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Prevalence and Factors Associated with High Postpartum Depression Score Using Thai Edinburgh Postnatal Depression Scale in Charoenkrung Pracharak Hospital

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ABSTRACT

Objectives: This study aimed to estimate the prevalence of high postpartum depression score at 6-week postpartum using Thai Edinburgh postnatal depression scale (EPDS).

Materials and Methods: This cross-sectional study was conducted in December 2022 - May 2023. Two hundred and ninety-four participants were included. Personal data and obstetrics outcome of participants were collected on the 2nd day and 6-week of the postpartum period. Thai version of EPDS was recorded at 6 weeks postpartum. EPDS score at least 11 were considered as high postpartum depression score. Personal data and obstetrics outcome were analyzed by using t-test and regression analysis to identify associating factors.

Results: Of all 264 participants who were followed-up at 6-week postpartum period, it was found that 46 participants had high postpartum depression scores with the prevalence of 17.42%. After multivariate analysis, unintended pregnancy adjusted odds ratio (aOR 2.27, 95% confidence interval (CI) 1.06-4.76), maternity leave (aOR 0.47, 95%CI 0.23-0.99), postpartum stressful event (aOR 4.55, 95%CI 2.13-9.74) and inadequate social support (aOR 5.26, 95%CI 2.33-12.5, p <0.001) were statistically significantly associated with high postpartum depression scores.

Conclusion: The prevalence of high postpartum depression scores at 6 weeks was 17.42%. Healthcare professionals should be aware of postpartum depression and pay extra attention to patients with unintended pregnancy, postpartum stressful event, and inadequate social support. Taking maternity leave may be advocated.

Keywords: postpartum depression, Edinburgh postnatal depression scale.

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ความชุกและปัจจัยที่เกี่ยวข้องกับการมีคะแนนภาวะซึมเศร้าหลังคลอดสูงโดยใช้แบบคัดกรองภาวะซึมเศร้าหลังคลอดเอดินบะระที่โรงพยาบาลเจริญกรุงประชารักษ์

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บทคัดย่อ

วัตถุประสงค์: *เพื่อศึกษาความชุกและปัจจัยที่เกี่ยวข้องกับการมีคะแนนภาวะซึมเศร้าหลังคลอดสูง โดยใช้แบบคัดกรองภาวะซึมเศร้าหลังคลอดเอดินบะระ*

วัสดุและวิธีการ: *การศึกษาแบบตัดขวางนี้เริ่มศึกษาตั้งแต่เดือนธันวาคม พ.ศ.2565 ถึงเดือนพฤษภาคม พ.ศ.2566 อาสาสมัคร 294 คนได้เข้าร่วมในงานวิจัย ข้อมูลส่วนตัวของอาสาสมัคร และข้อมูลเกี่ยวกับการคลอดได้ถูกรวบรวมที่วันที่ 2 และที่ 6 สัปดาห์หลังคลอดบุตร อาสาสมัครได้ทำแบบคัดกรองภาวะซึมเศร้าหลังคลอดเอดินบะระที่ 6 สัปดาห์หลังคลอดบุตร โดยคะแนนรวมที่มากกว่าเท่ากับ 11 จะถือว่าเป็นคะแนนภาวะซึมเศร้าหลังคลอดที่สูง ข้อมูลส่วนตัว และข้อมูลการคลอดจะถูกวิเคราะห์เพื่อหาปัจจัยที่เกี่ยวข้องกับการมีคะแนนภาวะซึมเศร้าหลังคลอดสูง*

ผลการศึกษา: *พบอาสามัคร 46 คน จากอาสาสมัคร 264 คนที่มาติดตามที่ 6 สัปดาห์หลังคลอดมีคะแนนภาวะซึมเศร้าหลังคลอดสูงที่ 6 สัปดาห์ คิดเป็นร้อยละ 17.42 โดยพบปัจจัยที่เกี่ยวข้องอย่างมีนัยสำคัญทางสถิติได้แก่ การตั้งครรภ์ที่ไม่ได้เกิดจากความตั้งใจ (aOR 2.27, 95%CI 1.06-4.76) การได้ลาคลอดบุตร (aOR 0.47, 95%CI 0.23-0.99) การมีเหตุการณ์อื่นที่ทำให้ความเครียดหลังคลอด (aOR 4.55, 95%CI 2.13-9.74) และการมีความช่วยเหลือทางสังคมที่ไม่เพียงพอ (aOR 5.26, 95%CI 2.33-12.5, P<0.001)*

