

# Prevalence and risk factors for postpartum depressive symptoms in Argentina: a cross-sectional study

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**Introduction:** Postpartum depression is a prevalent disorder with negative consequences for women, infants, and the family as a whole. Most studies of this disorder have been conducted in Western countries, and studies from developing countries are few. In this paper, we report the first – as far as we are aware – study of the prevalence and risk factors associated with postpartum depressive symptoms in Argentina.

**Materials and methods:** The study participants were 86 women attending 6 week check-ups, (range 4–12 weeks) postpartum at a private health care center in the metropolitan area of Buenos Aires. The women completed the Edinburgh Postnatal Depression Scale (EPDS) and a questionnaire collecting demographic and obstetric data. Data were described as proportions (percentages). Differences between proportions were assessed with chi-squared tests. To control for possible confounders, we fitted bivariate logistic regression models in which the dependent variable was an EPDS sum score of <10 versus a score of  $\geq 10$ .

**Results:** We found a high prevalence of depressive symptoms. A total of 32 women (37.2%) had an EPDS score of  $\geq 10$ , 16 (18.6%) had a score between 10 and 12, and 16 (18.6%) had a score of  $\geq 13$ . In our sample, an EPDS score of  $\geq 10$  was significantly associated with multiparity (odds ratio [OR] =3.58; 95% confidence interval [CI]: 1.13–11.30;  $P=0.030$ ), pregnancy complications (OR =3.40; 95% CI: 1.03–11.26;  $P=0.045$ ), labor complications (OR =11.43; 95% CI: 1.71–76.61;  $P=0.012$ ), cesarean section (OR =4.19; 95% CI: 1.10–16.01;  $P=0.036$ ), and incomplete breast-feeding (OR =5.00; 95% CI: 1.42–17.54;  $P=0.012$ ).

**Conclusion:** Our results indicate that postpartum depression may be prevalent in Argentina, and may be associated with incomplete breast-feeding, cesarean section, perinatal complications and multiparity. The prevalence and risk factors for postpartum depression has not been described previously and is a considerable health-related problem among women. Argentinian health professionals should be aware of the high prevalence rate and possible risk factors so that these women and families can be identified and receive adequate support and treatment.

**Keywords:** postpartum depression, breast-feeding, cesarean section, perinatal complications

## Introduction

Postpartum depression is a prevalent disorder among women in the first year after birth and is considered a serious public health problem that is important to detect and treat. A meta-analysis of 59 studies from different countries found a mean prevalence of 13%.<sup>1</sup> A review of 143 studies in 40 countries, from low to high income, found large variations in prevalence, ranging from 0% to 60%,<sup>2</sup> and the prevalence has been shown to be higher in low- to middle-income countries.<sup>3</sup> The prevalence of depression in the postpartum period is not higher than the prevalence of depression in other periods of a woman's life,<sup>4</sup> but the incidence is higher in the first 3 months postpartum.<sup>4,5</sup> Most studies have

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been conducted in industrialized countries, and there is a lack of studies from developing countries. Some studies on postpartum depression have been conducted in Latin-American countries,<sup>6–10</sup> with the majority from Brazil and Chile. We were unable to find research studies on postpartum depression from Argentina, and the prevalence of postpartum depression in this country is largely unknown. A recent published study from Buenos Aires found a point prevalence of depression (not postpartum depression) of 20.6% among women, indicating that depression is prevalent.<sup>11</sup>

The etiology of postpartum depression remains unknown, but it is probable that several factors, including psychological, biological, and social, are involved. Among psychosocial risk factors, recent negative life events, lack of social support, and a history of depression<sup>12,13</sup> have been strongly associated with postpartum depression. Women who suffered from depression during pregnancy were found to have a five times higher risk of developing postpartum depression,<sup>13</sup> and women with anxiety during pregnancy were found to have a three times higher risk.<sup>14</sup>

Maternal depression has been associated with attachment difficulties in the infant<sup>15</sup> and can have negative long-term effects on the child's cognitive, emotional, social, and behavioral development.<sup>16</sup> Because of the negative consequences of postpartum depression, not only for women but also for their infant and family as a whole, it is important to detect and treat this disabling disorder. However, in spite of increasing evidence that postpartum depression can be effectively treated and possibly prevented, it often goes undetected and untreated in many women.<sup>17</sup> A study of primary health care in Bolton, England, found that health care personnel detected postpartum depression in fewer than half of those women with it.<sup>18</sup> Improved mental health is closely linked to the fifth Millennium Development Goal to improve maternal health.<sup>19</sup>

Thus, the aim of our study was to describe the prevalence of postpartum depressive symptoms and show possible associations with potential risk factors and frequency of breast-feeding in a population of postpartum women at a health care clinic in Buenos Aires, Argentina.

