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Prevalence of Postpartum Depression and its Correlation with Breastfeeding: A Cross-Sectional Study

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ABSTRACT

Background: *The relationship between breastfeeding and postpartum depression is bidirectional. Breastfeeding improves the maternal and neonatal health. There is now growing evidence that it might play a role in the prevention of postpartum depression.* ***Objective:*** *This study explores the relationship between breastfeeding and maternal postpartum depression. It also estimates the prevalence rate of postpartum depression among Saudi women.* ***Methods:*** *This is a cross-sectional study. Three-hundred postpartum women were recruited for this study from various hospitals in the Eastern Province of Saudi Arabia. Likelihood of depression was assessed using the Edinburgh Postpartum Depression Scale (EPDS). Socio-demographic data were collected as well as data regarding breastfeeding duration and intention to breastfeed. Data analysis was done using SPSS version 21, using parametric tests; independent t-test and One-Way ANOVA.* ***Results:*** *Postpartum mothers who intended to breast-feed their babies had a lower EPDS scores compared with those who did not intend to breast-feed. No correlation was found between the duration of breastfeeding and EPDS scores. Prevalence rate of postpartum depression in our sample was 14%. Greater age, having previous babies, intention to breastfeed and vaginal delivery were significantly associated with actual breastfeeding.* ***Conclusion:*** *Screening for mothers in the early postpartum period is essential to detect those who are at risk for postpartum depression. Breastfeeding may help to reduce and prevent the appearance of symptoms of depression. Prevalence rate of postpartum depression in Saudi Arabia, 14%, is similar to the worldwide rate.*

Keywords: Breastfeeding, Postpartum depression, Postnatal period

INTRODUCTION

The World Health Organization, the European Commission Directorate for Public Health and the American Academy of Pediatrics all recommend exclusive breastfeeding for the first 6 months of life [1-3]. Established benefits of breastfeeding are well known and has always been thoroughly investigated. It is globally accepted as the best infant feeding method for its economy and its immediate and long-term health benefits, in addition to decreased risk of infection and diarrhea in the infant. Regarding benefits to the mothers, breastfeeding reduces risk of type 2 diabetes and uterine and ovarian cancers in the mothers [4].

The relationship between breastfeeding and postpartum depression is bidirectional. A depressed pregnant woman is less likely to intend to breast-feed her infant [5], to initiate [6] or to maintain breastfeeding during the postpartum period [7]. Literature reviews suggest that breastfeeding is also less common among postpartum depressed mothers [8]. Whether postpartum maternal depression may cause early cessation of breastfeeding, and depressive symptoms have been noted to precede breastfeeding cessation as was noticed by some reviewers [9], or it merely results from cessation of breast feeding as proved by others, who noticed the stoppage of lactation precedes the appearance of depression [10], more empirical evidence is needed on the relationship between breastfeeding and post-partum depression [11].

Breastfeeding undoubtedly; has been associated with numerous positive health outcomes for both the child and the mother. It is very important and highly required for the psychological well-being of the mother, for example an attenuated response to stress [12,13] and better sleep patterns [11,14] have been noticed. Breastfeeding may reduce the risk of depression by its impact on every parameter of sleep [14]. Researches have shown that mothers who do

not initiate or maintain breastfeeding are at risk for depression during the postpartum period [10]. It was proven that breastfeeding is negatively affected by prenatal depression during pregnancy and reduces postpartum depression [15]. Exclusive breastfeeding may help to reduce symptoms of depression from childbirth to 3 months postpartum [15].

Raised levels of plasma pro-inflammatory cytokines have been linked to depression as possible causative agents [16]. It is generally accepted that in the postpartum period, there is elevated inflammatory responsiveness in the serum, which suggests an activation of the inflammatory response system. Recently, researches describe the physiological mechanism that explains why breastfeeding protects maternal mental health. Breastfeeding is anti-inflammatory, and it down regulates both the stress and the inflammatory response system. In addition, it protects infants when their mothers are depressed by preventing disengagement to happen between the infant and the mother, thus, improving physical and mental wellbeing. In one study, they compared infants' EEG patterns in two groups of women, depressed (breast or formula feeding) with non-depressed (breast or formula feeding) and found that, an abnormal EEG pattern was a measure of depression in 3 months old infants. However, the infants of depressed, breastfeeding mothers had normal EEG pattern [17].

