Postpartum depression and breastfeeding practices during the COVID-19 pandemic lockdown in Mexican mothers: a cross-sectional study

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Research Article

Abstract

Background

The incidence of mental disorders during major events is higher in prenatal and postnatal women than in the general population. The COVID-19 pandemic, subsequent lockdown, and social distancing may have caused changes in newborn mothers' mental health, postpartum depression (PPD), and breastfeeding practices. There is no information about this topic in Mexican mothers who have delivered newborns during the COVID-19 pandemic lockdown. The objective of this study was to explore whether quarantine measures, social distancing, and hospital containment policies altered the incidence rates of PPD, breastfeeding adherence, and skin-to-skin contact (SSC) in women giving birth during the COVID-19 pandemic.

Methods

This cross-sectional study included women who delivered a healthy baby at term in February to July 2020 during the COVID-19 pandemic. Participants completed an anonymous online survey incorporating the Edinburgh Postnatal Depression Scale.

Results

A total of 211 participants were included; their mean age was 30.5 ± 4.6 years and the gestational age at the time of delivery was 38.3 ± 2.0 weeks. Sixty (28.4%) participants reported PPD, and 196 (92.9%) reported breastfeeding their baby during COVID-19. Mothers with PPD had lower levels of exclusive breastfeeding ($P = 0.66$) and breastfeeding with formula ($P = 0.29$). Only 23 participants (10.9%) stopped breastfeeding because of issues with latching (30.4%). SSC was reported by 63% of participants and was more frequent immediately after birth (46%). Mothers with PPD reported less frequent SSC ($P = 0.001$) and later initiation of SSC ($P = 0.001$) after childbirth. Mothers who initiated SSC used exclusive breastfeeding more frequently during the first 48 h after birth ($P = 0.004$).

Conclusions

We found a higher prevalence of PPD in new mothers during the pandemic. Mothers reporting PPD were less likely to initiate SSC after birth. These findings suggest that the pandemic and the measures adopted to fight its spread may have harmed maternal well-being during pregnancy and after delivery. Women giving birth during the COVID-19 pandemic represent a vulnerable population that may need focused health care. SSC is a simple, cost-effective intervention that may help reduce the incidence of PPD.

Trial registration

This cross-sectional study is registered with ClinicalTrials.gov (NCT04769700).

Background

The postpartum period is a time when new mothers may develop clinical symptoms of mental illness [1]. Many psychosocial stressors can lead to the development of postpartum depression (PPD). In the Diagnostic and Statistical Manual of Mental Disorders, PPD is included under the title "Mood Disorders". PPD is defined as the emergence of an episode in the first 4 weeks of the postpartum period and is listed under the category of "Postpartum Onset Specifier." [2, 3]. PPD affects 10–20% of adult mothers yearly, and the depressive symptoms last more than 6 months among 25–50% of those affected [4, 5]. In Mexico, a middle-income country with traditional gender roles, 13.3–18% of women experience PPD [6–9]. The clinical presentation of PPD is similar to that of depression at other times of life. However, in addition to low mood, disturbed sleep, change in appetite, diurnal variation in mood, poor concentration, and irritability, women with PPD also experience guilt about their inability to look after their newborn baby [10]. These symptoms may appear between the first 2 and 4 weeks after birth and may continue for up to 1 year [11–13].

During major events or disasters, the prevalence rates of mental disorders are significantly higher among prenatal and postnatal women than among the general population [14]. Moreover, maternal stress during gestation is associated with other adverse perinatal outcomes, such as preterm birth, small for gestational age, and maternal depression. Maternal stress is also considered to be a risk factor for impaired lactogenesis and lactation by altering breastfeeding practices (BP) [15]. Breastfeeding is a characteristic process of mammals that ensures delivery of an adequate nutritional supply to the newborn through secretions produced by the mother's mammary glands. It is considered to be the gold standard food source during an infant's first months of life, and the World Health Organization recommends exclusive breastfeeding for at least the first 6 months of life [16]. Despite solid evidence for the nutritional and immunological benefits of early breastfeeding in reducing neonatal mortality and morbidity [17], only 50% of newborns in the world are breastfed during their first hour [18].

