ORIGINAL ARTICLE

Prevalence and Risk Factors of Postpartum Depression

Chitlada Sutthi, MD[1], Wiyada Luangdansakul, MD[1], Pichamon Sukkasame, MD[1], Buppa Smanchat, MD[1], Kornkarn Bhamarapravatana, PhD[2], Komsun Suwannarurk, MD[3]

[1] Department of Obstetrics and Gynecology, Bhumibol Adulyadej Hospital, Royal Thai Air Force, Bangkok, Thailand; [2] Department of Preclinical Sciences, Faculty of Medicine, Thammasat University, Pathumthani, Thailand; [3] Department of Obstetrics and Gynecology, Faculty of Medicine, Thammasat University, Pathumthani, Thailand

Background: Postpartum depression (PPD) is one of the most common mental health conditions in new mothers, and negatively impacts newborn care, mother-baby interaction/bonding, and familial relationships.

Objective: To identify the prevalence and risk factors of PPD in parturient-delivered babies at a tertiary medical facility in Thailand.

Materials and Methods: The present study was a cross-sectional descriptive study conducted at Bhumibol Adulyadej Hospital (BAH), Bangkok, Thailand, between October 2023 and October 2024. Participants were pregnant women who delivered their babies and attended the postpartum clinic at BAH. At the postpartum ward, patients were counseled before signing a written consent form. A Thai version of the Edinburgh Postnatal Depression Scale (EPDS) was used for PPD evaluation at four to six weeks. Demographic and clinical data were collected from the BAH electronic database.

Results: Five hundred thirteen participants were recruited in the present study. The mean age was 29.3 years old. The prevalence of PPD was 12.1% (62 out of 513). Risk factors for PPD were being a single mother (adj. OR 7.1, 95% CI 2.5 to 20.2), alcohol drinker (adj. OR 3.7, 95% CI 1.6 to 8.3), neonatal complication (adj. OR 6.6, 95% CI 1.8 to 24.2), premenstrual syndrome (adj. OR 2.7, 95% CI 1.3 to 5.3), no childcare support (adj. OR 5.1, 95% CI 2.2 to 11.7), and previous depression (adj. OR 5.1, 95% CI 1.5 to 16.8).

Conclusion: The prevalence of PPD was 12.1%. Risk factors of PPD were a single mother, alcohol drinker, neonatal complication, premenstrual syndrome, inadequate or absent childcare support, no familial psycho-social support, and previous depression.

Keywords: Postpartum depression; Prevalence; Risk factor

Received 29 November 2024 | Revised 8 April 2025 | Accepted 11 April 2025

J Med Assoc Thai 2025;108(5):354-60

Website: http://www.jmatonline.com

Depression is one of the most common mental health conditions, causatively associated with devastating effects around the world[1]. The World Health Organization (WHO) estimates that more than 320 million people, or 4.4% of the world population, experiences depression. Women experience depression at double the rate of men[1]. Pregnancy is a condition that causes numerous and significant changes to both physical and mental health. The report showed that stress in pregnancy could associate with strong negative mental health outcomes in the patient, including onset of new psychiatric illness or syndrome, worsening or complication of extant mental health condition, and relapse of previous conditions in remission[2]. Abnormal psychiatric conditions during pregnancy were found to be associated with poor antenatal care, drug abuse, poor delivery outcomes, and neonatal outcomes[2]. These risk factors have amplified the increased rate of psychiatric disorders after delivery. Postpartum depression (PPD) occurs during the first four weeks postpartum period[3]. The incidence of PPD ranges from 10% to 20% in pregnancies. In some countries, it reached as high as 35% depending on the timing of the study and questionnaire methodology[4].

The prevalence of PPD among Thai women was 8.4%[5]. A study from the United States showed the risk factors of PPD included teen pregnancy, prior depression before pregnancy, unmarried status, smoking, severe complications during pregnancy, newborns requiring intensive care, and strong stressors during pregnancy[6]. PPD may negatively affect newborn care, mother-baby interaction,

Correspondence to:

Luangdansakul W.

Department of Obstetrics and Gynecology, Bhumibol Adulyadej Hospital, Royal Thai Air Force, Bangkok 10220, Thailand.

Phone: +66-83-9928978

Email: nui.obgyn@gmail.com

How to cite this article:

Sutthi C, Luangdansakul W, Sukkasame P, Smanchat B, Bhamarapravatana K, Suwannarurk K. Prevalence and Risk Factors of Postpartum Depression. J Med Assoc Thai 2025;108:354-60.