Studies have explored prevalence rates of postpartum depression across countries and various socio-demographic and economic classes. Studies from the United States have reported prevalence rates varying between 8.9% and 17% [18]. Studies from Europe, showed very close prevalence rates of 13% [19]. Variations of postpartum depression prevalence in the Arab world range from 10% in the United Arab Emirates [20], 16% in Lebanon [21], 17.8% in Saudi Arabia [22], and 22% in Northern Jordan [23]. Postpartum depression was also examined in association with socio-demographic, maternal general health, obstetric, gynecologic, and infant health variables. Socio-demographic variables including maternal age (above 35 years), education, income, smoking, and employment status can affect and alter mood status. There is conflicting data on this aspect: for example, some studies found that less educated mothers were more likely to develop postpartum depression [24], while other studies did not find a statistically significant correlation between socio-demographic variables and postpartum depression. This contrast very clearly with the growing evidence that breastfeeding and postpartum depression are strongly correlated.

This study aims to assess the prevalence of postpartum depression among Saudi women and its correlation to actual breastfeeding and intention to breastfeed.

PATIENTS AND METHODS

Setting

The study was conducted at King Fahd University Hospital, Imam Abdulrahman Bin Faisal University, Dammam Maternity and Children Hospital and Security Forces Hospital. These are the main providers for secondary care services to the residents of the cities of Khobar and Dammam in Eastern Province of Saudi Arabia.

Participants

Subjects were postpartum women attending the outpatient department for their postnatal visits. Inclusion criteria included age 18-45 years, intention to breastfeed and giving birth to full-term single infant. The exclusion criteria were: pre-natal plans to formula feeding, admission to neonatal intensive care unit longer than 24 hours, history of depression and presence of serious maternal medical conditions.

Measurements

Socio-demographic data included: age, number of children, mode of delivery, previous miscarriages, education, employment, monthly salary, and presence of chronic disease. Other information included: intention to breast-feed and duration of exclusive breastfeeding.

Depression was measured by the Edinburgh Postnatal Depression Scale (EPDS). This is a 10-item scale with each item scored from 0 to 3 (minimum score 0, maximum 30). We used the Arabic version of the EPDS that has been previously validated in a sample of Emirati women [25]. A cut-off score of 14 was considered positive for depression.

Statistical Analysis

Statistical analysis was done using SPSS version 21. Descriptive and analytic statistics were applied for quantitative and qualitative variables. Independent t-test was used as a parametric test to detect differences between the compared groups. One Way ANOVA was run to detect any statistical differences between groups with p-value is considered significant when <0.05 at 95% confidence interval.

RESULTS

During the study period, April 2017 to January 2018, 300 women were recruited to the study. The characteristics of the study subjects are shown in Table 1. The mean age was 33.2 (± 9.2 SD) and the mean number of children was 3.1 (± 2.1 SD).

Table 1 Socio-demographic factors

Women's characteristics	N (%)
Age, years	
18–27	88 (29.3)
28–37	87 (29)
38–44	93 (31)
Not mentioned	32 (10.7)
Previous children	
Yes	271 (90.3)
No	24 (8)
Not mentioned	5 (1.7)
Mode of delivery	
Vaginal delivery	207 (69)
Caesarean delivery	81 (27)
Not mentioned	12 (4)
Previous miscarriage	
Yes	122 (40.7)
No	171 (57)
Not mentioned	7 (2.3)
Education in years	
6	1 (0.3)
6–12	49 (16.3)
>12	245(81.7)
Unknown	5(1.7)
Employment	
Employed	162 (54)
Non-employed	131 (43.7)
Not mentioned	7(2.3)
Income in Saudi Riyals	
<8,000	78 (26)
8,000–15,000	119 (39.7)
>15,000	84 (28)
Not mentioned	19 (6.3)
Medical problems	
Present	42(14)
Absent	251 (83.7)
Not mentioned	7 (2.3)

Majority of women (93.3%) in the study intended to breast-feed their babies. Almost 10% of those who intended to breast-feed their babies eventually did not breast-feed. The remaining women breast-fed for variable durations (Table 2).

Table 2 Duration of exclusive breastfeeding

Duration of breastfeeding (months)	N (%)
Did not breastfeed	29 (9.7)
1	48 (16)
<3	39 (13)
3-6	49 (16.3)
6-9	35 (11.7)
12	30 (10)
13-18	24 (8)
>18	37 (12.3)

Mothers who intended to breastfeed scored significantly less on the EPDS test compared with those who did not intend to breastfeed (P<0.05) (Table 3). There was no correlation between the duration of breastfeeding and the EPDS score. The EPDS score has no positive or negative predictive value regarding the duration of breastfeeding.