Bonding is a process with an emotional–interactional relationship structure and can be affected by many factors. Skin-to-skin contact (SSC) is an effective method for instigating mother–infant bonding [19]. It is recommended that SSC between the mother and infant should be established in the first hours after birth to start a healthy mothering process [20]. This contact is considered to increase maternal self-efficacy for breastfeeding [21], to facilitate the initiation of BP [21, 22], and to increase the duration of BP [21, 23] by encouraging women to breastfeed more each day [24]. Breastfeeding also reduces the risk of stress and depression after maternal trauma [25–27].

The coronavirus disease 2019 (COVID-19) pandemic has challenged the approach to almost every aspect of life. People placed under quarantine may experience a wide range of feelings, including fear, anger, sadness, irritability, guilt, or confusion, which can make isolation challenging for maternal health [28, 29]. In 2020, pregnant and postpartum women faced the COVID-19 pandemic and accompanying quarantine measures and disruptions to medical practice.

Methods

Aim of the study

To explore whether quarantine measures, social distancing, and hospital containment policies altered the incidence rates of PPD, breastfeeding adherence and SSC in women giving birth during the COVID-19 pandemic

Study setting and design

We evaluated the effects of the COVID-19 pandemic on PPD, breastfeeding adherence, and postpartum SSC. An online survey methodology was used. A self-selected sample of recent mothers logged on to a website to complete a free online questionnaire, which was available for 3 weeks online. The questionnaire took 15–20 min to complete. Only the name of the mother was asked. No other personal identifiers were collected, and the data reported were anonymous. Information and links to the survey were spread via websites and social media used by mothers of a newborn, such as Instagram, Twitter, and Facebook groups about infant feeding, mother support, and newborn information. Contacts with relevant professions and support organizations on this topic also helped to spread the questionnaire.

Content of the survey

The survey was developed by the design team, whose members have experience in research on infant nutrition with backgrounds in pediatrics, child nutrition and dietetics, and anthropology. Care was taken to minimize or avoid questions that might provoke or worsen psychological distress. Where possible, the survey used questions and formats from previous or ongoing research to facilitate comparisons. Participants had the option of omitting the answers to any questions. The survey included the Edinburgh Postnatal Depression Scale (EPDS) [30], a self-administered questionnaire comprising 10 items designed to screen for symptoms of PPD using a four-point Likert scale (0–3). PPD represents the end of a clinical continuum of symptoms. The cutoff point for depressive symptomatology risk was set at >12 points [31]. EPDS scores were determined based on three subscales: anhedonia, depression, and anxiety, and a global score was also calculated. The survey is presented in the appendix (Additional file 1).

Participants

This survey's online recruitment method implied that all participants were volunteers who had accessed the questionnaire because it was relevant to them and had chosen to complete it voluntarily. Women aged over 18 years who had delivered a singleton, healthy neonate at term during the start of the global pandemic (since March 2020) were included.

Statistical analysis

The results are expressed as mean and standard deviation or number and percentage. IBM SPSS Statistics version 21 (IBM Corp., Armonk, NY, USA) was used for statistical analysis. Continuous variables were analyzed using the independent-sample t test, and qualitative variables were analyzed using Fisher's exact test. $P < 0.05$ was considered to be significant.

Results

A total of 211 participants completed the questionnaire; their mean age was 30.5 ± 4.6 years (range: 18–41), and the mean gestational age at the time of birth was 38.3 ± 2.0 weeks (range: 27–41). The method of delivery included vaginal delivery in 27.5% (n = 58) and cesarean section in 72.5% (n = 153). The mean weight of the newborns was 3.2 ± 2.3 kg. The mean weight and body mass index of mothers at the time of birth were 75.9 ± 15.6 kg and 28.7 ± 5.9 kg/m^2, respectively. Further demographic details can be found in Table 1.

Table 1
EPDS scores and participants' demographic background.