DOI: 10.35755/jmedassocthai.2025.5.354-360-02003

development, long term child intellectual outcomes, and family relationships. Aim of the present study was to identify the prevalence and risk factors of PPD in the population of suburban women around Bhumibol Adulyadej Hospital (BAH), Bangkok, Thailand

Materials and Methods

The present study was a cross-sectional descriptive study of pregnant women who delivered at BAH, Bangkok, Thailand between October 2023 and October 2024. The BAH Institutional Review Board approved this study in 2023 (IRB No.71/66). The Thai Clinical Trial Register was approved in 2023 (TCTR20231010002). Inclusion criteria were pregnant women fluent in Thai language, aged between 15 and 50 years who delivered and attended the postpartum clinic at BAH.

Demographic characters included age, marital status, religion, family structure, occupation, monthly income, and the duration of marriage. Obstetric and gynecological data of interest included parity, history of terminated or failed pregnancy, gestational age during the first antenatal care visit, number of antenatal care visits, and complications occurring in pregnancy. Subjects who met the inclusion criteria were informed both on paper and verbally and all signed a written consent. Women who were illiterate in Thai or who were unwilling to participate were excluded.

The Edinburgh Postnatal Depression Scale (EPDS) questionnaire needed to be completed at four to six weeks postpartum. The EPDS was completed by a structured interview questionnaire that contained 10 questions, with a range of 0 to 30, relating to feeling overwhelmed, anxiety, blaming, fear, anhedonia, sadness, sadness-induced sleep disorder, crying, and thoughts of self-harm. Each statement was scored on a scale of 0 to 3 points. The maximum number of points possible was 30, with as few as 10 points or any marking on the answer confirming a desire to self-harm were taken as the lower limit for the likelihood of PPD[7]. The cut-off score in the present study had to be greater than or equal to 13 points. The cut-off scores in the previous study were presumably derived from the English version EPDS and therefore not directly applicable to the Thai version used[8].

The sample size was calculated on the basis of an assumed PPD prevalence of 8.4% according to Panyayong's study[5]. The effective size was set at the level of 0.25. Alpha errors were set at the level of 0.05. Total sample size was at least 473 cases. Due to the possibility of incomplete data, the sample size was increased by 10%. The number of participants in the present study groups amounted to 521 participants.

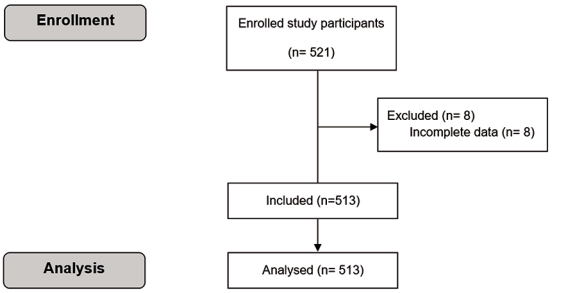

Figure 1. Flow of study.

Data collection was taken during postpartum follow-up at BAH. Data was analyzed using PASW Statistics for Windows, version 18.0 (SPSS Inc., Chicago, IL, USA). Demographic characteristics of the subjects were analyzed and presented as means with standard deviations or frequencies with percentages as appropriate. Comparisons between the PPD and non-PPD groups were performed using independent samples t-test for continuous variables and chi-square test or Fisher's exact test for categorical variables. Risk factors were analyzed using multivariate logistic regression. Variables that showed a p-value of less than 0.05 in the univariate analysis were included in the multivariate model. A p-value of less than 0.05 was considered statistically significant.

Results

Five hundred twenty-one participants were recruited into the present study. Eight participants were excluded from the study due to incomplete collected data as shown in Figure 1. After finishing the EDPS evaluation, the number of remaining participants was 513. There were 451 and 62 cases who were diagnosed with non-PPD and PPD status, respectively.

The mean age of participants was 29.3 years old. Many participants (251 out of 513) had an education level of bachelor's degree or higher. Three-quarters (381 out of 513) of subjects were unemployed. Most participants had no underlying diseases. Half of participants (241 out of 513) had a monthly income of more than 407 US dollars.

