkok and nearby (94.5%), and lived with a spouse (49.7%). The average number of family members was 4.4 ± 2.3 . The median of personal income was 18,004.3 baht/month and family income was 48,507.2 baht/month. The rate of adequacy and savings of income was 46.7%. More than half of the participants were multigravida. The majority (80.6%) had no history of physical illness. 81.8% and 50.3% of the participants abused substances (caffeine) before and during pregnancy. 6.1% had a family history of psychiatric disorder. Most of them reported a history of premenstrual syndrome (58.8%) and unplanned pregnancy (50.9%). The rate of unwanted pregnancy was 14.5 % and a history of postpartum depression was 9.7%. The mean MDQ total score, EPDS total score during pregnancy, EPDS total score in the postpartum period, PRQ total score, and DAS total score were 1.4 ± 2.0 , 6.42 ± 4.2 , 4.0 ± 3.5 , 95.2 ± 10.7 , 94.4 ± 13.4 , respectively.

The prevalence of antenatal depression, postpartum depression, and bipolarity were 16.4%, 4.2%, and 3%, respectively (Table 1).

Table 1. Socio-demographic and obstetrics characteristics of the participants (n = 165)

Characteristics	Mean ± SD or n (%)
Age (years)	29.6 ± 6.0
Marital Status	
Single	24 (14.5)
Married	122 (73.9)
Separated	8 (4.8)
Divorced / Widowed /other	11 (6.7)
Marriage registration	
Yes	64 (38.8)
No	101 (61.2)
Traditional wedding ceremony	
Yes	117 (70.9)
No	48 (29.1)
Educational level (years)	13.7 ± 2.9
Current occupation	
Unemployed	28 (17.0)
Government	11 (6.7)
Private sector	76 (46.1)
Business owner	13 (7.9)
Labor	25 (15.2)
Others	12 (7.3)
Native habitat	
Bangkok and nearby	53 (32.1)
Northern Thailand	14 (8.5)
North East Thailand	60 (36.4)
Middle Thailand	22 (13.3)
East Thailand	2 (1.2)
West Thailand	5 (3.0)
Southern Thailand	8 (4.8)
Present habitat	
Bangkok and nearby	156 (94.5)
Northern Thailand	3 (1.8)
Middle Thailand	6 (3.6)
Live with	
Alone	1 (0.6)
Spouse	82 (49.7)
Family of origin	47 (28.5)
In-laws family	31 (18.8)
Others	4 (2.4)
Number of family members	4.4 ± 2.3
Personal income (baht/month)	18,004.3 ± 15,050.9
Family income (baht/month)	48,507.2 ± 34,011.3
Adequacy of income	
Adequate and savings	77 (46.7)
Adequate but no savings	67 (40.6)
Inadequate and no debt	4 (2.4)
Inadequate and debt	17 (10.3)
Gravidity	
Primigravida	80 (48.4)
Multigravida	85 (51.5)
History of physical illness	
No	133 (80.6)
Yes	32 (19.4)

Table 1. (Con) Socio-demographic and obstetrics characteristics of the participants (n = 165)

Characteristics	Mean \pm SD or n (%)
History of substance abused before pregnancy	
Caffeine	135 (81.8)
Alcohol	70 (42.4)
Smoking	11 (6.7)
Stimulant	5 (3.0)
Other substances	1 (0.6)
History of substance abused during pregnancy	
Caffeine	83 (50.3)
Alcohol	14 (8.5)
Smoking	4 (2.4)
Family history of psychiatric disorder	10 (6.1)
History of premenstrual syndrome	97 (58.8)
History of postpartum depression	16 (9.7)
Unplanned pregnancy	84 (50.9)
Unwanted pregnancy	24 (14.5)
Total score of Mood Disorder Questionnaire scales (MDQ)	1.4 \pm 2.0
Total score of Edinburgh Postnatal Depression Scale (EPDS) during pregnancy	6.4 \pm 4.2
Total score of Edinburgh Postnatal Depression Scale (EPDS) postpartum period	4.0 \pm 3.5
Total score of Personal Resources Questionnaire (PRQ)	95.2 \pm 10.7
Total score of The Dyadic Adjustment Scale (DAS)	94.4 \pm 13.4
Number of peripartum depression	27 (16.4)
Number of postpartum depression	7 (4.2)
Number of bipolarity	5 (3.0)