สรุป: *ความชุกของการมีคะแนนภาวะซึมเศร้าหลังคลอดสูงที่ 6 สัปดาห์หลังคลอดเท่ากับร้อยละ 17.42 บุคลากรทางสาธารณสุขควรคำนึงถึงภาวะซึมเศร้าหลังคลอด โดยเฉพาะอย่างยิ่งในผู้ป่วยที่การตั้งครรภ์ไม่ได้เกิดจากความตั้งใจ มีเหตุการณ์อื่นที่ทำให้เกิดความเครียดหลังคลอด และได้รับความช่วยเหลือทางสังคมไม่เพียงพอ อีกทั้งยังอาจสนับสนุนการลาคลอดบุตรอีกด้วย*

คำสำคัญ: *ภาวะซึมเศร้าหลังคลอด, แบบคัดกรองภาวะซึมเศร้าหลังคลอดเอดินบะระ*

Introduction

Postpartum depression is defined as major and minor depressive episodes that occur in the postpartum period[1]. Postpartum depression is caused by both environmental and genetic factors[2]. Postpartum depression is often unrecognized because changes in appetite, sleep and libido may be attributed to postpartum changes, and new mothers may be reluctant to report their mood changes[3, 4]. Mothers with postpartum depression show low mood, diminish capacity to experience pleasure and may feel a sense of detachment from their infants[5]. Suicide and infanticide also remained significant concern[1, 6].

In the present, diagnosis of peripartum depression uses DSM-5 criteria of major depressive episode with onset of mood symptoms occurs during pregnancy or in the 4 weeks following pregnancy[6]. However, recommendations from obstetricians often extend the postpartum period until 12 months after delivery[3, 5]. In general, screening for postpartum depression was made before referring to psychiatrist for diagnosis and treatment. Several screening instruments for peripartum depression were developed to be used during pregnancy and the postpartum period. The Edinburgh postnatal depression scale (EPDS) developed by Cox et al[7] most frequently used in the research setting and clinical practice. EPDS consisted of 10 self-reported questions and took less than 5 minutes to complete. Each question had four choices with the score of 0, 1, 2 and 3. Hence, the total scores were 30. Thai version of the EPDS was translated and validated by Vacharaporn et al[8] and threshold score at least 11 was proposed with sensitivity 100%, specificity 88% and degree of agreement 0.38.

Systematic review of 565 studies from 80 countries worldwide in 2021 found prevalence of postpartum depression 17.22% with the prevalence in southeast Asia 13.53% and associated factors for postpartum depression were marital status, educational levels, social support, violence, gestational age, breast feeding, infant death, planned pregnancy, financial problems, partnership, life stress, smoking, alcohol use and living conditions[9]. In Thailand, a cross-sectional study in 2011 at General hospital[10] found prevalence of postpartum depression at 6 weeks postpartum was 10.4% using EPDS with marital status, partner relationship, plan of this pregnancy, maternal anxiety and newborn complication identified as associated factors. In 2017, a study at Taksin Hospital[11] found prevalence of postpartum depression at 6 weeks postpartum was 18.8% using EPDS with maternal anxiety and social support identified as associated factors. Trend of postpartum depression seems to rise over time.

Previous studies in Thailand were done many years ago and there were drastically changed in culture and lifestyle after the outbreak of COVID-19 infection. These alongside with economy regression might increase postpartum depression. Therefore, we would like to study the associating factors with postpartum depression in this era; patients at risk can be effectively identified, diagnosed, and treated postpartum depression.

This research aimed to study the prevalence and factors associated with high postpartum depression score at 6-week postpartum in Charoenkrung Pracharak hospital using Thai EPDS.

