Risk of Postpartum Depression among Mothers in Vinh Bao District, Hai Phong City, Vietnam in 2023

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Abstract: *Objective: This study assessed the prevalence and symptoms of probable postpartum depression among mothers in Vinh Bao district, Hai Phong, Vietnam. Methods: A cross-sectional study surveyed 204 mothers from 1 week to 6 months postpartum using the Edinburgh Postpartum Depression Scale (EPDS) with a cut-off of ≥13. Data were analyzed via SPSS 20.0. Results: The prevalence of probable postpartum depression was 18.1%, with higher rates among mothers 4–6 months postpartum, aged under 25 or over 35, and with three or more deliveries. Common symptoms included anxiety (91.9%), feeling overwhelmed (83.8%), and self-blame (83.8%), with 13.5% reporting self-harm thoughts. Conclusion: The notable risk of postpartum depression in this region underscores the need for educational interventions to enhance early detection and prevention, improving maternal mental health outcomes.*

Keywords: postpartum depression, maternal health, Hai Phong, Vietnam, EPDS

1. Introduction

Postpartum depression (PPD) is a worldwide health concern due to the consequences it causes. According to the American Psychiatric Association, PPD is a non-psychotic major depressive disorde, the symptoms of which usually begin within four weeks after giving birth. Symptoms of PPD include: depressed mood, decreased or loss of interest in previously enjoyed activities, weight loss, sleep disturbances, persistent tiredness or loss of energy, feelings of worthlessness or excessive guilt, decreased concentration, suicidal thoughts[1].

Postpartum depression impacts women's mental health while also compromising their physical well-being, often due to changes in eating habits and a reduced ability to care for themselves. Not only that, it also affects children's development as well as family and social relationships. A study in low-and middle-income countries found that infants born to mothers with depressive symptoms are more likely to be stunted, malnourished, and have significantly higher rates of illness and diarrhea each year than those born to healthy mothers. In addition, postpartum depression negatively impacts children's cognitive, social-emotional, and behavioral development.[2,3,4]

Globally, a systematic review reported that the prevalence of postpartum depression in studies conducted in Asia from 2000 to 2020 ranged from 7.45% to 56% [5]. In Vietnam, previous studies have found that the proportion of women at risk of postpartum depression varies between 8.2% and 48.1% [6,7,8,9]. These variations depend on factors such as the study location, timing of postpartum assessment, depression screening tools, and cut-off points used.

There have been no recent studies on the risk of postpartum depression among women in suburban areas of Hai Phong, Vietnam, particularly in the context of the COVID-19 pandemic. This study provides critical data to inform targeted mental health interventions in suburban Vietnam, addressing a gap in post-COVID-19 pandemic research. Therefore, to enhance understanding of postpartum depression and provide a foundation for future preventive interventions, this study was conducted to determine the risk and symptoms of depression in postpartum mothers in Vinh Bao district, Hai Phong

2. Methods

Study design
A descriptive cross-sectional study

Study period
From June to August, 2023

Sample and setting
Postpartum mothers residing in six communes of Vinh Bao district, Hai Phong, who met the following criteria: within the first six months postpartum, aged 18 years or older, with no language disorders or diagnosed mental illness, and who agreed to participate in the study.

Sample size
The study sample size was determined using the formula for estimating a proportion:

$$n = Z^2_{(1-\alpha/2)} \frac{p\,(1-p)}{(d)^2}$$

Where:
n: Required sample size
α: Significance level (0.05), corresponding to Z (1- α/2) = 1.96

p: Proportion of mothers at risk of depression, based on the study by Yen et al[10]., p = 0.143
d: Margin of error (0.05)

Based on this formula, the minimum required sample size was calculated as n = 188. The actual number of subjects participating in the study was 204 postpartum mothers.

Sampling method
Step 1: All 29 communes in Vinh Bao district were assigned a number, and **six** communes were randomly selected for the study.
Step 2: A list of eligible postpartum mothers in each selected commune was compiled.
Step 3: The survey was conducted among all postpartum mothers who agreed to participate in the study.