Indicator		N	%	EPDS < 12 (%)	EPDS > 12 (%)	P value	OR (95% CI)
Mode of delivery	*Vaginal*	58	27.5	46 (30.5)	12 (20)	0.12	1.7 (0.8−3.6)
	Cesarean	153	72.5	105 (69.5)	48 (80)		
Body mass index	*Underweight*	1	0.5	1 (.7)	0 (0)	0.88	
	Normal	40	19.0	28 (18.5)	12 (20)		
	Overweight	98	46.4	69 (45.7)	29 (48.3)		
	Obesity	72	34.1	53 (35.1)	19 (31.7)		
Prepartum smoking	*No*	211	100.0	0 (0)	0 (0)	NC	
	Yes	0	0.0	151 (100)	60 (100)		
Postpartum smoking	*No*	209	99.1	149 (98.7)	60 (100)	0.37	0.7 (0.6−0.7)
	Yes	2	0.9	2 (1.3)	0 (0)		
Education	*Middle school*	2	0.9	0 (0)	2 (3.3)	0.039	
	High school	23	10.9	13 (8.6)	10 (16.7)		
	College	124	58.8	91 (60.3)	33 (55)		
	Postgraduate	62	29.4	47 (31.1)	15 (25)		
Civil status	*Single*	11	5.2	9 (6)	2 (3.3)	0.16	
	Married	151	71.6	112 (74.2)	39 (65)		
	Free union	49	23.2	30 (19.9)	19 (31.7)		

Note: $P < 0.05$ was considered to be significant.

EPDS, Edinburgh Postnatal Depression Scale; OR, odds ratio; CI, confidence interval. NC, not calculable.

Indicator		N	%	EPDS < 12 (%)	EPDS > 12 (%)	P value	OR (95% CI)
Occupation	Student	7	3.3	5 (3.3)	2 (3.3)	0.75	
	Housewife	67	31.8	48 (31.8)	19 (31.7)		
	Employee	128	60.7	95 (62.9)	33 (55)		
	Unemployed	9	4.3	3 (2)	6 (10)		
Parity	First baby	142	67.3	100 (66.2)	42 (70)	0.59	0.8 (0.4−1.6)
	Second or more	69	32.7	51 (33.8)	18 (30)		
Note: P < 0.05 was considered to be significant.							
EPDS, Edinburgh Postnatal Depression Scale; OR, odds ratio; CI, confidence interval. NC, not calculable.							

The global average score for the EPDS was 9.6 ± 5.1 (range: 0−26). Using the definition of PPD as an EPDS score > 12, as mentioned above, 60 mothers (28.4%) were classified as having PPD and 151 (71.6%) as not having PPD. Mothers with PPD were less likely to have a degree or postgraduate qualification than those without PPD ($P = 0.039$). They also had a lower frequency ($P = 0.001$) and a later initiation of SCC ($P = 0.001$) after childbirth. A total of 196 (92.9%) participants reported breastfeeding their baby during COVID-19. However, compared with those not reporting PPD, participants with PPD reported relative lower frequencies of exclusive breastfeeding ($P = 0.66$) and the combination of breastfeeding and formula ($P = 0.29$) during COVID-19. More detailed information is listed in Table 2.

Table 2
EPDS scores, breastfeeding history, and skin-to-skin contact.

Indicator		N	%	EPDS < 12 (%)	EPDS > 12 (%)	P value	OR (95% CI)
Previous breastfeeding and number of children previously breastfed.	*No*	140.0	66.4	97 (64.2)	43 (71.7)	0.3	0.7 (0.2– 2.3)
	Yes	71.0	33.6	54 (35.8)	17 (28.3)		
	1	44	20.9	37 (24.5)	7 (11.7)		
	2	11	5.2	8 (5.3)	3 (5)		
	3	6	2.8	2 (1.3)	4 (6.7)		
	4	10	4.7	7 (4.6)	3 (5)		
Exclusive breastfeeding during COVID-19	*No*	15	7.1	10 (6.6)	5 (8.3)	0.66	0.7 (0.2 – 2.3)
	Yes	196	92.9	141 (93.4)	55 (91.7)		
Breastfeeding and formula during COVID-19	*No*	93	44.1	70 (46.4)	23 (38.3)	0.29	1.3 (0.7– 2.5)
	Yes	118	55.9	81 (53.6)	37 (61.7)		
Planned method to feed the newborn	*Breastfeeding*	191	90.5	139 (92.1)	52 (86.7)	0.2	
	Breastfeeding and formula	15	7.1	8 (5.3)	7 (11.7)		
	No breastfeeding plan	5	2.4	4 (2.6)	1 (1.7)		
Newborn feeding 48 h postpartum	*Breastfeeding*	67	31.8	51 (33.8)	16 (26.7)	0.6	
	Formula	13	6.2	9 (6)	4 (6.7)		
	Breastfeeding and formula	131	62.1	91 (60.3)	40 (66.7)		

Note: *P* < 0.05 was considered to be significant.