Table 3 EPDS test score

Intention to breast-feed	N	Mean	Std. Deviation	t-test	Sig. (2-tailed)
YES	271	8.8044	6.2101	-2.207	0.043
NO	14	11.9286	5.10602		

Forty-two women scored more than 14 on the EPDS giving a prevalence of postpartum depression of 14%. Older mothers who had previous babies and intended to breast-feed are more likely to actually breast feed their babies. Mothers who delivered vaginally were more likely to breast-feed their babies compared with those who had Caesarean delivery. The other variables did not affect the likelihood of breast-feeding (Table 4).

Table 4 Comparison of the breastfeeding and non-breastfeeding groups

Variables	No breast-feeding	Breast-feeding	p-value
Age			
18-27	14 (15.9)	74 (84.1)	0.036
28-37	10(11.5)	77 (88.5)	
38-44	4 (4.3)	89 (95.7)	
Number of children			
1-3	21 (11.9)	155 (88.1)	0.029
4-6	3 (3.8)	75 (96.2)	
7-9	0 (0)	25 (100)	
Mode of delivery			
Vaginal	10 (4.9)	196 (95.1)	0.001
Caesarean	10 (8.3)	66 (81.5)	
Previous abortion			
Yes	10 (8.3)	111 (91.7)	0.497
No	18 (10.7)	151 (89.3)	
Education in years			
6	0 (0)	1 (100)	0.188
6-12	9 (18.4)	40 (81.6)	
>12	20 (8.3)	22 (91.7)	
Medical disease			
Yes	4 (9.5)	38 (90.5)	0.899
No	25 (10.2)	221 (89.8)	
Employment			
Yes	13 (8.1)	147 (91.9)	0.22
No	16 (12.5)	112 (87.5)	
Income			
<8000	10 (13.7)	63 (86.3)	0.258
8000-15000	13 (10.9)	106 (89.1)	
>15000	5 (6)	79 (94)	
Intention to breast-feed			
Yes	9 (64.3)	5 (35.7)	0.001
No	20 (7.3)	225 (92.7)	
EPDS score			
Negative	19 (7.8)	224 (92.2)	0.379
Positive	5 (11.9)	37 (88.1)	

DISCUSSION

Breastfeeding plays an important role in the mother's postpartum mental health. Our results indicated that postpartum depression correlates with breastfeeding more than other socio-demographic factors such as age, monthly salary,

employment, and level of education. Women who breastfed their infants have less predisposition to postpartum depression. Those who intended and planned to breastfeed (93% of our participated mothers) scored less in Edinburgh Postnatal Depression Scale compared with those who did not, mean score of 8.8 and 11.9, respectively (p=0.043).

The duration of breastfeeding was not related to the EPDS scores in our study. Other studies have shown that mothers who initiate or maintain breastfeeding are at a lower risk for postpartum depression, and that early cessation of breastfeeding may contribute to postpartum depression [10,26]. In a longitudinal cohort study done by Ystrom, it was found that early cessation of breastfeeding lead to depression and anxiety in the mothers [10]. Severe breastfeeding discomfort or pain was also related to postpartum depression [27]. It would be interesting if future studies compare the rate of postpartum depression among primiparous and multiparous women, because usually pain and discomfort is usually more pronounced with the first breastfed infant.

As suggested previously, breastfeeding may have an antidepressant effect [8]. These data support the possibility that postpartum depression may be associated with a dysregulated hypothalamic-pituitary-adrenal axis. Breastfeeding might promote a tighter regulation of diurnal basal cortisol secretion [12].

Some studies showed an association between postpartum depression and giving birth to a male or a female infant [28], other researchers highlighted financial status as a contributing factor for the development of postpartum depression, while others mentioned employment as a risk factor [29]. We did not find any correlation with any of these factors.

It is estimated that 13% of women are affected by postpartum depression within one year of birth. The risk of postpartum depression increases dramatically to 41% in women with antenatal depression [30]. In our study, we have found that 14% of postpartum women scored high on the EPDS score. Studies from the United States have reported prevalence rates varying between 8.9% and 17% [18]. Studies from Europe showed the prevalence rate of 13% [19]. Variations of postpartum depression prevalence in the Arab world range from 10% in the United Arab Emirates [20], 16% in Lebanon [21] and 17.8% in Saudi Arabia. Our finding is similar to those reported in the literature.