Data collection method
Structured questionnaires, including the EPDS, collected data on demographics, obstetric history, and postpartum depression. Postpartum depression was assessed using the Edinburgh Postnatal Depression Scale (EPDS), developed by Cox et al[11] in 1987. The EPDS consists of 10 questions assessing depressive symptoms over the past seven days. Each item is scored from 0 to 3, with a total possible score of 30—a higher score indicates a higher risk of depression. A cut-off score of ≥13 was used to identify women at high risk of postpartum depression (probable postpartum depression). The questionnaire was translated into Vietnamese and tested for reliability and validity in the study by Thach Tran et al[12], with a reported Cronbach's α = 0.75.

All investigators underwent training and conducted a pilot survey. The pilot confirmed questionnaire clarity with no major revisions. Prior to each interview, the investigator provided an introduction to the study, explaining its rationale, objectives, content, and participants' rights. Informed consent was obtained from all study participants before proceeding with the interview.

Data analysis
Collected data was cleaned, coded, entered and analyzed on SPSS 20.0 software. Results was expressed as frequencies and percentages (%).

Ethical consideration
The study was approved by the ethics committee of Nam Dinh University of Nursing (no 1590/GCN- HĐĐĐ) and officially approved by the leaders of the district and commune health centers where the study was conducted. The study subjects were fully explained about the purpose and procedures of the study and voluntarily participated in the study.

3. Results

Demographic Characteristics
The majority of study participants were aged 25–34 years (49.5%), followed by those under 25 years (27.5%) and those aged 35 or older (23%). Most mothers had at least a high school education or higher (73%), while five mothers (2.5%) had only primary school education. In terms of occupation, 57.3% were workers, 16.7% were in other occupations (freelancers, housewives, unemployed), 10.3% were private business owners, 8.3% were civil servants or private company employees, and 7.4% were farmers. Nearly all participants were married and living with their husbands (99.5%), while 0.5% were widowed, and none were unmarried or divorced. Regarding parity, 27.9% of mothers were giving birth for the first time, 39.2% for the second time, and 32.9% for the third time or more (Table 1).

Table 1: Socio-demographic and obstetrics characteristics of women in Vinh Bao district

Variable	Frequency	Percent (%)
Age (Mean ± SD): 29.33 ± 6.02		
<25 years old	56	27.5
25 – 34 years old	101	49.5
≥ 35 years old	47	23.0
Education level		
Primary school	5	2.5
Secondary school	50	24.5
High school	89	43.6
Higher education (College, university...)	60	29.4
Employment status		
Farmer	15	7.4
Worker	117	57.3
Civil servants/ Private company employee	17	8.3
Private Business	21	10.3
Other (freelance,housewife, unemployed...)	34	16.7
Marital status		
Unmarried	0	0
Married	203	99.5
Divorced	0	0
Widowed	1	0.5
Number of deliveries		
First time	57	27.9
2nd time	80	39.2
3rd time or more	67	32.9
Mode of delivery		
Normal birth	102	50.0
Caesarean section	102	50.0

Prevalence of probable postpatum depression
As shown in Table 2, 18.1% of postpartum mothers were at risk of probable depression, based on an EPDS score of 13 or higher.

Table 2: Prevalence of probable postpartum depression

Probable of postpartum depression	Frequency	Percent (%)
Yes (EPDS ≥ 13)	37	18.1
No (EPDS < 13)	167	81.9
Total	**204**	**100.0**

Table 3 presents the distribution of probable postpartum depression by age group, postpartum period, and birth order. The highest prevalence was observed in mothers under 25 years old (19.6%), followed by those aged 35 and above (19.1%). Regarding postpartum period, the prevalence was 14.7% among mothers within the first three months postpartum and 24% among those in the 4–6 month period. In terms of birth order, mothers with three or more births had the highest prevalence of probable depression (28.4%),

compared to 14% in first-time mothers and 12.5% in second-time mothers.