The significant associated factors of bipolarity ($P < 0.05$) were unemployment, inadequacy of income, history of smoking before pregnancy, PRQ score (assistance and guidance subscale), DAS score (dyadic cohesion subscale), and the significant associated factors of bipolarity ($P < 0.01$) were history of smoking during pregnancy, total EPDS score during pregnancy, PRQ score (social integration subscale), DAS score (dyadic consensus subscale and dyadic satisfaction subscale) (Table 2).

Bipolarity was also associated with significantly higher EPDS scores during pregnancy in the item of anxiety/ worry ($P < 0.01$), sad/ miserable ($P < 0.01$), crying ($P < 0.01$), suicidal thoughts ($P < 0.05$), EPDS total scores ($P < 0.05$), and higher scores in the item of crying during the postpartum period ($P < 0.01$) when compared to those without bipolarity.

Moreover, bipolarity was also associated with changes in EPDS scores in the item of scare/panic, insomnia, crying, and EPDS total scores ($P < 0.05$) (Table 3).

Logistic regression analysis demonstrated 2 factors that were statistically significant predictors for bipolarity among this group of pregnant women namely inadequacy of income ($P < 0.05$) and a history of smoking during pregnancy ($P < 0.01$) (Table 4).

Multiple linear regression analysis also showed the predictor variables that were statistically significant ($P < 0.05$) associated with total MDQ scores, including total EPDS scores during pregnancy and a history of lifetime smoking. The model predicted 25.7% of MDQ scores (Table 5).

Table 2. Factors associated with bipolarity.

Variables	MDQ < 7 (n = 160) Mean ± SD or n (%)	MDQ ≥ 7 (n = 5) Mean ± SD or n (%)	P - value
Age (years)	29.8 ± 6.0	25.0 ± 5.3	0.079
Marital Status (married)	120 (98.4)	2 (1.6)	0.112
Education (years)	13.8 ± 2.9	12.2 ± 2.5	0.229
Current occupation (unemployed)	25 (89.3)	3 (10.7)	0.035*
Live with (spouse)	82 (100.0)	0 (0.0)	0.059
Number of family members	4.4 ± 2.3	5.4 ± 3.7	0.317
Personal income (baht/month)	17,846.2 ± 13,935.5	23,000.0 ± 38,987.2	0.453
Adequacy of income (inadequate)	18 (85.7)	3 (14.3)	0.015*
Gravidity (primigravida)	77 (96.3)	3 (3.8)	0.674
History of physical illness	32 (100.0)	0 (0.0)	0.584
History of substance abused before pregnancy			
Caffeine	132 (97.1)	4 (2.9)	1.000
Alcohol	66 (94.3)	4 (5.7)	0.164
Smoking	9 (81.8)	2 (18.2)	0.036*
History of substance abused during pregnancy			
Caffeine	82 (98.8)	1 (1.2)	0.210
Alcohol	13 (92.9)	1 (7.1)	0.362
Smoking	2 (50.0)	2 (50.0)	0.004**
Family history of psychiatric disorder	9 (90.0)	1 (10.0)	0.271
History of premenstrual syndrome	94 (96.9)	3 (3.1)	1.000
History of postpartum depression	16 (100.0)	0 (0.0)	0.130
Edinburgh Postnatal Depression Scale (EPDS) total score during pregnancy	6.3 ± 3.9	10.2 ± 9.3	0.039*
Edinburgh Postnatal Depression Scale (EPDS) total score postpartum period	4.1 ± 3.4	3.2 ± 6.1	0.585
Personal Resources Questionnaire (PRQ) total score	95.3 ± 10.5	90.6 ± 16.2	0.334
PRQ score; Social Integration subscale	19.1 ± 2.1	16.4 ± 4.5	0.009**
PRQ score; Assistance and Guidance subscale	19.6 ± 2.7	16.4 ± 4.0	0.01*
PRQ score; Opportunity for Nurture subscale	17.7 ± 3.8	19.8 ± 3.2	0.228
PRQ score; Self-Worth subscale	18.8 ± 2.5	19.4 ± 4.0	0.644
PRQ score; Intimacy subscale	20.0 ± 2.5	18.6 ± 3.1	0.231
The Dyadic Adjustment Scale (DAS) Total score	94.1 ± 13.5	103.4 ± 3.6	0.129
DAS score; Dyadic Consensus subscale	29.7 ± 8.1	40.6 ± 5.4	0.003**
DAS score; Dyadic Satisfaction subscale	35.6 ± 2.8	28.0 ± 9.0	< 0.001**
DAS score; Dyadic Cohesion subscale	14.1 ± 5.4	19.0 ± 4.5	0.047*
DAS score; Affectional Expression subscale	14.8 ± 2.4	15.8 ± 0.8	0.342