EPDS, Edinburgh Postnatal Depression Scale; OR, odds ratio; CI, confidence interval.

Indicator		N	%	EPDS < 12 (%)	EPDS > 12 (%)	P value	OR (95% CI)
Newborn feeding after hospital discharge	Breastfeeding	148	70.1	111 (73.5)	37 (61.7)	0.2	
	Formula	4	1.9	3 (2)	1 (1.7)		
	Breastfeeding and formula	59	28.0	37 (24.5)	22 (36.7)		
Breastfeeding counseling	No	79	37.4	52 (34.4)	27 (45)	0.16	0.6 (0.3–1.1)
	Yes	132	62.6	99 (65.6)	33 (55)		
Breastfeeding cessation	No	188	89.1	137 (90.7)	51 (85)	0.22	1.7 (0.7–4.2)
	Yes	23	10.9	14 (9.3)	9 (15)		
Breastfeeding cessation reason	Issues with latching	7	30.4	4 (28.6)	3 (33.3)	0.95	
	Exhaustion	5	21.7	3 (21.4)	2 (22.2)		
	Insufficient milk	5	21.7	3 (21.4)	2 (22.2)		
	Pain	2	8.7	1 (7.1)	1 (11.1)		
	Letting other people feed the baby	1	4.3	1 (7.1)	0 (0)		
	Other responsibilities	2	8.7	1 (7.1)	1 (11.1)		
	Medication	1	4.3	1 (7.1)	0 (0)		
Skin-to-skin contact	No	78	37.0	45 (29.8)	33 (55)	0.001	0.3 (0.1–0.6)
	Yes	133	63.0	106 (70.2)	27(45)		

Note: P < 0.05 was considered to be significant.
EPDS, Edinburgh Postnatal Depression Scale; OR, odds ratio; CI, confidence interval.

Indicator		N	%	EPDS <12 (%)	EPDS >12 (%)	P value	OR (95% CI)
Skin-to-skin contact initiation	*Immediately after birth*	97	46.0	79 (52.3)	18 (30)	0.001	
	During the first 30 min after birth	15	7.1	9 (6)	6 (10)		
	After the first 30 min	8	3.8	5 (3.3)	3 (5)		
	After the first 60 min	13	6.2	13 (8.6)	0 (0)		
	No skin-to-skin contact	78	37.0	45 (29.8)	33 (55)		
Note: *P*< 0.05 was considered to be significant.							
EPDS, Edinburgh Postnatal Depression Scale; OR, odds ratio; CI, confidence interval.							

When asked how the participants fed their newborn immediately after hospital discharge, 148 (70.1%) reported breastfeeding exclusively, 59 (28%) used mixed feeding (breastfeeding and formula), and only four patients (1.9%) used formula exclusively to feed their newborn.

The frequencies of the planned method to feed the newborn and the feeding method during the first 48 h after birth were lower in patients with PPD (P= 0.2 and P= 0.6, respectively). Breastfeeding counseling was reported by 132 patients (62.6%), but this was reported less frequently in participants with PPD (P= 0.16). Only 23 (10.9%) mothers had stopped breastfeeding, and the main reason was problems with latching (30.4%). The frequency of having breastfed previously and the number of children previously breastfed by each participant were lower in participants with PPD (P= 0.3 and P= 0.08, respectively).