Table 3: Distribution of probable depression by age group, postpartum period, and birth oder

Variable	Number of mothers participating in the study (n)	Number of mothers with probable depression (n)	Percent (%)
Age group			
<25 years old	56	11	19.6
25 – 34 years old	101	17	16.8
≥ 35 years old	47	9	19.1
Postpartum period			
≤ 3 months	129	19	14.7
4 – 6 months	75	18	24.0
Number of deliveries			
First time	57	8	14.0
2nd time	80	10	12.5
3rd time	67	19	28.4

Assessment of depressive symptoms on the EPDS scale
Table 4 presents the depressive symptoms on the EPDS scale in the group at risk of depression (n = 37). The most common symptoms were: feeling anxious or worried for no good reason (91.9%), feeling overwhelmed by things (83.8%), blaming oneself excessively when things do not go as expected (83.8%), feeling scared and panicky for no reason (64.9%), feeling sad or miserable (40.5%), and having thoughts of self-harm (13.5%).

Table 4: Assessment of symptoms on the EPDS scale (n=37)

No	Items/symtoms	Score 2 or 3 on the EPDS scale n (%)
1	I have been able to laugh and see the funny side of things	6 (16.2)
2	I have looked forward with enjoyment to things	5 (13.5)
3	I have blamed myself unnecessarily when things went wrong	31 (83.8)
4	I have been anxious or worried for no good reason	34 (91.9)
5	I have felt scared or panicky for no very good reason	24 (64.9)
6	Things have been getting on top of me	31 (83.8)
7	I have been so unhappy that I have had difficulty sleeping	32 (86.5)
8	I have felt sad or miserable	15 (40.5)
9	I have been so unhappy that I have been crying	7 (18.9)
10	The thought of harming myself has occurred to me	5 (13.5)

4. Discussion

Characteristics of the participants
In our study, the mean age of the mothers was 29.33 ± 6.02 years, ranging from 18 to 45 years old. This finding is similar to previous studies on postpartum depression in Vietnam. For instance, Bac et al. reported that mothers giving birth at Hanoi Obstetrics Hospital had a mean age of 29.58 ± 5.04 years[13]. The majority of mothers in our study were workers (57.3%), which aligns with the economic and geographical conditions of Vinh Bao district, where numerous industrial parks provide employment opportunities for a large portion of the population. Regarding marital status, 99.5% of the mothers were married, a proportion comparable to the study by My et al. (2018) in Tra Vinh[14], which reported a marriage rate of 99.3%. This reflects the strong cultural norm in Vietnam and other Eastern societies, where marriage is traditionally considered a prerequisite for childbirth, in line with family customs and traditions. The proportion of vaginal deliveries and cesarean sections was equal (50%), similar to the findings of My et al[14], who reported a vaginal birth rate of 53.9% and a cesarean section rate of 46.1%.

Prevalence of probable postpartum depression
Based on EPDS score, prevalence of probable postpartum depression in this study was 18.1%. This result was comparable to several previous studies in Vietnam. Specifically, Tam et al (2019) reported an identical prevalence (18.1%) among 320 mothers within the first six months postpartum in Dong Nai[15]. Similarly, Murray et al. found the same rate (18.1%) in a study conducted in central Vietnam[16]. In addition, Thang et al. (2015) reported a 19.3% prevalence among 600 mothers from 1 to 6 months postpartum in Hai Chau district, Da Nang[17], using the EPDS scale with a cutoff point of 12/13. However, the prevalence in our study was lower than the 23.2% reported by Hang (2019) in Hai Phong[18]. This discrepancy may be attributed to differences in study populations. Specifically, Hang's study focused on mothers whose infants were hospitalized, a factor that could contribute to heightened anxiety and stress.

The risk of depression in our study was higher than that reported by Tho Nhi (8.2%) and Bac (7.6%) in 2023 at the Central Maternity Hospital[19,13]. The variation in postpartum depression prevalence across studies may stem from differences in participant selection criteria, study settings, survey timing, and data collection methods. Notably, Bac's study assessed the risk of depression only within the first week postpartum (specifically at 72 hours and one week after delivery) in a hospital setting. At this early stage, many mothers may not yet exhibit depressive symptoms, potentially leading to a lower reported prevalence.

Our screening thus reveals a relatively high risk of postpartum depression among mothers within six months postpartum. This highlights the need for early detection and intervention measures to prevent postpartum depression, improve maternal mental health, and enhance the quality of life for postpartum women.

