

## Comparison Of Prevalence Of Postpartum Depression Symptoms Between Breastfeeding Mothers And Non-breastfeeding Mothers

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**Objectives:** There is a relationship between infant feeding method and maternal postpartum depression (PPD). This study was carried out in an Iranian population to compare the prevalence of PPD symptoms between breast feeding and non-breast feeding mothers for first time.

**Methods:** Four health centers in Ahvas were selected by random sampling in 2009. At first 78 non-breast feeding mothers at two months postpartum were recruited in the study and then 78 breast feeding mothers were recruited through random sampling. They were re-assessed in six months postpartum period. Demographic and obstetric data questionnaire and Edinburgh Postnatal Depression Scale (EPDS) were used .

**Results:** There was a significant difference in prevalence of Edinburgh Postnatal Depression Scale positive between breast feeding (2.5%) and non- breast feeding mothers (19.4%) (p=0.004).

**Conclusion:** Infant feeding method may be related to maternal mood disorder and breast feeding mothers are less depressed. Breastfeeding may decrease PPD.

**Key words:** Breast feeding, Postpartum depression, Women

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**B**reast feeding (BF) has significant benefits for mothers and infants (1-5). To achieve optimal health and well being of newborns, World Health Organization (WHO) has recommended exclusive BF for the first six months of infants' life (6). BF increases oxytocin secretion (1) and consequently induces maternal-fetal attachment and bonding (1,7). BF can also regulate diurnal basal cortisol secretion in postpartum mothers (4) and autonomic response to stress (3). There is a relationship between infant feeding method and maternal postpartum depression (PPD) (8-10). PPD can begin any time during the first year after delivery. The Text Revision of fourth Diagnostic and Statistical Manual for psychiatric disorders (DSM- IV-TR) allows the specification of a postpartum mood disturbance if the onset of symptoms is within 4 weeks after delivery. PPD symptoms may include feelings of loneliness, sleep disturbances, decreased appetite, and emotional liability (11). The reported prevalence of PPD is 10-18% in different societies (12-15), and is reported to be 14-21.4% in Iran (16-21). The annual incidence of a major depressive episode is 1.89% for women (11), and there is a threefold higher rate of onset of depression during the first five weeks after childbirth (22). Depression

symptoms in children of depressed mothers are more frequent than that of general population (23). Recent studies have emphasized reciprocal relationship between depression of mothers and depression of their children (24). Therefore, depression in post partum period is an important mental health problem for infant-mother dyad. Thome M et al. assessed Icelandic mothers at 2-3 months after delivery and concluded that depressive symptoms are associated with lower rates of exclusive BF (8). Abou-Saleh MT et al. examined 70 women at postpartum period and found that BF mothers have significantly lower EPDS scores, and that postpartum mothers with current depression (EPDS $\geq$ 11) have significantly lower plasma prolactin level than non-depressed mothers (9). Dennis CL et al. carried out a qualitative systematic review to assess the relationship between postpartum depressive symptoms and infant-feeding outcomes. Seventy five articles from 1966 to 2008 were reviewed. Of the 49 included studies, seven found a positive association between bottle-feeding and higher level of depressive symptoms, another seven studies found a positive relationship between BF and lower level of depressive symptoms, and six reported no relationship between postpartum depression and infant-feeding outcomes. They also found 12 studies that suggested mothers with depressive symptoms are more likely to discontinue breastfeeding earlier than non-depressed mothers.

They found “consistent trends that women with depressive symptomatology may be at increased risk to prematurely discontinue BF, report more BF worries and difficulties, and have decreased levels of BF self-efficacy. There is also beginning evidence to suggest that they might be less likely to initiate BF and to do it exclusively.” Dennis CL et al. suggested additional research to confirm their results and examine the unidirectional pathway of negative effect of maternal mood on infant-feeding outcomes rather than reverse pathway (10). Therefore, we compared the prevalence of PPD symptoms between BF and non BF mothers to assess inverse relationship between BF problems and PPD. To our best knowledge, this is the first study carried out in Iranian population to compare the prevalence of PPD symptoms between BF and non BF mothers.

## Materials and Method

This is a descriptive-analytic case-control study. The study was approved by Institutional Review Board of Ahvaz Jundishapur University of Medical Sciences (AJUMS). Four health centers in Ahvaz were selected by random sampling in 2009. Staff members of these health centers collaborated in data collection and a medical student collected questionnaire from these health centers. Because of low prevalence of non-BF mothers, at first, all non-BF mothers (78 non-BF mothers) attending health centers were requested to participate in the study and then 78 BF mothers participated through random sampling and their consent was acquired orally. We tried to consider similarity in other variables such as some risk factors of PPD (21) between the two groups. Exclusive BF is defined as the feeding of breast milk only, and no other liquids or solids with the exception of drops or syrups consisting of vitamins, minerals supplements, or medicines (25). This method was assumed for at least six months (6) for the BF group, and they were re-assessed four months later for continuation of BF. Mothers who discontinued BF due to precautions for taking medications were excluded.