Materials and Methods

This cross-sectional study was conducted in Charoenkrung Pracharak Hospital, Bangkok, Thailand in December 2022 – May 2023. The protocol was approved by the Bangkok Metropolitan Administration Human Research Ethics Committee (R004h/65_EXP). The sample size was calculated based on Nuanchawee's study[11] in 2017 which identified 18.8% of prevalence of postpartum depression at 6 weeks. Then total sample size in this study was 294 with estimated 20% data loss. The inclusion criteria were participants who were at least 18 years old, delivered at Charoenkrung Pracharak Hospital, and could read and write Thai. Participants were enrolled and their consent forms were obtained during the 3rd trimester or immediate postpartum period. Participants who had psychotic disorders that could not communicate

or had depressive disorder before delivery was excluded. For participants with psychotic disorders that could not communicate, we excluded them by reviewing their medical records. For the participants with depressive disorder, we exclude them by reviewing medical record in Charoenkrung Pracharak Hospital, and by asking whether they have depressive disorder before delivery that had to be treated by a psychiatrist.

On the 2nd day of postpartum period, a questionnaire was given to each participant to be answered in an isolated room with no distraction. Participants had to write their answers in the questionnaire. The questionnaire consisted of questions about age, educational levels, family income, adequacy of income, family type (nuclear or extended family), marital status, tobacco use (during this pregnancy), alcohol drinking (during this pregnancy), substance use (during this pregnancy), parity, underlying disease, antepartum complication (i.e. gestational hypertension, preeclampsia, gestational diabetes mellitus, and placenta previa), intention of pregnancy and newborn sex expectation. At 6-week postpartum visit, the Thai version of Edinburgh postnatal depression scale (EPDS)[7] and another questionnaire were given to the participants to be answer in an isolated room with no distraction. Participants had to write their answers in the EPDS and the questionnaires. This questionnaire consisted of questions about maternity leave (defined as 90 days maternity leave from work), breast feeding (breast milk only, formular milk only or combine), breast feeding complication, duration of sleep (estimated by the participants as accumulate time of sleep per night), postpartum stressful event (defined as any stressful event happened during the postpartum period apart from childbirth related event), adequacy of social support (defined as the support participants got from their partner, family, and friends in the postpartum period; the participant will be determining whether they were receiving adequate social support). Obstetrics outcomes were collected by chart review on the participant's and newborn's medical records. These outcomes consisted of gestational age, route of delivery, intrapartum complication (i.e. retained placenta, cervical tear, third- and fourth-degree perineal tear), postpartum complication (i.e. infected episiotomy wound, and metritis), postpartum hemorrhage, birth weight, congenital anomaly (i.e. esophageal atresia, and cardiac malformations), newborn complication (i.e. pneumonia, sepsis, severe birth asphyxia, transient tachypnea of newborn, and jaundice that need phototherapy), birth injury (i.e. cephalhematoma, and clavicle fracture), neonatal intensive care unit (NICU) admission. Participants who had EPDS score at least 11 would be referred to the psychiatrist. Unfortunately, psychiatric diagnosis and treatment would not be accounted in our study.

Primary outcome was prevalence of high postpartum depression score at 6-week postpartum (define as Thai version of EPDS score at least 11). The secondary outcomes were factors (personal data and obstetrics outcome) associated with high postpartum depression score by comparing between normal and high postpartum depression score groups. All data were analyzed with SPSS software (version 26). The data were summarized by using descriptive statistics and were shown with numbers, percentage, mean and standard deviation. Regression analysis was used to analyze the associating factors. After univariate analysis, all factors that were statistically significant were included in multivariate analysis. Adjusted odds ratio (aOR) along with 95% confidence interval (CI) were presented. A p value < 0.05 was considered statistically significant.

Results

In December 2022 – May 2023, 336 participants met the inclusion criteria. There were 29 participants who denied enrollment. Thirteen participants were fallen into the exclusion criteria. Two of them were excluded due to having psychotic disorder that cannot communicate and eleven of them were excluded due to having depressive disordered before delivery. Apart from participants who denied enrollment or had fallen into the exclusion criteria, the total number of participants in our study was 294. Thirty participants did not follow-up at the 6-week postpartum period. Of 264 participants, 46 of them had a high postpartum

depression score. Therefore, the prevalence of high postpartum depression score was 17.42%. There are 2 participants that have other ethnicities with 262 Thai participants. The demographic data are shown in Table 1. The rate of unintentional pregnancy, postpartum stressful event, and inadequate social support was significantly higher in high postpartum depression score group than normal postpartum depression score group. The rate of maternity leave was significantly lower in high postpartum depression score group than normal postpartum depression score group.

