

# Prevalence and Risk Factors of Postpartum Depression in Yaounde, Cameroon

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## Abstract

**Introduction:** Postpartum Depression is one of the commonest complications of the postpartum period. In Cameroon, little is known about this condition. Our objective was to determine the prevalence and identify the risk factors for postpartum depression. **Methodology:** The study was carried out at the Yaoundé Gyneco-Obstetric and Pediatric Hospital, from November 4th 2013 to April 4th 2014. All the women between the 4th and 6th week after birth who gave their consent were included. A pretested questionnaire including demographic, psychosocial, maternal and infant variables as well as the Edinburgh Postnatal Depression Scale (EPDS) was filled. A woman with an EPDS score  $\geq 12$  was considered having postpartum depression, while a score  $< 12$  ruled out a postpartum depression. **Results:** We recruited 214 women, among whom 50 had an EPDS score  $\geq 12$ , giving a prevalence of 23.4% of postpartum depression. After multivariate analysis, the risk factors of postpartum depression were: lack of satisfaction in the marital relationship, recent financial problems, recent conflicts with the partner, baby blues, difficulties in feeding the baby and problems with the baby's sleep. **Conclusion:** Postpartum depression is common and associated to specific risk factors in our setting.

## Keywords

Postpartum Depression, Prevalence, Risk Factors, Cameroon

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## 1. Introduction

Becoming a mother is associated with emotional distress in about 30% of women [1]-[2]. The postpartum period is of particular vulnerability for decompensations or the outbreak of some psychiatric disorders [3]. Postpartum

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depression (PPD) is one of the most common complications in women in the postpartum period [4]. Its prevalence is estimated between 10% and 20%, with an average prevalence of 13% [5]. This figure depends on the geographic location and the socio-economic conditions. In sub-Saharan Africa, studies have reported a prevalence of 6.6% in Uganda, 14.6% in Nigeria, 34.7% in South Africa, and up to 50.8% in the Democratic Republic of Congo [6]-[9].

The diagnosis is difficult because of the variability in clinical presentation. In addition, some health professionals do not have the required competence for diagnosis. Therefore, postpartum depression is often confused with baby blues or postpartum psychosis.

The causes are not well known. Some authors have identified several disposing factors to the disease. The most encountered are: a personal history of depression or other psychiatric condition, family history of psychiatric disorder, anxiety and depression during pregnancy, the baby blues, the stress due to the infant, to binding life events, to marital relationship or insufficient social support [10] [11].

The occurrence of postpartum depression can have serious consequences, not only on the mother but also on the mother-infant dyad and indirectly hinder the psycho affective development of the child; hence the importance of early detection. The Edinburgh Postnatal Depression Scale (EPDS) [12] is an internationally recognized tool used for the screening of PPD. This self-administered questionnaire is simple and quick to use. Its acceptability by patients themselves makes it a tool of choice. It consists of 10 multiple choice items rated each on a scale of 0 - 3, giving a total score ranging from 0 to 30 [13].

To the best of our knowledge, there are very few available studies on postpartum depression in Cameroon. Thus, the present study was conducted with the general objective to determine its prevalence and identify the risk factors in our environment.

## 2. Methodology

It was an analytical case-control study, carried out at the Yaoundé Gyneco-Obstetrics and Pediatric Hospital and (YGOPH), which is a referral hospital dedicated to the mother and child health. The study period covered 5 months; from November 4th 2013 to April 4th 2014. All women who presented at the postpartum consultation, vaccination or routine pediatric consultation with a child aged 4 to 6 weeks were included. The recruited women had given birth to a live or dead baby at a term  $\geq 28$  weeks. They should not be under treatment for a given psychiatric disorder. The sampling was consecutive and based on a calculated minimum sample size of 48 women per group.

Data was collected using a pretested questionnaire with two sections. The first section included sociodemographic characteristics, the relationship with the partner (satisfaction and recent conflicts within the last 3 months), social support from the father of the child, family and friends, stressful life events in the 3 months preceding the birth, personal and family history of psychiatric disorders, obstetric history (parity, history of complications during pregnancy or during delivery or postpartum complications), the experience of the conception, pregnancy and childbirth and the relationship with the newborn. These factors were assessed by yes or no type questions. The second part consisting of the Edimburg Postpartum Depression Scale (EPDS) proposed by Cox *et al.* in 1987, and better used between the 4th and 6th week postpartum [12].