A total of 133 patients (63%) had initiated SCC and 78 (37%) had not. SSC was more frequent immediately after birth (46%), followed by within the first 30 min (7.1%), after the first hour (6.2%), and after the first 30 min (3.8%). Of those who had initiated SSC, most planned to give breastmilk exclusively (94%), followed by those who planned to give breastmilk and formula (5.3%); only one (0.8%) did not have a plan for feeding (P= 0.046). Participants who had given birth through cesarean section had a higher frequency of providing SSC (87 or 65.4%) than those who had given birth through vaginal delivery (46 or 34.6%) (P= 0.003). During the first 48 h after birth, 94% of those who had initiated SSC used breastmilk exclusively, 0.8% used breastmilk and formula, and only 5.3% used formula (P= 0.004). Detailed information is shown in Table 3.

Table 3
Skin-to-skin contact and the planned method of feeding.

Indicator		N	%	SSC No	SSC Yes	P value	OR (95%CI)
Planned method to feed the newborn	Breastfeeding	191	91	66 (54.6)	125 (94)	0.046	
	Breastfeeding and formula	15	7	8 (10.3)	7 (5.3)		
	No plan	5	2	4 (5.1)	1 (0.8)		
Mode of delivery	Vaginal	58	27	12 (15.4)	46 (34.6)	0.003	0.3 (0.1–0.7)
	Cesarean	153	73	66 (84.6)	87 (65.4)		
Newborn feeding in the first 48 h postpartum	Breastfeeding	67	31.8	66 (84.6)	125 (94)	0.004	
	Formula	13	6.2	8 (10.3)	7 (5.3)		
	Breastfeeding and formula	131	62.1	4 (5.1)	1 (0.8)		

Note: P< 0.05 was considered to be significant.

SSC: skin-to-skin contact; OR, odds ratio; CI, confidence interval.

Discussion

Screening for perinatal depression is recommended internationally and should be a priority during an international public health crisis. Our study found that a higher percentage (28.4%) of Mexican women giving birth during the period of COVID-19 quarantine between February and July 2020 had PPD, as indicated by the EPDS score, compared with the frequency reported previously (13.3–18%) in Mexico. Similar results have been reported by Sun et al. who found that 33.71% of 2,883 women in Wuhan, China, had symptoms of depression [32]. These authors reported a relationship between COVID-19 and depression, and that 34% of the participants experienced depression during the 0–18-month postpartum period. Another study in China reported that, since the start of the COVID-19 pandemic, postpartum women had a higher incidence of anxiety and depression than women who were still pregnant. That study included 20,569 women, 16,796 of whom were pregnant and 3,722 were postpartum. The prevalence rate of depression among pregnant woman during the COVID-19 pandemic was 31% [14].

A study in Italy of 575 pregnant and postpartum women found that a large percentage of both groups had scores above the clinical cutoff for several well-being measures. The participants showed clinically significant depressive symptoms, 34.2% during pregnancy and 26.3% at postpartum [18], which suggests

a significant global increase in the prevalence of depression during COVID-19. These findings suggest that the pandemic and measures adopted to fight its spread may have had negative effects on the well-being of pregnant and postpartum women. Social isolation, lack of support, and perceived lack of control over one's health may negatively affect pregnancy outcomes [25]. Pregnant women giving birth during the COVID-19 pandemic represent a vulnerable population. High-risk groups should be carefully followed to minimize the risk of postpartum mental dysfunction, as previously reported following natural disasters [33].

SSC is an easy, simple, and cost-effective method and can be applied as a nursing intervention to encourage mother–infant bonding. SSC may have been effective at reducing PPD in the participants in our study given that a significantly higher percentage of women without PPD had initiated SSC after childbirth ($P = 0.001$). We also found that a higher percentage of mothers using SSC had a previous plan to feed their newborn with exclusive breastfeeding ($P = 0.046$) and to feed with exclusive breastfeeding during the first 48 h after birth ($P = 0.004$) than those mothers who did not initiate SSC. The application of SSC should be encouraged because it facilitates adaptations between mother and infant. Previous studies have shown that SSC contributes positively to reducing the incidence of PPD symptoms in mothers and term infants [26, 34, 35].

SSC is known to facilitate access to the breast and to increase breast milk production and breastfeeding rate. SSC also increases the breastfeeding rate and breastfeeding time after discharge from neonatal intensive care unit [36–38].