Participants were asked to complete demographic and obstetric data questionnaires and Edinburgh Postnatal Depression Scale (EPDS). Demographic and obstetric data questionnaires contained maternal age, employment history, educational level, economic status, previous history of depression or PPD, previous history of abortion or still birth, type of delivery, gender of infant, number of previous pregnancies, infant gender satisfaction, pregnancy satisfaction, and reason for BF cessation.

The EPDS is a 10-item self-report scale for measuring the intensity of depressive symptoms experienced within the past 7 days. Each statement is rated on a scale from 0 to 3 (“yes, most of the time” to “no, not at all”), total score ranging from 0 to 30. Seven of the 10 items are scored reversely (26). The cut-off score for indication of PPD is 12/13 or greater (26-29). For the first time, Cox et al. designed EPDS as a screening tool

for the secondary prevention of PPD (30) with established validity and reliability. A cut-off score of 13 or greater identified probable postnatal depression with a sensitivity of 86% and a specificity of 78% (31). The best cut-off point in Iranian sample is 12/13 with sensitivity of 95.3% and specificity of 87/9% (32), which can be used 6-8 weeks after delivery to screen for PPD (5). We used EPDS with cut-off of 12 and translated it to Farsi.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) windows version 13.0. Results were calculated as frequencies (%), means and standard deviations. Groups’ comparisons were done by chi-square test and odds ratio (95% confidence interval) and t-test. A probability of  $P < 0.05$  was considered statistically significant.

## Results

Seventy-two non-BF mothers and 78 BF mothers completed the questionnaires. Questionnaires of six non BF mothers were excluded because they were not filled completely. Table 1 demonstrates demographic data, and table 2 shows obstetric data of the participants). The two groups were similar in different variables. Most of them were 20-30 years old, homekeeper, had a high school diploma, with moderate economic status (table1), and were satisfied with their pregnancy and infant's gender (table 2). Most of them had vaginal delivery, one child, and negative previous history of depression, PPD, abortion, still birth and pregnancy (table 2). The most common reason of BF cessation among non BF mothers with or without PPD was subjective feeling of having poor lactation (table 3). There was a significant difference in EPDS score between BF ( $16.40 \pm 4.10$ ) and non BF ( $18.06 \pm 2.69$ ) mothers, and rate of women with  $EPDS \geq 12$  was significantly higher in the non BF group ( $n=14$ ) than BF group ( $n=2$ ) ( $P=0.004$ ,  $t=2.9$ ,  $df=148$ ).

## Discussion

In this study, prevalence of postpartum depression symptoms in non-BF mothers was significantly higher than BF mothers. Therefore, there is a probable association between non-BF and depressive symptoms among mothers in eight weeks after delivery.

This result is relatively consistent with other studies (8-10). In a study carried out by Thome M et al. they concluded that depressive symptoms are associated with lower levels of exclusive BF (8). Abou-Saleh MT et al. also found that BF mothers have significantly lower level of PPD symptoms (9), but their sample size was noticeably smaller as compared to this study. Additionally, in those studies, exclusive BF was well defined, whereas in this study exclusive BF has been defined based on WHO’s definition. These differences make the comparison of our results with other studies more difficult. In the systematic review of Dennis CL et al., seven studies found a relationship between BF and lower level of depressive symptoms (10).

Table 1. Demographic data of breastfeeding and non breastfeeding mothers

	BF		Non BF				
	number	%	number	%			
<b>Age (year)</b>							
20-30	64	82.05	62	86.11			
31-40	14	17.94	10	13.88			
					p=0.30	t=1.04	df=148
<b>Employment</b>							
Employed	58	74.35	52	74.28			
homekeeper	20	25.64	18	25.71			
					P=0.016	Z=0.5	
<b>Economic status</b>							
High	33	42.85	22	31.42			
Medium	41	53.24	44	62.85			
low	3	3.89	4	5.71			
<b>Educational level</b>							
illiterate	0	0	3	4.22			
Primary school	13	16.66	12	16.90			
Middle school	6	7.92	13	18.30			
High school	37	47.43	28	39.43			
University	22	28.20	15	21.12			