Table 1. Comparison of demographic and preoperative data between transfusion and non-transfusion groups.

Variables	Normal depression score, n = 218 (%)	High depression score, n = 46 (%)	Crude odds ratio (95% confidence interval)	p value
Age (years) mean ± SD	29.4 ± 6.1	27.2 ± 6.4	-	0.029[t]
< 20	9 (4.1)	5 (10.9)	Reference	
20-34	162 (74.3)	34 (73.9)	0.38 (0.12-1.20)	0.098
≥ 35	47 (21.6)	7 (15.2)	0.27 (0.07-1.04)	0.056
Education level				
Secondary school and below	58 (26.6)	16 (34.8)	Reference	
High school	57 (26.1)	7 (15.2)	0.45 (0.17-1.16)	0.099
Vocational education	37 (17.0)	11 (23.9)	1.08 (0.45-2.58)	0.866
Bachelor's degree and above	66 (30.3)	12 (26.1)	0.66 (0.29-1.51)	0.323
Family income (baht/month) mean ± SD	32,473.5 ± 20,821.5	29,865.9 ± 15,544.7	-	0.449[t]
< 15,000	27 (13.6)	5 (12.2)	Reference	
15,000 - 30,000	92 (46.5)	19 (46.3)	1.12 (0.38-3.27)	0.842
> 30,000	79 (39.9)	17 (41.5)	1.16 (0.39-3.45)	0.787
Inadequate income	28 (13.0)	7 (15.6)	1.23 (0.5-3.03)	0.651
Nuclear family	105 (48.2)	24 (52.2)	1.18 (0.62-2.22)	0.621
Unmarried	93 (42.7)	24 (52.2)	1.47 (0.78-2.77)	0.238
Tobacco use	5 (2.3)	-	-	0.591[F]
Alcohol drinking	15 (6.9)	2 (4.3)	0.62(0.14-2.79)	0.529
Substance use	3 (1.4)	-	-	> 0.999[F]
Nulliparous	98 (45.0)	24 (52.2)	1.33 (0.70-2.50)	0.373
Underlying disease	22 (10.1)	3 (6.5)	0.62 (0.18-2.17)	0.456
Antepartum complication	74 (33.9)	21 (45.7)	1.64 (0.86-3.11)	0.135
Unintended pregnancy	51 (23.4)	22 (47.8)	3.03 (1.56-5.88)	0.001
Match sex expectation	196 (90.3)	41 (89.1)	0.88 (0.31-2.47)	0.806
Six weeks postpartum				
Maternity leave	155 (71.1)	23 (50.0)	0.41 (0.21-0.78)	0.006
Breast feeding				
Breast milk only	119 (54.6)	20 (43.5)	Reference	
Formula milk only	5 (2.3)	3 (6.5)	1.46 (0.75-2.81)	0.263
Combine	94 (43.1)	23 (50.0)	3.57 (0.79-16.12)	0.098
Breast feeding complication	84 (38.5)	22 (74.8)	1.46 (0.77-2.77)	0.244
Duration of sleep ≥ 6 hours	96 (44.2)	16 (34.8)	0.67 (0.35-1.30)	0.241
Postpartum stressful event	58 (26.6)	33 (71.7)	7.00 (3.45-14.22)	< 0.001
Inadequate social support	21 (9.6)	21 (45.7)	0.13 (0.06-0.26)	< 0.001

[t] = independent t-test, [F] = fisher's exact test, SD: standard deviation

Table 2 shows obstetrics outcomes of both high and normal postpartum depression score groups which were not statistically different.

Table 3 demonstrates the associations between high postpartum depression score and several variables using logistic regression. After regression analysis, unintentional pregnancy (aOR 2.27, 95%CI 1.06-4.76, p = 0.035), present of postpartum stressful event (aOR 4.55, 95%CI 2.13-9.74, p < 0.001) and inadequate social support (aOR 5.26, 95%CI 2.33-12.5, p < 0.001) were statistically significant factors associated with high postpartum depression score. In the contrary, receiving maternity leave (aOR 0.47, 95%CI 0.23-0.99) reduced the prevalence of high postpartum depression score. Other factors were assessed but failed to show statistically significant association with high postpartum depression score.

Table 2. Obstetrics outcome.