Before inclusion, women received oral and written information about the study. The coded questionnaire was filled by the patient after reading and signing the consent form. For those who could not read nor write; the questionnaire was administered by a female member of the research team. A woman with an EPDS score  $\geq 12$  was considered having postpartum depression, while a score  $< 12$  ruled out a postpartum depression. All the women with a score  $\geq 12$  were referred to a psychiatric center for a specialized care.

Data were analyzed using Chi-square and Fisher's exact test. Risk factors were identified by calculating the odds ratio (OR) with a 95% confidence interval (CI). P-values less than 0.05 indicate statistical significance. We then made several logistic regressions to eliminate confounding factors.

This study was approved by the Institutional Ethics Committee of Research for Human Health of the Yaounde Gyneco-Obstetrics and Pediatric Hospital.

## 3. Results

Two hundreds and fourteen women were included. The ages ranged from 15 years to 45 years with a mean age of  $28.15 \pm 5.22$  years.

### 3.1. Prevalence

The mean score on the Edinburgh Postnatal Depression Scale was  $7.44 \pm 5.65$ , with scores ranging from 0 to 26. Fifty women had a score  $\geq 12$  and were considered having postpartum depression, giving a prevalence of 23.4%.

### 3.2. Associated Risk Factors

#### 3.2.1. Sociodemographic Characteristics

No socio-demographic variable was found to be a risk factor for postpartum depression, as shown in [Table 1](#).

**Table 1.** Sociodemographic factors associated with postpartum depression.

Factors	Postpartum depression		Odds Ratio (CI 95%)	P value
	Yes (EPDS $\geq 12$ )	No (EPDS $< 12$ )		
	Effectif (%)	Effectif (%)		
<b>Age</b>				
15 - 19 years	3 (6)	6 (3.7)	1.68 (0.40 - 6.98)	0.35
20 - 29 years	31 (62)	98 (59.8)	1.90 (0.57 - 2.11)	0.45
30 - 39 years	15 (30)	56 (34.1)	0.83 (0.42 - 1.64)	0.35
$\geq 40$ years	1 (2)	4 (2.4)	0.82 (0.09 - 7.47)	0.67
<b>Cultural area</b>				
Sahel	4 (2)	9 (5.5)	0.35 (0.03 - 2.84)	0.28
Forest	20 (40)	49 (29.9)	1.56 (0.81 - 3.02)	0.09
Coast	4 (8)	9 (5.5)	1.50 (0.44 - 5.09)	0.36
Grass field	25 (50)	96 (58.5)	0.71 (0.38 - 1.34)	0.15
Non Cameroonian	0 (0)	1 (0.6)	-	0.77
<b>Religion</b>				
Catholic	29 (58)	105 (64)	0.77 (0.40 - 1.48)	0.27
Protestant	12 (24)	35 (21.3)	1.16 (0.55 - 2.46)	0.41
Muslim	1 (2)	8 (4.9)	0.40 (0.05 - 3.26)	0.34
Other	8 (16)	16 (9.8)	1.76 (0.70 - 3.26)	0.16
<b>Profession</b>				
Housewife	9 (18)	42 (25.6)	0.64 (0.28 - 1.42)	0.18
Pupil/Student	8 (16)	26 (15.9)	1.01 (0.42 - 2.40)	0.57
Public sector	8 (16)	25 (15.2)	1.06 (0.44 - 2.52)	0.53
Private sector	10 (20)	32 (19.5)	1.03 (0.47 - 2.28)	0.54
Peasant	0 (0)	1 (0.6)	-	0.77
Shopping	2 (4)	10 (6.1)	0.64 (0.14 - 3.03)	0.44
Unemployed	10 (10)	19 (11.6)	1.90 (0.22 - 4.43)	0.10
Small independent	3 (6)	9 (5.5)	1.10 (0.28 - 4.22)	0.56
<b>Marital status</b>				
Single	20 (40)	43 (26.2)	1.88 (0.97 - 3.64)	0.04
Divorced/separated	0 (0)	3 (1.8)	-	0.45
Married/Cohabiting	30 (60)	118 (72)	0.58 (0.30 - 1.13)	0.08
<b>Type of marriage</b>				
Monogamy	28 (93.3)	101 (85.6)	2.35 (0.51 - 10.81)	0.21
Polygamy	2 (6.7)	17 (14.4)	0.42 (0.09 - 1.95)	0.21
<b>Study level</b>				
None	0 (0)	1 (0.6)	-	0.76
Primary	3 (6)	7 (4.3)	1.43 (0.36 - 5.75)	0.42
Secondary	20 (40)	54 (32.9)	1.36 (0.71 - 2.61)	0.22
University	27 (54)	102 (62.2)	0.71 (0.38 - 1.35)	0.19