\*breastfeeding

Table 2: obstetric data of breastfeeding and non breastfeeding mothers

	BF		Non BF			
	number	%	number	%		
<b>Previous delivery</b>						
1	46	61.33	35	50.00		
2	17	22.66	24	34.28		
3	10	13.33	8	11.42		
4	2	2.66	3	4.28		
<b>pregnancy satisfaction</b>						
Yes	75	96.15	62	86.11		
No	3	3.84	10	13.88		
					P=0.053	Z=1.9
<b>Infant gender satisfaction</b>						
Yes	75	96.15	62	86.21		
No	3	3.84	10	13.88		
					P=0.314	Z=1.01
<b>Type of delivery</b>						
Cesarean section	34	43.58	22	31.42		
vaginal	44	56.41	48	68.57		
					P=2.04	Z=1.27
<b>abortion or still birth</b>						
Yes	11	14.38	9	12.50		
no	66	85.71	63	87.50		
					P=0.204	Z=1.27
<b>Number of offspring</b>						
1	49	62.82	34	48.57		
2	17	21.79	24	34.28		
3	10	12.82	8	11.42		
4	2	2.56	3	4.28		
5 or more	0	0	1	1.42		
<b>previous depression or PPD*</b>						
Yes	4	5.12	7	9.72		
No	74	94.87	65	90.27		
					P=0.135	Z=1.4

\*postpartum depression

Table 3: the reasons of breastfeeding cessation in non breastfeeding mothers

reason of BF cessation	non BF mothers with or without PPD		non BF mothers with PPD	
	number	%	number	%
Low weight of infant	11	15.27	5	35.71
feeling of inadequate lactation	48	66.66	9	64.28
Small breast	3	4.16	0	0
Advise of other person	4	5.55	0	0
Maternal illness	6	8.33	0	0
total	72	100	14	100

The relationship between non-BF and depression might share some similarities with BF discontinuation and child loss which can lead to depression (33). Gallup Jr GG et al. suggested that “the decision to bottle feed unwittingly mimics conditions associated with the death of an infant. Child loss is a well-documented trigger for depression particularly in mothers, and growing evidence shows that bottle feeding is a risk factor for postpartum depression (34).” In this study, the most common reason of non-BF was subjective feeling of having poor lactation and low weight in infants. This result is consistent with previous hypothesis about cognitive errors in depression (33). Thus, worrying about infant or lactation may be related to depression. Galler JR et al. assessed 226 mother-infant dyads and found that women who believed that BF was better than bottle feeding at seven weeks postpartum were more likely to continue BF up to six months postpartum, and were also less depressed at seven weeks and six months postpartum. Galler JR et al., also concluded that feeding attitudes and maternal mood are closely linked, but each of them contributed independently to BF, especially at six months after childbirth (35). On the other hand, the relationship between maternal identity, early BF cessation and distress is complex. Cooke M et al. concluded that the relationship between BF cessation and EPDS score is varied according to Maternal Role Attainment (MRA) level. Women with high MRA level and no longer duration of BF had higher EPDS scores and distress compared to women with low MRA level and those with high MRA level and continuation of BF. They suggested it may be helpful to provide support, psychological assessment, and to highlight strong belief about the importance of BF and maternal role for those women who decide to stop BF earlier (36).

Other psychological effects of BF may be through autonomic responses and endocrine system. BF increases parasympathetic/sympathetic activity ratio among mothers, while an inverse change is occurred by bottle feeding (3). Also, BF increases maternal-fetal bonding by oxytocin secretion (7) and can consequently lead to lower level of distress (37). Besides, both depressed mothers and their infants are more relaxed during BF than bottle feeding (2). In sum, BF and PPD may have a reciprocal relationship. Mothers with PPD may not initiate or continue BF or do it exclusively. Conversely, non-BF mothers may experience higher levels of PPD. Encouraging BF continuation may prevent or decrease depressive symptoms.

This study had some limitations. One limitation was the small sample size due to voluntary participation and lower prevalence of non-BF. Another limitation was difficulty in controlling for potential confounding variables, because of many potential risk factors for PPD. Another limitation of this study was the probable absence of mothers with severe depression. Also, we did not assume the time of initiation or cessation of BF. Comparison of our results with that of other studies

was difficult due to some methodological differences such as BF definition, EPDS cut-off points and different self-report measures.

**Conclusion:** our results suggest that PPD symptoms may be higher in non-exclusive BF mothers as compared to exclusive BF mothers. This finding supports the need for mental health screening of non-BF mothers and mothers who decide to discontinue exclusive BF.

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