* $P < 0.05$, ** $P < 0.01$

Table 3. Correlation between bipolarity and EPDS score.

EPDS score	Without bipolarity (n = 160) Mean ± SD	Bipolarity (n = 5) Mean ± SD	P - value
During pregnancy			
Total score	6.3 ± 3.9	10.2 ± 9.3	0.039*
Item 1 (able to laugh)	0.4 ± 0.7	0.2 ± 0.4	0.678
Item 2 (look forward with enjoyment)	0.3 ± 0.4	0.4 ± 0.9	0.581
Item 3 (self blame)	1.2 ± 0.8	1.4 ± 1.1	0.303
Item 4 (anxiety/worry)	1.2 ± 0.8	1.6 ± 1.1	0.006**
Item 5 (scare/panic)	0.8 ± 0.8	1.8 ± 1.3	0.464
Item 6 (overwhelm)	0.5 ± 0.8	0.8 ± 1.1	0.152
Item 7 (insomnia)	0.9 ± 0.8	1.4 ± 1.1	0.299
Item 8 (sad/miserable)	0.5 ± 0.6	0.8 ± 0.8	0.002**
Item 9 (crying)	0.5 ± 0.6	1.4 ± 1.3	0.007**
Item 10 (suicidal thought)	0.1 ± 0.2	0.4 ± 0.9	0.039*
Postpartum period			
Total score	4.1 ± 3.4	3.2 ± 6.1	0.981
Item 1 (able to laugh)	0.2 ± 0.6	0.2 ± 0.4	0.458
Item 2 (look forward with enjoyment)	0.1 ± 0.4	0.0 ± 0.0	0.144
Item 3 (self blame)	0.7 ± 0.8	0.2 ± 0.4	0.603
Item 4 (anxiety/worry)	0.8 ± 0.8	0.6 ± 1.3	0.955
Item 5 (scare/panic)	0.6 ± 0.7	0.6 ± 0.9	0.856
Item 6 (overwhelm)	0.4 ± 0.6	0.4 ± 0.9	0.286
Item 7 (insomnia)	0.5 ± 0.7	0.2 ± 0.4	0.487
Item 8 (sad/miserable)	0.4 ± 0.7	0.2 ± 0.4	0.790
Item 9 (crying)	0.3 ± 0.6	0.4 ± 0.5	<0.001**
Item 10 (suicidal thought)	0.0 ± 0.2	0.4 ± 0.9	0.585
Change of EPDS score			
Total score	-2.2 ± 4.1	-7.0 ± 5.8	0.012*
Item 1 (able to laugh)	-0.1 ± 0.9	0.0 ± 0.0	0.710
Item 2 (look forward with enjoyment)	-0.2 ± 0.6	-0.4 ± 0.9	0.379
Item 3 (self blame)	-0.5 ± 0.9	-1.2 ± 0.8	0.096
Item 4 (anxiety/worry)	-0.4 ± 1.0	-1.0 ± 1.0	0.201
Item 5 (scare/panic)	-0.2 ± 1.0	-1.2 ± 1.3	0.02*
Item 6 (overwhelm)	-0.2 ± 0.8	-0.4 ± 0.9	0.591
Item 7 (insomnia)	-0.3 ± 0.9	-1.2 ± 0.8	0.038*
Item 8 (sad/miserable)	-0.1 ± 0.7	-0.6 ± 0.5	0.176
Item 9 (crying)	-0.2 ± 0.7	-1.0 ± 1.4	0.016*
Item 10 (suicidal thought)	-0.0 ± 0.3	0.0 ± 0.0	0.874

* $P < 0.05$, ** $P < 0.01$ **Table 4.** Logistic regression analysis.