### 3.2.2. Psychosocial Factors

The psychosocial factors found to be risk factors associated with postpartum depression were: lack of satisfaction in the marital relationship (for married or cohabiting women), recent conflicts with the partner, recent financial problems and loss of employment (Table 2).

The lack of the father's of the child support was the basis of many risk factors identified at univariate analysis: inadequate emotional or financial support, inability to rely or confide on him. The absence of family emotional support was also a risk factor resulting from analysis (Table 3). In the past history, abortion was significantly associated to postpartum depression (Table 4).

### 3.2.3. Obstetric Factors

The conditions in relationship with the last pregnancy associated with postpartum depression were: an unplanned pregnancy, an unwanted pregnancy, depressive symptoms during pregnancy and anxiety during pregnancy (Table 5 and Table 6).

### 3.2.4. Neonatal and Postnatal Factors

As shown in Table 7, having difficulties in feeding the baby and having trouble with his sleep were significantly associated with postpartum depression. At the same time, women who thought they had the baby blues were more likely to experience postpartum depression.

### 3.2.5. Factors Associated with Postpartum Depression after Logistic Regression

After logistic regression, lack of marital satisfaction, recent conflicts either with partner or child's father, recent financial problems, baby blues, having difficulty feeding the baby and having trouble with the baby's sleep remained significant factors associated with postpartum depression.

## 4. Discussion

### 4.1. Prevalence of Postpartum Depression

The prevalence of postpartum depression in our study was 23.4%. This figure is similar to the 23% of prevalence found in Nigeria by Owoeye *et al.* [14]. This can be explained by the fact that postpartum depression was

**Table 2.** Stressful life events associated with postpartum depression.

Factors		Postpartum depression		Odds Ratio (CI 95%)	P value
		Yes (EPDS $\geq$ 12)	No (EPDS < 12)		
		Effectif (%)	Effectif (%)		
<b>Marital satisfaction</b>	Yes	18 (60)	115 (97.5)	0.04 (0.01 - 0.15)	0.00
	<b>No</b>	12 (40)	3 (2.5)	<b>25.56 (6.56 - 99.49)</b>	<b>0.00</b>
<b>Recent conflicts with the partner</b>	<b>Yes</b>	31 (62)	39 (23.8)	<b>5.23 (2.66 - 10.27)</b>	<b>0.00</b>
	No	19 (38)	125 (76.2)	0.19 (0.10 - 0.38)	0.00
<b>Financial problems</b>	<b>Yes</b>	43 (86)	86 (52.4)	<b>5.57 (2.36 - 13.11)</b>	<b>0.00</b>
	No	7 (14)	78 (47.6)	0.18 (0.08 - 0.42)	0.00
Conflicts with the family	Yes	18 (36)	37 (22.6)	1.93 (0.97 - 3.92)	0.04
	No	32 (64)	127 (77.4)	0.52 (0.26 - 1.03)	0.04
Loss of a love one	Yes	17 (34)	49 (29.9)	1.20 (0.61 - 2.37)	0.35
	No	33 (66)	115 (70.1)	0.83 (0.42 - 1.62)	0.35
Serious illness in the family	Yes	16 (32)	39 (23.8)	1.50 (0.75 - 3.02)	0.16
	No	34 (68)	125 (76.2)	0.66 (0.33 - 1.33)	0.16
Job loss	Yes	10 (20)	15 (9.3)	2.45 (1.02 - 5.87)	0.04
	No	40 (80)	149 (90.7)	0.40 (0.17 - 0.96)	0.04