## Materials and methods

### Setting

This study is a result of research collaboration between the University of Oslo and Universidad de Buenos Aires focusing on mother/infant health in primary care. The study was conducted at a private well-baby clinic in the metropolitan area of Buenos Aires that has established ties with the Universidad de Buenos Aires, participating in the education of medical students. The well-baby

clinic is a private clinic serving a middle-class population with health insurance from its workers' union, Obras Sociales.

### Study population

Women attending their normal 6-week postpartum check-up at the Sanatorio Modelo de Caseros Well-Baby Clinic in Provincia de Buenos Aires, Argentina, were invited to participate. Inclusion criteria were women who had given birth to a live infant and were able to speak and write Spanish fluently. Women who could not speak and write Spanish fluently were excluded from the study.

### Recruitment of participants

A health secretary at the Sanatorio Modelo de Caseros Well-Baby Clinic distributed written information about the study to all women who attended the clinic for their normal 6-week postpartum care visit. The women were recruited consecutively from October 2011 to November 2012. Women who agreed to participate in the study signed a written informed consent form designed to meet the requirements of the Norwegian Regional Ethics Committee. The health secretary then distributed the Edinburgh Postnatal Depression Scale (EPDS) and the questionnaire, which the women completed anonymously at the clinic immediately before or after their scheduled check. (The scale and questionnaire are described in the "Instruments" section.) The women then returned their completed questionnaire in a sealed envelope to the health secretary. The questionnaires were stored in a secure place separate from the signed consent forms.

### Instruments

#### EPDS

The EPDS was developed by Cox et al<sup>20</sup> to detect depressive symptoms among women who had recently given birth. The EPDS questionnaire consists of ten questions for self-completion. Each question has four response options, and is rated on a four-point scale from 0 to 3, giving a total score between 0 and 30. Higher scores indicate more severe symptoms. The scale shows the intensity in depressive symptoms present during the last 7 days. The instrument has been used in clinical settings and epidemiological studies and is generally well accepted by women. The EPDS used in our study was validated in Spanish.<sup>21–23</sup>

#### Questionnaire

We designed a questionnaire focusing on sociodemographics and known psychosocial risk factors for postpartum depression. The questions concerned: satisfaction

with partner (on a four-point scale from “very satisfied” to “not satisfied”); support from partner and others (on a four-point scale from “very satisfied” to “not satisfied”); history of mental health problems, including mental health problems during pregnancy; current, past, and prenatal treatment for mental health disorders; use of alcohol, illegal drugs, or tobacco (“yes” or “no”); negative life events over the last year (“yes” or “no,” with the opportunity to specify in their own words); somatic illness; whether their pregnancy was planned; morning sickness; complications during pregnancy and birth (with the opportunity to specify the type of complications); cesarean section, including whether a cesarean section was planned and the reason for performing a cesarean section; degree of breast-feeding (three options: complete, partial or none); and motivation for breast-feeding before birth and at the time of the study.

## Ethics

The study was conducted in accordance with the Helsinki Declaration on Human Rights. The study was approved by the Norwegian Regional Ethics Committee (reference no 2011/1073-6) and approved by the Director of Sanatorio Modelo de Caseros. Each individual participated voluntarily, and had the opportunity to withdraw from the study without any consequences for the health care service provided to them.

## Statistical procedures

We established an electronic database using EpiData version 3.1 (The EpiData Association, Odense, Denmark). We then transferred the data into SPSS software (version 20; IBM Corporation, Armonk, NY, USA) by performing double entry to ensure the data transfer was correct.