PPD cases had comparatively higher incidence of single motherhoods, alcohol consumption, neonatal complications, marital conflict, and premenstrual symptoms (PMS) versus the non-PPD group with

Table 1. Demographic character of parturient who attended study by using EDPS

	PPD		p-value
	Yes (n=62)	No (n=451)	
Age (years); mean±SD	29.94±7.06	29.21±5.87	0.375
Single; n (%)	7 (11.3)	8 (1.8)	<0.001
Higher than bachelor; n (%)	29 (46.8)	222 (49.2)	0.717
Employed; n (%)	22 (35.5)	110 (24.4)	0.061
Income >407 USD; n (%)	29 (41.9)	212 (47.0)	0.178
Alcohol drinker; n (%)	12 (19.6)	30 (6.9)	0.001
Neonatal complication; n (%)	6 (9.7)	6 (1.3)	<0.001
Fully breastfeeding; n (%)	27 (43.5)	221 (49.0)	0.574
Marital conflict; n (%)	11 (17.7)	30 (4.4)	<0.001
Premenstrual syndrome; n (%)	24 (38.2)	65 (14.4)	<0.001
Stressful life event; n (%)			
Previous depression[1]	9 (14.5)	9 (2.0)	<0.001
Couple had no jobs[2]	3 (4.8)	9 (2.0)	0.166
Heavy financial burden[3]	14 (22.6)	27 (6.0)	<0.001
Family support; n (%)			
Father shows no childcare[a]	24 (38.7)	30 (6.7)	<0.001
No financial support[b]	3 (4.8)	7 (1.6)	0.08
No family support in crisis[c]	52 (83.9)	441 (98.0)	<0.001
Felt unsafe within their families	2 (3.2)	2 (0.4)	0.02
Low secure attachment with their families	5 (8.1)	0 (0.0)	<0.001

SD=standard deviation; EDPS=Edinburgh Postnatal Depression Scale; PPD=postpartum depression

[1] Previous history of depression which need help, [2] Couple/partner lost their jobs, [3] Having debt or could not pay the bill

(a) Father showed no childcare involvement (i.e., the father did not participate in daily childcare activities such as feeding, changing nappies, or nighttime care), (b) No financial support from spouse, (c) Mother family support in crisis

statistical significance.

In terms of psychosocial support, patients with PPD reported higher incidence of depression history, financial hardship, absent/unsupportive partners, lack of family support during crisis, and report of unsafe and insecure relationships within families when compared to non-PPD with statistical significance (Table 1).

Table 2 shows the risk factors associated with PPD in the study via logistic regression, univariate, and multivariate analysis. The associated risk factors for PPD by multivariate analysis were single motherhood, alcohol consumption, neonatal complication, PMS, and previous history of depression.

Discussion

The purpose of the present study was to investigate the prevalence of PPD and its risk factors among patients who lived in the Bangkok Metropolitan Region. The prevalence of PPD found in the present study was 12.1%. From the previous studies, the prevalence of PPD ranged from 8.4% to 36.5% (Table 3)[5,9-14].

The study of Panyayong's from Thailand in 2013 reported that the prevalence of PPD was only 8.4%[5]. The 10-year difference between the two studies might account for broad trends in psychosocial change. The population in Panyayong's study included four regions and the Bangkok population so the difference of demographics data may have affected PPD factors. The factors in the current study that differed from Panyayong's study were being a single mother, alcohol consumption, history of PMS, and the father's involvement in childcare. In a Nigerian study from 2020, a high prevalence of PPD was reported at 36.5%[9]. Subjects in the Nigerian study were Christian and Muslim people. Most subjects in the current study were Buddhist. Muslim and Christian mothers had differences in religious background, social support from family, friends, and faith communities. These factors might be associated with findings of high prevalence of PPD[15]. In addition, Adeyemo's study used EPDS cut-off of 10 points so the prevalence of PPD was higher than the present study.