**Table 3.** Social support and postpartum depression.

Factors		Postpartum depression		Odds Ratio (CI 95%)	P value
		Yes (EPDS ≥ 12)	No (EPDS < 12)		
		%	%		
Child's father support					
<u>Adequate emotional support</u>	Yes	32 (64)	138 (84.1)	0.33 (0.16 - 0.68)	0.00
	<u>No</u>	18 (36)	26 (15.9)	<u>2.98 (1.46 - 6.09)</u>	<u>0.00</u>
<u>Adequate instrumental support</u>	Yes	33 (66)	146 (89)	0.24 (0.11 - 0.51)	0.00
	<u>No</u>	17 (44)	18 (11)	<u>4.18 (1.95 - 8.96)</u>	<u>0.00</u>
<u>Can rely on him</u>	Yes	32 (64)	147 (89.6)	0.20 (0.09 - 0.44)	0.00
	<u>No</u>	18 (36)	19 (10.4)	<u>4.86 (2.26 - 10.45)</u>	<u>0.00</u>
<u>Can confide on him</u>	Yes	30 (58.8)	135 (82.8)	0.30 (0.15 - 0.59)	0.00
	<u>No</u>	21 (41.2)	28 (17.2)	<u>3.38 (1.69 - 6.73)</u>	<u>0.00</u>
Family support					
<u>Adequate emotional support</u>	Yes	39 (78)	147 (89.6)	0.41 (0.18 -0.95)	0.03
	<u>No</u>	11 (22)	107 (10.4)	<u>2.44 (1.06 - 5.63)</u>	<u>0.03</u>
Adequate instrumental support	Yes	35 (70)	131 (79.9)	0.59 (0.29 - 1.20)	0.10
	No	15 (30)	33 (21.1)	1.70 (0.83 - 3.48)	0.10
Can rely on them	Yes	42 (84)	148 (90.2)	0.57 (0.23 - 1.42)	0.17
	No	8 (16)	16 (9.8)	1.76 (0.70 - 4.40)	0.17
Can confide on them	Yes	41 (82)	147 (89.6)	0.53 (0.22 - 1.27)	0.12
	No	9 (18)	17 (10.4)	1.90 (0.79 - 4.57)	0.12
Friends support					
Adequate emotional support	Yes	40 (80)	126 (76.8)	1.20 (0.55 - 2.64)	0.40
	No	10 (20)	38 (23.2)	2.44 (1.05 - 5.63)	0.40
Adequate instrumental support	Yes	27 (54)	92 (56.1)	0.92 (0.49 - 1.73)	0.50
	No	23 (46)	72 (43.9)	1.08 (0.58 - 2.05)	0.50
Can rely on them	Yes	29 (58)	103 (62.8)	0.82 (0.43 - 1.55)	0.33
	No	21 (42)	61 (37.2)	1.22 (0.64 - 2.33)	0.33
Can confide on them	Yes	21 (42)	87 (53)	0.64 (0.34 - 1.21)	0.11
	No	29 (58)	77 (47)	1.56 (0.82 - 2.96)	0.11

detected by the same tool in a similar setting: Edinburgh Postpartum Depression Scale with a threshold score at 12 in women at 6 weeks postpartum in a referral hospital. However; this prevalence is higher than the average prevalence of 13% described by O'Hara and Swain in the Western [5] or the 18.4% figure of Sawyer *et al.* in Africa [15]. At the same time, higher figures have been witnessed in some African countries: 43% in Uganda [1] and 50.8% in the Democratic Republic of Congo [9]. In these two studies, Edinburgh Postpartum Scale was not the tool used to identify women with postpartum depression.

#### 4.2. Risk Factors Associated with Postpartum Depression

At multivariate analysis, identified risk factors for postpartum depression were: lack of satisfaction in the marital relationship, recent conflicts with the partner, recent financial problems, difficulties in feeding the baby, problems with the baby's sleep and baby blues.