We found that the risk of postpartum depression was higher in mothers under 25 years old (19.6%) and those aged 35 years and above (19.1%) compared to the 25–34 age group (16.8%). This result aligns with the study by Thang et al. (2017), which reported a 20.3% risk of depression in mothers aged 35 and above.[17] In reality, women are advised to give birth before the age of 35, as pregnancy after this age is associated with increased risks of complications both during and after pregnancy. These concerns may contribute to heightened anxiety and a greater risk of depression in this group. Similarly, the study by Bac et al. (2023) identified a significant association between depression and young maternal age, with an odds ratio (OR) of 5.84 (95% CI:

3.21–9.27, p < 0.05) for mothers under 25 years old.[20] Although the 20–24 age group is considered ideal for childbirth, younger mothers may face psychological, financial, and childbirth-related challenges compared to those aged 25–34, making them more vulnerable to stress and postpartum depression.

Postpartum depression symptoms on the EPDS scale

According to the WHO's International Classification of Diseases, 10th Revision (ICD-10), the diagnostic criteria for depressive episodes are based on three core symptoms and seven additional common symptoms[21]. Using the EPDS scale, my study assessed several characteristic symptoms, including low mood—specifically, feelings of anxiety and fear without a clear reason (91.8%); reduced energy—manifested as feeling overwhelmed (83.8%); and diminished enjoyment of activities (16.2%). Among the common symptoms observed, low self-esteem and excessive self-blame when things did not go as expected were reported by 83.8% of participants, sleep disturbances by 86.5%, and a pessimistic outlook on the future by 13.5%. Additionally, 13.5% of mothers reported experiencing thoughts of self-harm.

Similarly, the study by Bac and colleagues[5] identified common symptoms among 42 women with postpartum depression, including feeling very sad, depressed, or gloomy (83.3%), losing interest in social interactions (40.5%), constantly feeling fatigued (76.2%), and experiencing guilt or feelings of worthlessness (80.9%). Likewise, the study by Le Thi Thu Hang[18], which assessed depressive symptoms using the EPDS scale, reported similar findings. The most frequently observed symptoms included excessive self-blame when something bad happened (88.7%), unexplained anxiety (83.9%), insomnia (85.5%), feeling overwhelmed (85.5%), and thoughts of self-harm (27.4%).

In particular, our study found that five mothers (13.5%) reported suicidal ideation. This is one of the most serious consequences of depression. Mothers may feel useless, lack confidence, excessively blame themselves, and perceive themselves as unworthy, which can lead to suicidal thoughts and behaviors. Similarly, the study by Hung and colleagues on the clinical characteristics of 31 patients with postpartum depression reported a high prevalence of suicidal thoughts and behaviors. Specifically, 80.65% of patients had suicidal thoughts, 29.04% had attempted suicide, and 6.45% exhibited behaviors harmful to their children.[22]

A limitation of this study is that it only assessed the risk of depression and symptoms based on the EPDS screening tool, without evaluating physical symptoms such as appetite loss and weight changes. These physiological changes are common in postpartum women and may affect the sensitivity and specificity of diagnostic tools. However, in the original study on the development of the EPDS, Cox et al[11] compared EPDS with other screening tools (which assess physical symptoms) and found that EPDS has relatively high sensitivity (85%) and specificity (77%), with a positive predictive value increasing to 83%. Additionally, EPDS is a concise tool (10 self-reported items) that is easy to administer in community settings and can be effectively used by healthcare workers. Despite its limitations, this study provides an initial estimate of the prevalence of postpartum depression risk and common symptoms using the EPDS scale. The findings contribute to the scientific basis for future research and interventions aimed at improving maternal mental health and overall well-being

5. Conclusion

This study identified a notable 18.1% prevalence of probable postpartum depression among mothers in Vinh Bao district, with prevalent symptoms including anxiety (91.9%), feeling overwhelmed (83.8%), and self-blame (83.8%), alongside a concerning 13.5% reporting self-harm thoughts. These findings highlight an urgent need for community-based educational programs leveraging the EPDS for early detection and prevention, aiming to bolster maternal mental health and family well-being in this region.

Conflict of interest
The author declares no conflicts of interest related to this study.

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