In the current study, participants who lived without a partner, thus single mothers, had an eight-

Table 2. Factors associated with PPD, univariate, and multivariate logistic regression analysis

	Univariate				Multivariate			
	Crude OR	95% CI		p-value	Adj OR	95% CI		p-value
		Lower	Upper			Lower	Upper	
Marital status								
Couple	Reference			1	Reference			1
Single	7.05	2.46	20.19	<0.001	8.04	2.43	26.62	0.001
Drinker								
No	Reference			1	Reference			1
Yes	3.25	1.57	6.73	0.002	3.65	1.61	8.28	0.002
Neonatal complication								
No	Reference			1	Reference			1
Yes	7.95	2.48	25.48	<0.001	6.63	1.81	24.24	0.004
Heavy financial burden								
No	Reference			1	Reference			1
Yes	4.57	2.24	9.31	<0.001	2.22	0.88	5.62	0.092
Marital conflict								
No	Reference			1	Reference			1
Yes	4.89	2.2	10.86	<0.001	2.08	0.73	5.95	0.171
Premenstrual syndrome								
No	Reference			1	Reference			1
Yes	3.81	2.14	6.77	<0.001	2.65	1.33	5.28	0.005
Father shows no childcare involvement								
No	Reference				Reference			
Yes	8.84	4.7	16.62	<0.001	5.1	2.22	11.7	<0.001
No family support in crisis								
No	Reference			1	Reference			1
Yes	9.42	3.66	24.25	<0.001	3.49	0.82	14.78	0.09
Felt unsafe when surrounded by family members								
No	Reference				Reference			
Yes	7.47	1.03	53.99	0.046	0.43	0.03	5.36	0.511
Previous history of depression								
No	Reference				Reference			
Yes	8.32	3.16	21.88	<0.001	5.05	1.52	16.81	0.008

PPD=postpartum depression; CI=confidence interval; OR=odds ratio; Adj OR=adjusted odds ratio

fold increased risk of developing PPD. Mothers who lived with spouses who did not help with childcare were also at risk of developing PPD in the present study. Similarly, a Nigerian study found that not receiving help with childcare from the husband and having an unsupportive partner were identified as predictors of PPD[9]. Single and early motherhood is associated with low socioeconomic status[16]. Single mothers and their children had increased risk for psychopathology, however, the mechanisms of this are unclear[17]. Single mothers probably face both taking care of a child without shared responsibility and economic problems resulting from low income and the lack of extra income from a partner. In a Swedish study, 90% of children with single parents had increased risk for childhood psychopathology, suicidal ideation, and drug abuse[18].

Additionally, neonatal complications in 6 out of 62 were identified as significant risk factors in the present study. Neonatal complications were identified by readmittance within seven days, low Apgar score, and neonatal intensive care unit (NICU) administration. This result was consistent with the previous research from Thailand. Panyayong reported that poor child health doubled the risk of PPD[5]. Corresponding with the study in England, prolonged NICU admission and infants with complex medical conditions can aggravate stress, leading to maternal depression during and after the neonatal period. These stressors affect mother-infant bonding, which

Table 3. Comparison of prevalence and risk factors of postpartum depression

	Present	Wang	Xayyabouapha	Oliveira	Peng	Cena	Adeyemo	Panyayong
Year	2024	2024	2022	2022	2021	2021	2020	2013
Postpartum (weeks)	4 to 6	6	4 to 24	1	6	1 to 40	6	6 to 8
Country	Thailand	China	Loas	Brazil	China	Italy	Nigeria	Thailand
Cases	513	2,462	521	315	4,813	1,471	250	1,731
Single center	S	S	S	S	S	M	M	M
Self-questionnaire	SQ	SQ	I	SQ	I	I	I	SQ
Prevalence (%)	12.1	20.2	21.3	19.7	11.5	19.9	36.5	8.4
Age (years)	29.9	32.37	27.5	28.3	29		29.5	20 to 34
Factor								
Single mother	Y							
Preterm birth		Y						
CI		Y						
Multiparous			Y					
Drinker	Y							
NC	Y							Y
Formula feeding		Y						
Marital conflict			Y					Y
PMS	Y							
PDS	Y	Y	Y	Y	Y		Y	Y
Physical abuse			Y					
Having dept[a]						Y		Y
FSNCI	Y						Y	
NFSIC			Y				Y	Y
FLSA								Y
Comment*				1	1,2,3		4	5,6

S=single center; M=multicenter; Y=yes; SQ=self-questionnaire; I=interview; CI=cervical insufficiency; NC=neonatal complication; PMS=premenstrual syndrome; PDS=previous depression; FSNCI=father shows no childcare involvement; NFSIC=no family support in crisis; FLSA=family a little secure attachment

(a) Having debt or could not pay the bill

* 1: Domestic violence, 2: Family history of mental illness, 3: Living with parents-in law, 4: Stressful life events, 5: Maternal health, 6: Having been physically abused by partner

decelerates the emotional recovery postpartum[19].