Variables	Normal depression score, n = 218 (%)	High depression score, n = 46 (%)	Crude odds ratio (95% confidence interval)	p value
Gestational age (weeks) mean ± SD	38.0 ± 1.8	37.4 ± 2.2	-	0.062[t]
< 37	28 (12.8)	7 (15.2)	Reference	
37-42	190 (87.2)	39 (84.8)	0.82 (0.34-2.01)	0.667
Vaginal delivery	133 (61.0)	25 (54.3)	Reference	
Cesarean delivery	85 (39.0)	21 (45.7)	1.31 (0.69-2.50)	0.403
Primary cesarean delivery	61 (71.8)	13 (61.9)		
Repeated cesarean delivery	24 (28.2)	8 (38.1)		
Intrapartum complication	14 (6.4)	2 (4.3)	0.66 (0.15-3.02)	0.595
Postpartum complication	9 (4.1)	2 (4.3)	1.06 (0.22-5.06)	0.964
Postpartum hemorrhage	18 (8.3)	2 (4.3)	0.51 (0.11-2.26)	0.371
Birth weight (g) mean ± SD	3,084.4 ± 531.8	2,962.9 ± 493.7	-	0.156[t]
< 2,500	23 (10.6)	8 (17.4)	1.68 (0.70-4.03)	0.249
2,500-4,000	183 (83.9)	38 (82.6)	Reference	
> 4,000	12 (5.5)	-	-	
Congenital anomaly	8 (3.7)	1 (2.2)	0.58 (0.07-4.78)	0.616
Newborn complication	95 (43.6)	18 (40.0)	0.86 (0.45-1.66)	0.659
Birth injury	15 (6.9)	3 (6.5)	0.94 (0.26-3.40)	0.930
NICU admission	9 (4.1)	2 (4.3)	1.06 (0.22-5.06)	0.946

[t] = independent t-test, NICU: neonatal intensive care unit, SD: standard deviation

Table 3. Regression analysis.

Variables	Univariate analysis		Multivariate analysis	
	Crude odds ratio (95% confidence interval)	p value	Adjusted odds ratio (95% confidence interval)	p value
Unintended pregnancy	3.03 (1.56-5.88)	< 0.001	2.27 (1.06-4.76)	0.035
Maternity leave	0.41 (0.21-0.78)	0.006	0.47 (0.23-0.99)	0.049
Postpartum stressful event	7.00 (3.45-14.22)	< 0.001	4.55 (2.13-9.74)	< 0.001
Inadequate social support	0.13 (0.06-0.26)	< 0.001	5.26 (2.33-12.5)	< 0.001

[t] = independent t-test, NICU: neonatal intensive care unit, SD: standard deviation

Discussion

The prevalence of high postpartum depression score in our study was 17.42% which was approximated to the worldwide prevalence of postpartum depression of 17.22%[9]. A systematic review of global prevalence of depression in general population[12] found more increasing prevalence of depression after the COVID-19 pandemic in women than men. With the same trend, increasing prevalence of postpartum depression after the COVID-19 pandemic could also be expected with postpartum women. Our study showed approximate rate of postpartum depression with the study by Nuanchawee in 2017 at Taksin Hospital[11]. They used the same cut point of Thai version of EPDS (score of at least 11) to define high postpartum depression score as our study and reported the prevalence of postpartum depression of 18.8%. The higher prevalence of high postpartum depression score than the one in the previous study at Taksin Hospital, which was conducted before the era of COVID-19, was not found in our study. This might result from the fact that our study was undertaken in December 2022 – May 2023 when the COVID-19 pandemic eased up. Also, there was not any participant being infected with COVID-19 during the time when the questionnaire was given. In contrast to the study at Taksin Hospital, the study at General Hospital[10] reported the prevalence of postpartum of 10.4%, which showed lower prevalence of postpartum depression score than the one in our study. This might stem from differences of cut point of EPDS. The study in General hospital used a score of at least 13 to define high postpartum depression score. Although the EDPS was originally developed with the threshold score at least 13 suggested by the developer, the study by Vacharaporn[8] found using cut point of 11 of Thai version of EDPS showed better sensitivity and specificity (sensitivity 100% and specificity 88% for cut point of 11, sensitivity 66.6% and specificity 93.75% for cut point of 13).