Data were described as proportions (percentages). Differences between proportions were assessed with two-tailed unadjusted chi-square tests. To control for possible confounders, we fitted bivariate logistic regression models, where the dependent variable was an EPDS sum score of  $<10$  versus  $\geq 10$ . This cutoff point was selected to ensure a comparable number of participants in each group, and to correspond with a cutoff point frequently used to identify less severe depression. In designing the model, we included independent variables that correlated with the dependent variable with a  $P$ -value  $<0.1$  using Pearson’s correlation. Among the independent variables that showed a statistically significant correlation with each other, we chose the one giving the highest  $R$ -squared value. The results are presented as odds ratios, with 95% confidence intervals. Values were

missing for  $<5\%$  of all questions.  $P$ -values  $<0.05$  were considered statistically significant, and all tests were two-sided. All analyses were conducted using the SPSS software mentioned earlier.

## Results

Questionnaires were completed by 86 women. The mean age of participants was 28.3 years (range 17–45 years). Of the participants, 81 were Argentinean (94.2%) and five (5.8%) came from neighboring countries (Peru and Paraguay). Almost three-quarters (62; 72.1%) of the women’s infants were 6 weeks old (range 4–12 weeks). A total of 36 women (41.9%) fully breast-fed, 40 (46.5%) partially breast-fed, and nine (10.5%) formula-fed their infants. The last two categories, partial breast-feeding and formula feeding, were grouped together in our analysis as the category “incomplete breast-feeding.”

We found no significant differences in terms of the women’s age, civil status, level of education, work status, housing conditions, economy, smoking, whether the pregnancy was planned, motivation for breast-feeding, or the sex of their infant between women who scored  $<10$  and those who scored  $\geq 10$  on the EPDS. However, we found a significantly higher frequency of incomplete breast-feeding, multiparity, and complications during pregnancy among those with an EPDS score  $\geq 10$  (Table 1).

Of our sample of 86 women, 27 (31.4%) had an EPDS score of  $\leq 4$  (indicating no depression), 27 (31.4%) had an EPDS score of between five and nine (indicating some depressive symptoms), 16 (18.6%) had a score between ten and 12 (indicating mild depression), and 16 (18.6%) women had an EPDS score of  $\geq 13$  (indicating clinical depression). Only three women (3.5%) in the sample had a history of mental health problems, and only one (1.2%) had received treatment for mental health problems in the past. In spite of a high prevalence of high EPDS scores, none of the women was currently receiving professional treatment; however, only 58 (67.4%) responded to this last question. One woman (1.2%) had used illegal drugs during pregnancy, five (5.8%) had used alcohol, and seven (8.7%) had smoked cigarettes during pregnancy. We observed a high number of cesarean sections performed in our sample (57; 66.3%). A total of 23 women (26.7%) experienced complications during pregnancy. The types of complications mentioned were gestational diabetes, hypertension, renal insufficiency, asthma, cholestasis, anemia, premature rupture of the amniotic sac, hemorrhages, threatened abortion, and cerclage. Birth complications were experienced by seven women

**Table 1** Characteristics of mothers with Edinburgh Postpartum Depression Scale (EPDS) scores  $\leq 9$  compared with those with scores  $\geq 10$ 

Characteristic	EPDS score $\leq 9$ , N=54 (%)	EPDS score $\geq 10$ , N=32 (%)	P-value
Age, years			
17–25	23 (42.6)	9 (28.1)	0.180
26–35	26 (48.1)	18 (56.3)	0.468
$\geq 36$	5 (9.3)	5 (15.6)	0.373
Child			
Male	32 (59.3)	13 (40.6)	0.094
First child	34 (63.0)	13 (40.6)	0.044*
Civil status			
Married	15 (27.8)	7 (21.9)	0.544
Living with a partner	34 (63.0)	21 (65.6)	0.804
Single	5 (9.3)	4 (12.5)	0.635
Smoking	4 (7.4)	3 (9.4)	0.747
Education			
Primary school	9 (16.7)	4 (12.5)	0.602
Junior High School	30 (55.6)	19 (59.4)	0.730
High School or University	15 (27.8)	8 (25.0)	0.779
Work			
Outside home	26 (48.1)	16 (50.0)	0.868
In the home	20 (37.0)	11 (34.4)	0.804
Other	8 (14.8)	3 (9.4)	0.465
Housing and economy			
Ownership			
Own the house	18 (33.3)	14 (43.8)	0.334
Rent the house	27 (50.0)	13 (40.6)	0.400
Not specified	9 (16.7)	4 (12.5)	0.602
No of rooms			
2 or less rooms	30 (55.6)	17 (53.1)	0.827
3 or more rooms	22 (40.7)	14 (43.8)	0.785
Living with others			
Living with parents	11 (20.4)	9 (28.1)	0.411
Living with other family members	10 (18.5)	6 (18.8)	0.979
Economy			
Difficulties paying monthly expenses	6 (11.1)	6 (18.8)	0.323
Pregnancy and labor			
Pregnancy was planned	30 (55.6)	13 (40.6)	0.181
No complications during pregnancy	43 (79.6)	19 (59.4)	0.043*
Cesarean section was preplanned	14 (25.9)	12 (37.5)	0.256
Cesarean section was performed	32 (59.3)	25 (78.1)	0.074
No complications during labor	48 (88.9)	25 (78.1)	0.178
Breast-feeding			
Strongly motivated	50 (92.6)	25 (78.1)	0.052
Complete breast-feeding <sup>a</sup> accomplished	28 (51.9)	8 (25.0)	0.015*