Variables	Adjusted OR	95% CI	P - value
Inadequacy of income	12.834	1.103 - 149.370	0.042*
History of smoking during pregnancy	117.728	6.538 - 2119.946	0.001**
EPDS score during pregnancy item 10 (suicidal thought)	4.876	0.847 - 28.068	0.076

* $P < 0.05$, ** $P < 0.01$

Table 5. Factors predicting MDQ total score by Multiple linear regression analysis.

Variables	b	Beta	t	P - value
EPDS total score during pregnancy	0.170	0.360	3.538	0.001*
Change of EPDS total score	0.012	0.025	0.267	0.790
DAS score; Dyadic Consensus subscale	0.032	0.134	1.486	0.139
DAS score; Dyadic Satisfaction subscale	-0.050	-0.086	-1.102	0.272
DAS score; Dyadic Cohesion subscale	-0.014	-0.038	-0.417	0.677
PRQ score; Social Integration subscale	-0.052	-0.060	-0.665	0.507
PRQ score; Assistance and Guidance subscale	-0.025	-0.035	-0.369	0.712
History of smoking (before and during pregnancy)	1.286	0.163	2.157	0.033*

$r=0.507$ $R^2=0.257$ $F=6.762$ $P<0.05$

Discussion

The prevalence of bipolarity in our study was 3% which was somewhat higher than those among the general population in the study of Hirschfeld RM, *et al.* ⁽¹⁾ They demonstrated the prevalence of bipolarity in the general population was 0.9% among males and 3.2% among females. Ferrari AJ, *et al.* ⁽²⁾ also found a 1.06 - 1.57% prevalence of bipolarity among the general population as well as Clemente AS, *et al.* ⁽³⁾ who found the prevalence was 0.8% in females and 0.6% in males. However, the prevalence of bipolarity in this study was lower than in the study of Celik SB, *et al.* ⁽⁴⁾ who examined bipolarity in 63 Turkish women after giving birth using MDQ and EPDS (17.5%). Therefore, it was possible that bipolarity first signalized after giving birth. Since MDQ was the questionnaire evaluating past lifetime until present, if the researcher re-evaluated with MDQ at the postpartum period, the prevalence of bipolarity might increase.

Jaeschke RR, *et al.* ⁽⁵⁾ examined the prevalence of bipolarity among 434 Polish women who had postpartum depression for 6 - 12 weeks using an EPDS score crossing point at 13 and MDQ with a crossing point of 7. The results indicated that 23.7% had MDQ scores of more than 7. Nevertheless, the result might be different because of the population group and the time completing questionnaire (postpartum period). Bipolarity in pregnant women appeared during pregnancy and the postpartum period; it mostly increased during the postpartum period. ⁽⁶⁾ Thus, the evaluation during the postpartum period might have resulted in a higher prevalence.

During the pregnancy period, women with bipolarity had higher EPDS scores than those without bipolarity with statistical significance. It was consistent with the research of Park CM, *et al.* ⁽⁷⁾ which found that pregnant women with bipolarity had higher EPDS

score significantly. Furthermore, those with bipolarity had higher EPDS scores in Question item 4 (anxiety/worry), item 8 (sad/miserable), item 9 (crying), and item 10 (suicidal thought) with statistical significance. Anxiety has regularly been found as the comorbidity which activated and caused bipolarity to become more severe ⁽⁸⁾, had more depressive episodes, and maximized the risk of suicidal thoughts and suicidal attempts. ^(9, 10)

Among the group of bipolarity, the total EPDS scores during the postpartum period was not different from those without bipolarity. This was in contrast to the study of Jaeschke RR, *et al.* ⁽⁵⁾, conducted in Poland, which examined the prevalence of bipolarity in women with postpartum depression. It was found that those with high EPDS scores showed significantly longer symptoms of bipolarity (38%). Moreover, Celik SB, *et al.* ⁽⁴⁾, in Turkey, who observed bipolarity in women after giving birth, revealed that those with high EPDS scores would have significantly higher MDQ scores than those with low EPDS scores. The finding was different because the researchers only collected data during one week of the postpartum period which might not be sufficient time to determine postpartum depression that is normally found during weeks 4 - 6 of the postpartum period. However, those with bipolarity had higher scores in Question item 9 (crying).