**Table 4.** Past history and postpartum depression.

Factors	Postpartum depression		Odds Ratio (CI 95%)	P value
	Yes (EPDS $\geq$ 12)	No (EPDS < 12)		
	%	%		
Parity				
• 1	18 (36)	99 (36)	1 (0.52 - 1.94)	0.56
• 2 and more	32 (64)	105 (64)	1 (0.52 - 1.93)	0.56
<b><u>Abortion history</u></b>				
• Yes	13 (26)	16 (9.8)	<b>3.25 (1.44 - 7.35)</b>	<b>0.00</b>
• No	37 (74)	148 (90.2)	0.31 (0.14 - 0.69)	0.00
Number of living children				
• More than 4	3 (6)	17 (10.4)	0.55 (0.15 - 1.97)	0.27
• 1 - 3	47 (94)	147 (89.6)	1.18 (0.51 - 6.45)	0.27
<b>Complications and previous pregnancies</b>				
During a pregnancy				
• Yes	11 (34.4)	22 (21)	1.98 (0.83 - 4.71)	0.09
• No	19 (65.5)	85 (79)	0.55 (0.24 - 1.23)	0.09
During a childbirth				
• Yes	5 (17.9)	16 (16.3)	1.11 (0.37 - 3.36)	0.52
• No	23 (82.1)	82 (83.7)	0.97 (0.34 - 2.80)	0.52
During postpartum period				
• Yes	3 (10.7)	2 (2)	5.76 (0.91 - 36.36)	0.07
• No	23 (89.3)	96 (98)	0.19 (0.03 - 1.19)	0.07
Baby health problem				
• Yes	5 (17.9)	17 (17.3)	1.03 (0.34 - 3.11)	0.57
• No	23 (82.1)	81 (82.7)	1.04 (0.36 - 2.98)	0.57

The lack of satisfaction in the marital relationship is a well documented risk factor for postpartum depression. Authors from Africa, Asia and Europe have stated a significant association this factor and postpartum depression [16]-[19]. At the contrary, an Iranian study failed to reach a similar conclusion [20].

As far as pregnancy and childbirth are concerned, the marital partner plays a major role. Therefore, a conflict with the partner is an obvious risk factor for postpartum depression. This has already been objected by Husain *et al.* in Pakistan [21].

Recent financial problems are independent risk factors found in our study. This has been published as risk factor for postpartum depression by Amr *et al.* in Saudi Arabia [17]. The same authors also identified loss of employment as a risk factor.

Difficulty in feeding the baby is a stressful condition for the mother and significantly leads to postpartum depression, according to our findings. For Kakyo *et al.* in Uganda [1], high levels of postpartum depression are significantly associated with having a child which is not feeding well. This association can be explained by the stress due the fear of malnourishment for the baby.

As well as difficulties in feeding the baby, problems with the baby's sleep have been found to be a risk factor for postpartum depression in our study. This can be understood by the fact that any disturbance of the baby sleep's lead to the absence of sleeping for the mother, which is a stressful condition.