In a systematic review of 887 participants, Moore [36] et al. reported that women who initiated SSC were more likely to breastfeed at 1–4 months after birth than were those with standard contact. Women who initiate SSC also breastfeed their infants for longer and are more likely to breastfeed exclusively between the time of hospital discharge and 1 month later and between 6 weeks and 6 months after birth [36]. SSC may also reduce depressive feelings by strengthening the sense of motherhood [25, 39, 40]. Bigelow et al. [26] indicated that mother–infant SSC provided benefits by decreasing mothers' depressive symptoms and physiological stress in the first weeks after birth. SSC can also improve general health and reduce symptoms of depression and stress in new mothers [25, 26, 35, 41].

The relationship between PPD and the practice of exclusive breastfeeding is not yet well established in the literature. However, this issue has been addressed in several studies because PPD may reduce the duration of exclusive breastfeeding [42]. Despite this observation, there is no consensus yet because some studies have reported that mothers with depressive symptoms are more likely to abandon the practice of exclusive breastfeeding [43, 44]. Using an EPDS score > 10 as the cutoff for PPD, Gaffney et al. [45] reported lower-intensity breastfeeding in mothers with depressive symptoms. The reason for this may be reduced self-efficacy in mothers with PPD because maternal confidence in breastfeeding tends to be affected by depressive symptoms [41]. Women with high self-esteem in the postpartum period tend to continue exclusive breastfeeding for longer than those with low self-esteem [46].

One of our study's limitations is that there is no literature on PPD and BP based on the Mexican population to compare the results with a population similar to ours. Nonetheless, our data provide the basis for a better understanding of breastfeeding and PPD in postpartum women in Mexico. Another limitation is that our study included a smaller sample compared with previous research during COVID-19. More studies covering a larger population are needed to confirm our findings. One methodological limitation concerns the data collection because our data were collected online, which may affect the ability to compare with other studies using data collected in person. However, the digital survey has also been used in other studies [47, 48]. Although the online modality might discourage some women from seeking help, it helps in terms of anonymity and confidentiality.

The COVID-19 pandemic and resultant restrictions may aggravate symptoms of PPD. Health-care interventions may be needed to avoid deterioration of maternal health caused by social containment and after natural disasters [29].

To our knowledge, this is the first study to use the EPDS score to assess PPD in Mexican women giving birth in an area severely affected by COVID-19. The burden of exposure to COVID-19, physical distancing, and containment recommendations may adversely affect new mothers' thoughts, emotions, and functioning, which may worsen their depressive symptoms. The present study used the EPDS scale because this population was regarded as a susceptible population. Despite the limitations noted above, the present results suggest that the pandemic emergency and restrictions imposed on the population have significantly affected the well-being of mothers during and after birth and that these effects may pose risks to mental health and emotional stability of new mothers.

Conclusion

During the COVID-19 pandemic, spikes in the prevalence of postpartum depression have been reported in several countries, now including Mexico. It is crucial to continue investigating this condition, being pregnant women a probably vulnerable group in the face of the actions taken because of the pandemic. It is necessary further research on measures and interventions that could improve the incidence of this condition during a crisis. We propose SCC as a cheap and straightforward intervention that could help reduce the incidence of postpartum depression.

Abbreviations

BP: Breastfeeding practices; COVID-19, Coronavirus disease 2019; EPDS: Edinburgh Postnatal Depression Scale; PPD: Postpartum depression; SSC: Skin-to-skin contact

Declarations

Ethics approval and consent to participate

Data collection was approved by the Ethics and Research Committee, with the Clinical trial number NCT04769700 (ClinicalTrials.gov). Participants gave their informed consent through the online questionnaire.

Consent for publication

Not applicable.

Availability of data and materials

The dataset analyzed is available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

MChT, KVCh, GCG, GGC, ECP, CFO, JMChC, FJBC and AGO were in charge of the study design. GLV, DMHC, TGH, BGGR, PFB, EARE and JAGB developed and applied the questionnaire. MChT, GCG, GGC, CFO and AGO were in charge of disseminating and obtaining the database's sample. MChT, AGO, CFO, FJBC, ECP, TGH and ELRE performed the coding and statistical analysis. MChT, AGO, CFO, BGGR, JMChC, FJBC, PFB, GCG, ECP and JAGB wrote the final version of the manuscript. All authors read and approved the final manuscript.

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