**Notes:** <sup>a</sup>Complete breast-feeding includes all women who completely breast-fed, while incomplete breast-feeding includes the women who partially breast-fed or bottle-fed; \* $P < 0.05$ , two-tailed unadjusted chi-square test.

**Abbreviations:** EPDS, Edinburgh Postpartum Depression Scale.

(8.1%). The types of complications mentioned were meconium aspiration, placental insufficiency, baby lodging in the birth canal, narrow birth canal, nuchal umbilical cord, macrosomia, hemorrhages, prolapse, and anxiety attacks.

The independent variables were primipara versus multipara, complications versus lack of complications during pregnancy and birth, cesarean section versus no cesarean section, and breast-feeding (complete versus incomplete). The results from the bivariate regression analysis are summarized in Table 2, and show an increased risk of scoring  $\geq 10$  on the EPDS for those who gave positive statements on five independent variables: multiparity, pregnancy complications, birth complications, cesarean section, and incomplete breast-feeding. The model explained 28.4% of the variance of the dependent variable (Cox and Snell's  $R$ -square).

## Discussion

In our sample of postpartum Argentinean women, we found a relatively high prevalence of depressive symptoms compared with in women of Western, especially Nordic, countries. The prevalence is similar to high rates found in other Latin-American countries like Chile and Mexico.<sup>24,25</sup> We were not able to detect major differences in the women's age, civil status, education, or economy between those with high EPDS scores of  $\geq 10$ , and those with lower EPDS scores. A high frequency of depressive symptoms (EPDS  $\geq 10$ ) was associated with multiparity, experiencing complications during pregnancy and birth, cesarean section, and incomplete breast-feeding.

## Multiparity

Having more children was associated with higher EPDS scores in our sample, and may reflect a higher care burden and psychosocial stress. Studies have shown different results

**Table 2** Bivariate logistic regression model with the dependent variable Edinburgh Postpartum Depression Scale (EPDS) scores of  $\leq 9$  versus scores of  $\geq 10$ 

Variable	OR	95% CI	P-value
Parity (ref first child)	3.580	1.13–11.30	0.030
Complications during pregnancy (ref no)	3.400	1.03–11.26	0.045
Complications during labor (ref no)	11.430	1.71–76.61	0.012
Cesarean section (ref no)	4.190	1.10–16.01	0.036
Breast-feeding (ref complete)	4.995	1.42–17.54	0.012

**Notes:** Independent variables were parity, whether the pregnancy was planned, any occurrence of complications during pregnancy or during birth, whether cesarean section was performed, and whether the child was fully breast-fed at the time of the EPDS screening.