**Table 5.** Obstetric factors associated with postpartum depression.

Factors	Postpartum depression		Odds Ratio (CI 95%)	P value
	Yes (EPDS ≥ 12) %	No (EPDS < 12) %		
<b><u>Planned pregnancy</u></b>				
• Yes	23 (46)	116 (70.7)	0.35 (0.18 - 0.67)	0.00
• No	27 (54)	48 (29.3)	<b>2.82 (1.48 - 5.43)</b>	<b>0.00</b>
Conception				
• Natural	49 (98)	163 (99.4)	0.30 (0.02 - 4.90)	0.41
• In vitro fertilization	1 (2)	1 (0.6)	3.32 (0.20 - 54.17)	0.41
<b><u>Desired pregnancy</u></b>				
• Yes	39 (78)	153 (93.3)	0.25 (0.10 - 0.53)	0.00
• <b>No</b>	11 (22)	11 (6.3)	<b>3.92 (1.58 - 9.71)</b>	<b>0.00</b>
Number of antenatal cares				
• Less than 4	16 (32)	43 (26.4)	1.28 (0.64 - 2.55)	0.29
• 4 and more	34 (68)	120 (73.6)	0.75 (0.39 - 1.55)	0.29
Full antenatal diagnosis				
• Yes	43 (86)	146 (89.6)	0.71 (0.28 - 1.84)	0.32
• No	7 (14)	17 (10.4)	1.32 (0.52 - 3.37)	0.32
<b><u>Depressive symptoms during pregnancy</u></b>				
• <b>Yes</b>	24 (48)	26 (15.9)	<b>4.90 (2.44 - 9.82)</b>	<b>0.00</b>
• No	26 (52)	138 (84.1)	0.20 (0.10 - 0.41)	0.00
<b><u>Anxiety during pregnancy</u></b>				
• Yes	35 (70)	75 (45.7)	<b>2.77 (1.40 - 5.46)</b>	<b>0.00</b>
• No	14 (30)	90 (54.3)	0.36 (0.18 - 0.71)	0.00
Disease during pregnancy				
• Yes	20 (40)	47 (28.7)	1.66 (0.85 - 3.20)	0.09
• No	30 (60)	117 (71.3)	0.60 (0.31 - 1.16)	0.09
Antepartum complication				
• Yes	10 (20)	23 (14)	1.53 (0.67 - 3.48)	0.20
• No	40 (80)	141 (86)	0.65 (0.29 - 1.48)	0.20
Delivery				
• Premature	6 (12)	22 (13.4)	0.88 (0.33 - 2.31)	0.50
• At term	44 (88)	142 (86.6)	1.14 (0.43 - 2.98)	0.50
Type of delivery				
• Normal	41 (82)	136 (82.9)	0.94 (0.41 - 2.15)	0.51
• Cesarean section	8 (18)	29 (17.1)	1.07 (0.46 - 2.44)	0.51
Delivery				
• Spontaneous	35 (85.4)	113 (83.1)	1.19 (0.45 - 3.15)	0.47
• Induced	6 (14.6)	23 (16.9)	0.95 (0.48 - 1.89)	0.47
Instrumental delivery				
• Yes	2 (4.9)	4 (2.9)	1.69 (0.30 - 9.59)	0.42
• No	39 (95.1)	132 (97.1)	0.60 (0.11 - 3.38)	0.42
Cesarean section				
• Elective	1 (11.1)	8 (28.6)	0.31 (0.03 - 2.92)	0.28
• In emergency	8 (88.9)	20 (71.4)	2.51 (0.31 - 20.59)	0.28
Complication in childbirth				
• Yes	3 (6)	6 (3.7)	1.68 (0.40 - 6.98)	0.35
• No	47 (94)	158 (96.3)	0.59 (0.14 - 2.47)	0.35
Postpartum complication				
• Yes	4 (8)	12 (7.3)	1.10 (0.34 - 3.58)	0.54
• No	46 (92)	152 (92.7)	0.91 (0.28 - 2.95)	0.54

**Table 6.** neonatal and postnatal variables associated with postpartum depression.

Factors	Postpartum depression		Odds Ratio (CI 95%)	P value
	Yes (EPDS $\geq$ 12)	No (EPDS < 12)		
	%	%		
Number of fetuses				
• 1	46 (92)	158 (96.3)	0.44 (0.11 - 1.61)	0.18
• 2 and more	4 (8)	6 (3.7)	2.29 (0.12 - 8.46)	0.18
Sex				
• Male	30 (55.6)	80 (47.1)	1.41 (0.75 - 2.60)	0.17
• Female	24 (44.4)	90 (52.9)	0.71 (0.38 - 1.32)	0.17
Immediate cry at birth				
• Yes	47 (37)	148 (87.1)	1 (0.40 - 2.48)	0.58
• No	7 (13)	22 (12.9)	1 (0.40 - 2.49)	0.58
Baby reanimated at birth				
• Yes	8 (14.8)	17 (10)	1.56 (0.63 - 3.86)	0.23
• No	46 (85.2)	153 (90)	0.64 (0.26 - 1.58)	0.23
Health problem at birth				
• Yes	9 (16.7)	32 (18.8)	0.86 (0.38 - 1.94)	0.44
• No	45 (83.3)	138 (81.2)	1.16 (0.51 - 2.61)	0.44
<b><u>Difficulties to feed the baby</u></b>				
• Yes	9 (16.7)	8 (4.7)	<b><u>4.05 (1.48 - 11.10)</u></b>	<b><u>0.00</u></b>
• No	45 (83.3)	162 (95.3)	0.25 (0.09 - 0.68)	0.00
<b><u>Problem with the baby's sleep</u></b>				
• <b><u>Yes</u></b>	27 (50)	53 (31.2)	<b><u>2.21 (1.18 - 4.12)</u></b>	<b><u>0.00</u></b>
• No	27 (50)	117 (68.8)	0.45 (0.24 - 0.84)	0.00
Difficulties in carrying the baby				
• Yes	8 (14.8)	19 (11.2)	1.38 (0.57 - 3.36)	0.31
• No	42 (85.2)	155 (88.8)	0.72 (0.30 - 1.76)	0.31
The baby cries a lot				
• Yes	15 (27.8)	30 (17.6)	1.79 (0.89 - 3.66)	0.08
• No	39 (72.2)	140 (82.4)	0.56 (0.27 - 1.14)	0.08
The baby is difficult to calm				
• Yes	9 (16.7)	15 (8.8)	2.07 (0.85 - 5.03)	0.09
• No	45 (83.3)	155 (91.2)	0.48 (1.20 - 1.18)	0.09
breastfeeding				
• Maternal	21 (38.9)	77 (45.3)	0.77 (0.41 - 1.43)	0.25
• Artificial	2 (3.7)	7 (4.1)	0.89 (0.20 - 5.08)	0.63
• Both	31 (54.4)	86 (50.6)	1.32 (0.71 - 2.44)	0.24
<b><u>Baby blues</u></b>				
• Yes	31 (62)	48 (29.3)	<b><u>3.94 (2.03 - 7.65)</u></b>	<b><u>0.00</u></b>
• No	49 (38)	116 (70.7)	0.25 (0.13 - 0.49)	0.00