The result of this study demonstrated that breastfeeding has a much larger role to play in maintaining physical and mental health. It's not just a method of feeding, it's a way of caring for the mother and her infant. Recognizing variables that could contribute to postpartum depression, may help to develop strategies to overcome the potential barriers to improve the rates of breastfeeding in mothers and prevent postpartum depression.

There might be additional variables that influence the correlation between breastfeeding and postpartum depression, which were not scrutinized in this study, and we recommend more comprehensive studies for this problem.

CONCLUSION

The results of this study emphasis on the importance of exclusive breastfeeding and its correlation to postpartum depression. Women who intended to breastfeed their infants and did so, had lower scores on EPDS, compared with those who didn't. Socio-demographic factors have no statistically significant relationship with postpartum depression. Further research is required to ensure whether interventional programs held to improve breastfeeding self-efficacy can prevent postpartum depression.

DECLARATIONS

Ethical Approval and Informed Consent

Ethical approval for the study was obtained from the Deanship of scientific research, Imam Abdulrahman Bin Faisal University (ethical approval number 2013190), after complete description of the study and the expected benefits from the study. The study protocol was reviewed by the Institutional Review Board of Imam Abdulrahman Bin Faisal University. All subjects signed an informed consent before taking part in the study.

Data Sharing Statement

The full dataset has not been stored in a public repository because it contains identifiers that may lead to identification of individual participants. The data presented in the article will not lead to identification of women because it only contains summarized results. The full dataset is freely available upon reasonable written request to the corresponding author.

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Author Contribution

All authors contributed towards data analysis, drafting, and revising the paper and agree to be accountable for all aspects of the work.

Conflict of Interest

The authors report no conflicts of interest in this work.

REFERENCES

[1] World Health Organization, UNICEF. *Global strategy for infant and young child feeding*. 2003, http://www.who.int/nutrition/publications/infantfeeding/9241562218/en/.

[2] European Commission Directorate Public Health and Public Assessment. *Promoting, protecting and supporting breastfeeding: an action plan for Europe*. Unit for Health Services Research and International Health, IRCCS Burlo Garofolo, 2002, https://iblce.org/wp-content/uploads/2017/05/eu-blueprint-short-english.pdf.

[3] Gartner LM, et al. American Academy of Pediatrics Section on Breastfeeding. "Breastfeeding and the use of human milk". *Pediatrics,* Vol. 115, 2005, pp. 496-596.

[4] Chaput, Kathleen H., et al. "Breastfeeding difficulties and supports and risk of postpartum depression in a cohort of women who have given birth in Calgary: A prospective cohort study." *CMAJ open,* Vol. 4, No. 1, 2016, p. E103.

[5] Insaf, Tabassum Z., et al. "Prenatal stress, anxiety, and depressive symptoms as predictors of intention to breastfeed among Hispanic women." *Journal of Women's Health,* Vol. 20, No. 8, 2011, pp. 1183-92.

[6] Seimyr, L., et al. "In the shadow of maternal depressed mood: experiences of parenthood during the first year after childbirth." *Journal of Psychosomatic Obstetrics & Gynecology,* Vol. 25, No. 1, 2004, pp. 23-34.

[7] Field, Tiffany, Maria Hernandez-Reif, and Larissa Feijo. "Breastfeeding in depressed mother-infant dyads." *Early Child Development and Care,* Vol. 172, No. 6, 2002, pp. 539-45.

[8] Field, Tiffany. "Breastfeeding and antidepressants." *Infant Behavior and Development,* Vol. 31, No. 3, 2008, pp. 481-87.

[9] Cooper, Peter J., Lynne Murray, and Alan Stein. "Psychosocial factors associated with the early termination of breast-feeding." *Journal of Psychosomatic Research,* Vol. 37, No. 2, 1993, pp. 171-76.

[10] Ystrom, Eivind. "Breastfeeding cessation and symptoms of anxiety and depression: A longitudinal cohort study." *BMC Pregnancy and Childbirth,* Vol. 12, No. 1, 2012, p. 36.

[11] Heinrichs, Markus, Inga Neumann, and Ulrike Ehlert. "Lactation and stress: Protective effects of breast-feeding in humans." *Stress,* Vol. 5, No. 3, 2002, pp. 195-203.