Inadequate social support was pointed out to be associated with high postpartum depression scores in our study. A study of association between social support and postpartum depression by Hahyeon et al[13] also showed the same trend. They reported that women with moderate or low social support were more likely to have postpartum depression (moderate social support (OR 1.78, 95%CI 1.26–2.53), low social support (OR 2.76, 95%CI 1.56-4.89)). Our study focused on perceived social support which might not be equal to the actual support. Previous studies found perceived social support to have more effects on maternal mental health and wellbeing than actual support[14, 15].

Postpartum stressful event is another relating factor with high postpartum depression score. A study of effect of stressful life event in the year before delivery on the likelihood of postpartum depression by Mina et al[16] revealed the likelihood of postpartum depression was higher among women who had high relational stress. This showed the importance of postpartum visit in identifying not only physical but also mental and psychological problems of the new mothers.

Our study also found that unintended pregnancy was associated with high postpartum depression score. A prospective cohort study by Mercier et al[17] found unintentional pregnancy to be associated with depression at 3 and 12 months postpartum (3 months (relative risk (RR) 2.1, 95%CI 1.2-3.6, and 12 months (RR 3.6, 95%CI 1.8-7.1)). In our study, we found 27.7% of all pregnancies to be unintentional. Unintended pregnancy could result from lack of family planning and poor knowledge on contraception[19]. After birth, some mothers would deny their child to ever be resulted from unintentional pregnancy[18]. Since our study collected this information at the immediate postpartum period, the actual rate of unintended pregnancy may be higher than the one in our study. Unintended pregnancy could lead to suboptimal antenatal care, and adverse pregnancy outcome. Patient education and family planning should be promoted to lower rate of unintended pregnancy.

We found that taking maternity leave was associated with lower rate of high postpartum

depression score. A cross-sectional study by Kornfeind and Sipsma found that every additional week of maternity leave was associated with the lower rate of postpartum depressive symptoms (OR, 0.58, 95% CI 0.40–0.84)[20]. Taking maternity leave allowed new mothers to adjust to mother life, bond with the newborn, have time for wound healing, and breast feeding.

Previous studies found breastfeeding reduce the rate of postpartum depression[21, 22]. In our study, however not statistically significant, we also found higher number of participants using formula milk and lower number of breastfeeding in high postpartum depression score group compared to normal score group.

Strengths

We collected some of the personal data on the 2nd day of postpartum period while participants were in the hospital to avoid recall bias. The data was collected completely so the result was reliable. Moreover, our study used Thai version of Edinburgh postnatal depression scale instead of the Edinburgh postnatal depression scale instead of the 2 questions and 9 questions (2Q9Q) questionnaire to identify participants with high postpartum depression score. The 2Q9Q questionnaire was a screening tool for depression. Apart from being wildly used in clinical and research setting, the 2Q9Q questionnaire might not be suitable to be used in postpartum patients since the questionnaire of 2Q9Q included changes in sleep pattern which would be the common situation among breastfeeding mothers.

Limitations

The limitations of our study were firstly, our study did not follow-up participants with high postpartum depression score on the psychiatric diagnosis and treatment so, the actual rate of postpartum depression could not be calculated. Secondly, participants who were unable read and write Thai were exclude from our study. These participants could be uneducated Thai people, or they could have other ethnicities. Therefore, the rate of high postpartum depression score in our study might be different from the actual rate. Thirdly, because our study lacked antepartum depression testing, participants who did not recognize or deny themselves of having depressive disorder before delivery would be included in our study.

Clinical Application

From our study, patients with risk factors of high postpartum depression score should be identified early and health care personnel should pay extra attention. All women in the postpartum period should be educated about symptoms of postpartum depression and reassured not to hesitate in reporting any feelings of anxiety to health care provider when having those symptoms. Patients with risk factors must have more frequent and early postpartum visits which should contain both physical and mental cares. Moreover, new mothers should be recommended to take maternity leave as it resulted in lower chance of having high postpartum depression score.

Conclusion

The prevalence of high postpartum depression score at 6 weeks in our study was 17.42%. Unintentional pregnancy, present of postpartum stressful event and inadequate social support were associated with high postpartum depression score. Taking maternity leave may be advocated because of lower rate of high postpartum depression score.

Potential conflicts of interest

The authors declare no conflicts of interest.

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