**Table 7.** Factors significantly associated with postpartum depression after multiple logistic regressions.

Factors	Adjusted Odds Ratio	CI (95%)	P Value
<b><u>lack of satisfaction in the marital relationship</u></b>	<b><u>6.91</u></b>	<b><u>3.29 - 14.49</u></b>	<b><u>0.00</u></b>
<b><u>Recent conflicts with the partner</u></b>	<b><u>2.55</u></b>	<b><u>1.05 - 6.18</u></b>	<b><u>0.04</u></b>
Lack of adequate emotional support of the child's father	1.32	0.45 - 3.93	0.61
Lack of adequate material support the father of the child	1.28	0.30 - 5.43	0.74
Cannot rely on the father of the child	3.10	0.76 - 12.64	0.11
Can trust the father of the child	1.18	0.48 - 2.91	0.72
Lack of emotional family support	2.24	0.79 - 6.35	0.13
<b><u>Recent financial problems</u></b>	<b><u>3.85</u></b>	<b><u>1.44 - 10.28</u></b>	<b><u>0.01</u></b>
Loss of a job recently	1.93	0.64 - 5.78	0.24
Abortion history	2.73	0.95 - 7.81	0.06
Unplanned pregnancy	1.08	0.27 - 4.35	0.91
Unwanted pregnancy	1.64	0.66 - 4.12	0.29
Depressive symptoms during pregnancy	1.66	0.71 - 3.89	0.24
Anxiety during pregnancy	1.36	0.56 - 3.31	0.49
<b><u>Baby blues</u></b>	<b><u>3.52</u></b>	<b><u>1.48 - 8.41</u></b>	<b><u>0.00</u></b>
<b><u>Difficulties in feeding the baby</u></b>	<b><u>3.51</u></b>	<b><u>1.26 - 9.82</u></b>	<b><u>0.02</u></b>
<b><u>Problems with the baby's sleep</u></b>	<b><u>2.02</u></b>	<b><u>1.06 - 3.81</u></b>	<b><u>0.03</u></b>

Signs of baby blues described by the mother after birth were independently associated with postpartum depression. Many studies have documented the same finding. For example, Lee *et al.* have stated baby blues as a risk factor for postpartum depression in China [22].

Our results should be considered with some limitations, as women might not give the correct answers to the questions. In addition, the Edinburg Postpartum Depression Scale is a screening tool that shows depressive symptoms in the last 7 days, not an instrument for generating a diagnosis of depression. All women with a score  $\geq 12$  were oriented to a psychiatrist, but only few of them met him. All these might have introduced bias in this study.

## 5. Conclusion

This study stated the prevalence of postpartum depression in our setting at 23.4%. Independent risk factors associated with postpartum depression are: lack of satisfaction in the marital relationship, recent conflicts with the partner/father of the child, recent financial problems, baby blues, difficulties in feeding the baby and problems with the baby's sleeping. The routine screening and management of postpartum depression in primary health care are recommended, so as to improve maternal and child wellbeing.

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