A meta-analysis study from China in 2020 illustrated that pregnant women who consumed alcohol had a significantly higher risk of developing PPD compared to those who did not, with an odds ratio of 1.22[20]. Hence, alcohol consumption could be considered as a predictor of PPD. In the current study, 26.3% of the participants were alcohol drinkers. This group demonstrated a statistically significant three-fold increase in the risk of PPD. The results of the present study supported Qiu et al.'s study[20]. Wang et al.'s study showed only 0.1% alcohol drinkers and reported no significant relative risk of PPD associated with alcohol consumption[14]. The alcoholic consumption among participants in the current study was more than Wang et al.'s study at 26.3% versus 0.1%, respectively. This might be the difference of culture and education of the current study and Wang et al.'s study. Wang et al. conducted the study in China where 95% of participants had an education level higher than bachelor's degree, compared to 46.8% in the current work[14]. In the culture that emphasized having only one child, each pregnancy was highly valued by close knit family and friends, especially in multigenerational families. Higher education of mothers and family support might be a good contributor to new mothers resulting in low prevalence of PPD.

Mothers with a history of mental health issues were at a higher risk of developing PPD after giving birth. The present study also supported the above finding, showing that participants with a history of mental health issues had a five-fold increased risk of developing PPD. Similar findings had been reported in studies from Laos, China, Brazil, and Nigeria[9,11-14]. This finding may be attributed to hormonal and

immune system changes after delivery[13,14,21].

The current study reported that those who reported PMS had 2.6-fold increased risk of PPD. Similarly with a systematic review and meta-analysis, women with pre-pregnancy history of PMS had more than double the odds of PPD compared to those without PMS (odd ratio 2.20)[22]. This finding was attributed to sex hormone fluctuation. During menstrual cycle, high level of estrogen and sudden drop of progesterone levels affected the lowering of serotonin level[23]. Lower levels of estrogen and progesterone lowered levels of serotonin and GABA in central nervous system, respectively[23].

The main strength of the present research was a quick self-finish standard screening test. The limitations of the study included being conducted at a single hospital, a population limited to Bangkok, and the use of only the EPDS as a depression measurement tool. The lack of inter-rater reliability and the absence of consideration for cultural and contextual factors might have resulted in inadequate control of confounding factors. Moreover, the cross-sectional design of the study limits the ability to establish causal relationships between the identified risk factors and PPD. This questionnaire was used as a screening test, not a diagnostic test. The diagnosis of major depressive disorder requires evaluation by a psychiatrist.

Conclusion

The prevalence of PPD was 12.1%. Risk factors of PPD were single motherhood, alcohol consumption, neonatal complication, irritable mood before menstruation, lack of childcare support, weak or absent familial psycho-social support, and prior depression. These factors can be utilized as tools for prevention, early intervention, and prompt treatment.

What is already known about this topic?

Depression is the most common mental health pathology in women. Stress during pregnancy could trigger mental illness or exacerbate existing psychiatric conditions and progress psychiatric disease. Stress and risk factors might affect the increased rate of psychiatric disorders after delivery. PPD was diagnosed as early as four weeks after delivery.

What does this study add?

The prevalence of PPD was 12.1%. Single mother, alcohol drinkers, neonatal complications, irritable mood before menstruation, no childcare support, no familial psycho-social support, and previous depression were the risk factors of PPD. Patients who had these risk factors should be evaluated for PPD prevention, early intervention and prompt treatment.

Acknowledgement

The authors would like to thank the staff of the Department of Obstetrics and Gynecology, Maternal and Fetal Medicine Bhumibol Adulyadej Hospital for their support and cooperation.

Conflicts of interest

The authors declare no conflict of interest.