**Abbreviations:** CI, confidence interval; no, number; OR, odds ratio; ref, reference.

when it comes to parity and postpartum depression; some have found a higher prevalence among multiparous women,<sup>26,27</sup> while others have found that primiparae are more at risk.<sup>28</sup>

## Cesarean section

We found a high frequency (66.3%) of cesarean sections in our sample. These women had a significantly higher risk of expressing more depressive symptoms than those giving birth vaginally. However, we did not detect associations between planned versus unplanned cesarean sections. Our findings are in accordance with a Chinese prospective study from 2011 in a population with a high frequency of cesarean sections (77.7%).<sup>29</sup> In that study, the postpartum rate of depression was 21.7% in women who had a cesarean delivery and 10.7% in women who delivered vaginally.<sup>29</sup> Similarly, a Canadian prospective cohort study of 2,560 women found cesarean sections to be associated with postpartum depression in Canadian-born women, but not in women born outside Canada.<sup>30</sup> In a review of 24 studies by Carter et al,<sup>31</sup> five studies showed significant adverse associations between postpartum depression and cesarean sections, 15 showed no significant association, and four found mixed results. The authors of the review discussed whether cesarean section may be a weak risk factor and if different aspects of the procedure, such as whether the cesarean section was planned, whether it was an emergency situation, and the degree of control the woman experienced during the procedure, may be of importance. They concluded that the largest and most methodologically sound studies have not been able to show an association.<sup>31</sup>

## Perinatal complications

Complications during pregnancy and birth were significantly associated with postpartum depressive symptoms in our Argentinean sample. These are similar to the findings of a large Dutch study of 4,941 women, in which preeclampsia, hospitalization, and emergency cesarean section, a medically indicated delivery provided by an obstetrician, and hospital admission of the infant were significantly associated with postpartum depression. In that study, the risk of postpartum depression increased with an increasing number of complications.<sup>32</sup> A Japanese study of 627 women found high EPDS scores were significantly associated with premature delivery and difficult labor.<sup>33</sup>

## Breast-feeding

The advantages of breast-feeding are recognized worldwide, and include benefits for both the infant and the mother.<sup>34</sup> According to WHO on infant and young children feeding

54.9% of a sample Argentinean mothers continued breast-feeding after 1 year (2004-2005).<sup>35</sup> In our sample, 36 (41.9%) women fully breast-fed their children at the time of the study. A qualitative systematic review of 49 studies showed that women who had depressive symptoms early in the postpartum period had an increased risk of a reduced duration of breast-feeding, increased difficulties with breast-feeding, and reduced self-efficacy. The study indicated that depressed mothers appeared to initiate breast-feeding to a lesser degree than mothers without depressive symptoms.<sup>36</sup> A large Norwegian cohort study of 42,225 women identified breast-feeding cessation as a risk factor for increased anxiety and depression. Further, women who experienced anxiety and depression during pregnancy and who stopped breast-feeding were at increased risk of postpartum anxiety and depression.<sup>37</sup> In a cross-sectional study of 89 Brazilian women, women who partially breast-fed were found to have higher EPDS scores than women who fully breast-fed, and the study concluded that women with depressive symptoms had impaired self-efficacy.<sup>38</sup>

Of concern is that none of the women in our sample reported that she received professional help at the time of the study, although Argentina has the highest ratio of psychologists per capita and is known for its focus on mental well-being. This may indicate that the knowledge and focus on postpartum depression are insufficient.

## Strengths and weaknesses

The findings of the present study should be interpreted with caution, considering the small sample size and wide confidence intervals. Further, our sample was a selected group of mothers representing mainly middle-class women. The participants had a low prevalence of prior psychiatric history, and virtually no drug or alcohol problems. Although the women were recruited consecutively, recording of nonresponders was not performed. Reports from the Well-Baby Clinic indicate that the number of nonresponders was low, but selection bias toward women of higher socioeconomic status cannot be excluded. Finally, it is important to emphasize that the EPDS is a screening instrument that indicates depressive symptoms in the last 7 days, based on self-report; it is not an instrument designed to yield a diagnosis of depression.

## Conclusion

We found a high prevalence of depressive symptoms in our sample of Argentinean postpartum women. Depressive symptoms were associated with multiparity, perinatal complications, cesarean section, and incomplete breast-feeding. Our results

indicate that postpartum depression might be prevalent in Argentina. This does not seem to be fully recognized and may be a considerable health care problem that is important to detect and treat. As such, Argentinean health professionals should be aware of the high prevalence rate and possible risk factors, so that these women can be identified and both them and their families can receive adequate support and treatment. Further prevalence studies should be conducted in various settings in Argentina, and should include larger samples of women and be conducted in resource-poor settings. Studies should also be undertaken to validate the EPDS and determine appropriate cutoff values.

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## Disclosure

The authors report no conflicts of interest in this work.

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