For the change of EPDS scores during postpartum period, it was found that the scores of Question item 5 (scare/panic), item 7 (insomnia), item 9 (crying), and total scores of the bipolarity group were lower during the first week, more than those without bipolarity. It was possible that during the pregnancy period, women with bipolarity had higher EPDS scores and they were getting better during the first few days after giving birth. Therefore, when evaluating for one week during the postpartum period, the score was significantly lower.

After the analysis using logistic regression analysis, it was shown that there were two factors predicting bipolarity in pregnant women: inadequacy of income and smoking during pregnancy. Moreover, multiple linear regression analysis revealed that factors to predict the total MDQ score were total EPDS score during pregnancy and smoking record before and during pregnancy. The second factor that was found to be related with bipolarity with statistical significance was in line with many studies. For example, Li XH, *et al.*⁽¹¹⁾ studied the prevalence of smoking in patients with bipolarity and found a 17.5% prevalence. Wilens TE, *et al.*⁽¹²⁾ reported that the teenagers with bipolarity smoked more than those without bipolarity (49% and 17%, respectively). Jackson JG, *et al.*⁽¹³⁾ indicated that there was at 3.5 times higher smoking rate among patients with bipolarity than general people. Also, when comparing among psychotherapy patients, it was found that those with bipolarity had a higher smoking rate than those with depression, but lower than psychotherapy patients.

In terms of social support, those with bipolarity had lower average scores of PRQ in Social Integration and Assistance and Guidance than those without bipolarity. It was in line with the research of Owen R, *et al.*⁽¹⁴⁾ who found that the bipolarity group who had lower social support was associated with manic episodes and the lack of social support stimulated mania or depression. Although hypomania built the connection with the new society, the lack of disinhibition and risk behavior while having mania caused the relationship problem. Besides, it was consistent with the study of Park CM, *et al.*⁽⁷⁾, and Johnson L, *et al.*⁽¹⁵⁾ which revealed that low social support related to bipolarity.

In terms of marital satisfaction, it was found that the average score of DAS in Dyadic Consensus, Dyadic Satisfaction, and Dyadic Cohesion related to bipolarity with statistical significance. Those with bipolarity had higher average scores in Dyadic Consensus and Dyadic Cohesion while they had lower score in Dyadic Satisfaction than general people. It was in line with the research of Vibha P, *et al.*⁽¹⁶⁾ who studied about the quality of life of psychotherapy patients evaluating from marital adjustment. Results showed that the marital adjustment of patients with bipolarity and depression was better than that in psychotherapy patients. The patients evaluated themselves very low whereas their spouse did not consider it as bad as they did; it was possible that the

research was evaluated by the patients themselves so the score was quite low. The study of Arciszewska A, *et al.*⁽¹⁷⁾ examined marital adjustment among bipolar disorder I and bipolar disorder II groups and found that the bipolar disorder I group had more disruptive behavior which related to the significantly lower marital adjustment, especially if there was drug use or comorbidity.

There are some limitations in this study. It is the specialized study of pregnant women who were in their third trimester (gestational age ≥ 28 weeks) and of who were attending antenatal care at the Gynecology Department, King Chulalongkorn Memorial Hospital of which only a small amount of pregnant women were found with bipolarity, which may not be able to represent all pregnant women with bipolarity.

The duration of postpartum depression data collection was only the first week after birth, therefore, it may not find postpartum depression that is usually found during the 4 - 6 weeks after delivery.

Conclusion

The prevalence of bipolarity in this study is somewhat higher than in the general population. Bipolarity was significantly associated with substance abused during pregnancy, poorer functions (work/financial), higher severity of antenatal depression, especially in the symptoms of anxiety/ worry, sad/miserable, crying and suicidal thoughts. They also have significantly lower social support and lower marital satisfaction when compared to those without bipolarity.