References

1. World Health Organization (WHO). Anxiety disorders. In: Depression and other common mental disorders: global health estimates. Geneva: WHO; 2017. p. 10-11.
2. Frieder A, Dunlop AL, Culpepper L, Bernstein PS. The clinical content of preconception care: women with psychiatric conditions. Am J Obstet Gynecol 2008;199(6 Suppl 2):S328-32.
3. Limlomwongse N, Liabsuetrakul T. Cohort study of depressive moods in Thai women during late pregnancy and 6-8 weeks of postpartum using the Edinburgh Postnatal Depression Scale (EPDS). Arch Womens Ment Health 2006;9:131-8.
4. Cunningham FG, Leveno KJ, Dashe JS, Hoffman BL, Spong CY, Casey BM, editors. Psychiatric disorders (chapter 64). In: Williams obstetrics. 26th ed. New York: McGraw Hill Education; 2022. p. 1143-4.
5. Panyayong B. Postpartum depression among Thai women: a national survey. J Med Assoc Thai 2013;96:761-7.
6. Ko JY, Rockhill KM, Tong VT, Morrow B, Farr SL. Trends in postpartum depressive symptoms - 27 states, 2004, 2008, and 2012. MMWR Morb Mortal Wkly Rep 2017;66:153-8.
7. Vacharaporn K, Pitanupong J, Samangsri N. Development of the Edinburgh Postnatal Depression Scale Thai version. J Mental Health Thai 2003;11:164-9.
8. Beck CT, Gable RK. Further validation of the Postpartum Depression Screening Scale. Nurs Res 2001;50:155-64.
9. Adeyemo EO, Oluwole EO, Kanma-Okafor OJ, Izuka OM, Odeyemi KA. Prevalence and predictors of postpartum depression among postnatal women in Lagos, Nigeria. Afr Health Sci 2020;20:1943-54.
10. Cena L, Mirabella F, Palumbo G, Gigantesco A, Trainini A, Stefana A. Prevalence of maternal antenatal and postnatal depression and their association with sociodemographic and socioeconomic factors:

A multicentre study in Italy. J Affect Disord 2021;279:217-21.
11. Peng S, Lai X, Du Y, Meng L, Gan Y, Zhang X. Prevalence and risk factors of postpartum depression in China: A hospital-based cross-sectional study. J Affect Disord 2021;282:1096-100.
12. Oliveira TA, Luzetti GGCM, Rosalém MMA, Mariani Neto C. Screening of perinatal depression using the Edinburgh Postpartum Depression Scale. Rev Bras Ginecol Obstet 2022;44:452-7.
13. Xayyabouapha A, Sychareun V, Quyen BTT, Thikeo M, Durham J. Prevalence and risk factors associated with postpartum depressive symptoms among women in Vientiane Capital, Lao PDR. Front Public Health 2022;10:791385.
14. Wang X, Zhang L, Lin X, Nian S, Wang X, Lu Y. Prevalence and risk factors of postpartum depressive symptoms at 42 days among 2462 women in China. J Affect Disord 2024;350:706-12.
15. Nurbaeti I, Lestari KB, Syafii M. Association between Islamic religiosity, social support, marriage satisfaction, and postpartum depression in teenage mothers in West Java, Indonesia: A cross-sectional study. Belitung Nurs J 2023;9:313-21.
16. Crosier T, Butterworth P, Rodgers B. Mental health problems among single and partnered mothers. The role of financial hardship and social support. Soc Psychiatry Psychiatr Epidemiol 2007;42:6-13.
17. Agnafors S, Bladh M, Svedin CG, Sydsjö G. Mental health in young mothers, single mothers and their children. BMC Psychiatry 2019;19:112.
18. Weitoft GR, Hjern A, Haglund B, Rosén M. Mortality, severe morbidity, and injury in children living with single parents in Sweden: a population-based study. Lancet 2003;361:289-95.
19. Gong J, Fellmeth G, Quigley MA, Gale C, Stein A, Alderdice F, et al. Prevalence and risk factors for postnatal mental health problems in mothers of infants admitted to neonatal care: analysis of two population-based surveys in England. BMC Pregnancy Childbirth 2023;23:370.
20. Qiu X, Sun X, Li HO, Wang DH, Zhang SM. Maternal alcohol consumption and risk of postpartum depression: a meta-analysis of cohort studies. Public Health 2022;213:163-70.
21. Silverman ME, Reichenberg A, Savitz DA, Cnattingius S, Lichtenstein P, Hultman CM, et al. The risk factors for postpartum depression: A population-based study. Depress Anxiety 2017;34:178-87.
22. Cao S, Jones M, Tooth L, Mishra GD. History of premenstrual syndrome and development of postpartum depression: A systematic review and meta-analysis. J Psychiatr Res 2020;121:82-90.
23. Takeda T. Premenstrual disorders: Premenstrual syndrome and premenstrual dysphoric disorder. J Obstet Gynaecol Res 2023;49:510-8.