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Conflict of interest

The authors, hereby, declare no conflict of interest.

References

1. Hirschfeld RM, Holzer C, Calabrese JR, Weissman M, Reed M, Davies M, et al. Validity of the mood disorder

- questionnaire: a general population study. *Am J Psychiatry* 2003;160:178-80.
2. Clemente AS, Diniz BS, Nicolato R, Kapczinski FP, Soares JC, Fermo JO, et al. Bipolar disorder prevalence: a systematic review and meta-analysis of the literature. *Braz J Psychiatry* 2015;37:155-61.
 3. Ferrari AJ, Stockings E, Khoo JP, Erskine HE, Degenhardt L, Vos T, et al. The prevalence and burden of bipolar disorder: findings from the Global Burden of Disease Study 2013. *Bipolar Dis* 2016;18:440-50.
 4. Çelik SB, Bucaktepe GE, Uludağ A, Bulut İU, Erdem Ö, Altınbaş K. Screening mixed depression and bipolarity in the postpartum period at a primary health care center. *Compr Psychiatry* 2016;71:57-62.
 5. Jaeschke RR, Dudek D, Topór-Mądry R, Drozdowicz K, Datka W, Siwek M, et al. Postpartum depression: bipolar or unipolar? Analysis of 434 Polish postpartum women. *Braz J Psychiatry* 2017;39:154-9.
 6. Wald MF, Muzyk AJ, Clark D. Bipolar Depression: Pregnancy, Postpartum, and Lactation. *Psychiatric Clin North Am* 2016;39:57-74.
 7. Park CM, Seo H, Jung Y, Kim M, Hong S, Bahk W, Yoon B, et al. Factors associated with antenatal depression in pregnant Korean females: the effect of bipolarity on depressive symptoms. *Neuropsychiatric Dis Treat* 2014;10:1017-23.
 8. Berkol TD, Kirli E, Islam S, Pinarbasi R, Ozyildirim I. Comparison of clinical and sociodemographic features of bipolar disorder patients with those of social anxiety disorder patients comorbid with bipolar disorder in Turkey. *Saudi Med J* 2016;37:309-14.
 9. Latalova K, Prasko J, Grambal A, Havlikova P, Jelenova D, Mainerova B, et al. Bipolar disorder and anxiety disorders. *Neuro Endocrinol Letters* 2013;34:738-44.
 10. Goes FS. The importance of anxiety states in bipolar disorder. *Curr Psychiatry Reports*. 2015;17:3.
 11. Li XH, An FR, Ungvari GS, Ng CH. Prevalence of smoking in patients with bipolar disorder, major depressive disorder and schizophrenia and their relationships with quality of life. *Sci Rep* 2017;7:8430.
 12. Wilens TE, Biederman J, Martelon M, Zulauf C, Anderson JP, Carrellas NW, et al. Further evidence for smoking and substance use disorders in youth with bipolar disorder and comorbid conduct disorder. *J Clin Psychiatry* 2016;77:1420-7.
 13. Jackson JG, Diaz FJ, Lopez L, de Leon J. A combined analysis of worldwide studies demonstrates an association between bipolar disorder and tobacco smoking behaviors in adults. *Bipolar Dis* 2015;17:575-97.
 14. Owen R, Gooding P, Dempsey R, Jones S. The reciprocal relationship between bipolar disorder and social interaction: A qualitative investigation. *Clin Psychol Psychotherapy* 2017;24:911-8.
 15. Johnson L, Lundstrom O, Aberg-Wistedt A, Mathe AA. Social support in bipolar disorder: its relevance to remission and relapse. *Bipolar Dis* 2003;5:129-37.
 16. Vibha P, Saddichha S, Khan N, Akhtar S. Quality of life and marital adjustment in remitted psychiatric illness: an exploratory study in a rural setting. *J Nerv Mental Dis* 2013;201:334-8.
 17. Arciszewska A, Siwek M, Dudek D. Dyadic Adjustment among Healthy Spouses of Bipolar I and II Disorder Patients. *Psychiatria Danubina* 2017;29:322-9.