[12] Heinrichs, Markus, et al. "Effects of suckling on hypothalamic-pituitary-adrenal axis responses to psychosocial stress in postpartum lactating women." *The Journal of Clinical Endocrinology & Metabolism*, Vol. 86, No. 10, 2001, pp. 4798-4804.

[13] Groer, Maureen W., and Mitzi W. Davis. "Cytokines, infections, stress, and dysphoric moods in breastfeeders and formula feeders." *Journal of Obstetric, Gynecologic, & Neonatal Nursing,* Vol. 355, 2006, pp. 599-607.

[14] Doan, Therese, et al. "Breast-feeding increases sleep duration of new parents." *The Journal of Perinatal & Neonatal Nursing*, Vol. 21, No. 3, 2007, pp. 200-206.

[15] Figueiredo, Bárbara, Catarina Canário, and Tiffany Field. "Breastfeeding is negatively affected by prenatal depression and reduces postpartum depression." *Psychological Medicine*, Vol. 44, No. 5, 2014, pp. 927-36.

[16] Maes, Michael, et al. "Immune activation in the early puerperium is related to postpartum anxiety and depressive symptoms." *Psychoneuroendocrinology,* Vol. 25, No. 2, 2000, pp. 121-37.

[17] Jones, Nancy Aaron, Barbara A. McFall, and Miguel A. Diego. "Patterns of brain electrical activity in infants of depressed mothers who breastfeed and bottle feed: The mediating role of infant temperament." *Biological Psychology,* Vol. 67, No. 1-2, 2004, pp. 103-24.

[18] McCue Horwitz, Sarah, et al. "Prevalence, correlates, and persistence of maternal depression." *Journal of Women's Health,* Vol. 16, No. 5, 2007, pp. 678-91.

[19] Gaillard, Adeline, et al. "Predictors of postpartum depression: Prospective study of 264 women followed during pregnancy and postpartum." *Psychiatry Research,* Vol. 215, No. 2, 2014, pp. 341-46.

[20] Hamdan, Aisha, and Hani Tamim. "Psychosocial risk and protective factors for postpartum depression in the United Arab Emirates." *Archives of Women's Mental Health,* Vol. 14, No. 2, 2011, pp. 125-33.

[21] Chaaya, M., et al. "Postpartum depression: Prevalence and determinants in Lebanon." *Archives of Women's Mental Health*, Vol. 5, No. 2, 2002, pp. 65-72.

[22] Alasoom, Lamia I., and Manal R. Koura. "Predictors of postpartum depression in the eastern province capital of Saudi Arabia." *Journal of Family Medicine and Primary Care,* Vol. 3, No. 2, 2014, p. 146.

[23] Mohammad, K. I., J. Gamble, and D. K. Creedy. "Prevalence and factors associated with the development of antenatal and postnatal depression among Jordanian women." *Midwifery,* Vol. 27, No. 6, 2011, pp. e238-e245.

[24] Decastro, Filipa, Nora Hinojosa-Ayala, and Bernardo Hernandez-Prado. "Risk and protective factors associated with postnatal depression in Mexican adolescents." *Journal of Psychosomatic Obstetrics & Gynecology,* Vol. 32, No. 4, 2011, pp. 210-17.

[25] Ghubash, R., M.T. Abou-Saleh, and T.K. Daradkeh. "The validity of the Arabic Edinburgh postnatal depression scale." *Social Psychiatry and Psychiatric Epidemiology*, Vol. 32, No. 8, 1997, pp. 474-76.

[26] Mezzacappa, Elizabeth Sibolboro, and Edward S. Katkin. "Breast-feeding is associated with reduced perceived stress and negative mood in mothers." *Health Psychology,* Vol. 21, No. 2, 2002, p. 187.

[27] Watkins, Stephanie, et al. "Early breastfeeding experiences and postpartum depression." *Obstetrics & Gynecology,* Vol. 118, No. 2, 2011, pp. 214-21.

[28] Sylvén, Sara M., et al. "Newborn gender as a predictor of postpartum mood disturbances in a sample of Swedish women." *Archives of Women's Mental Health,* Vol. 14, No. 3, 2011, pp. 195-201.

[29] Wayne, Joan Russo, and Amelia Gavin. "Predictors of postpartum depression." *Journal of Women's Health*, Vol. 23, No. 9, 2014, pp. 753-59.

[30] World Health Organization. *Global Health Observatory (GHO) data*. http://www.who.int/gho/en/. Accessed 20 Mar. 2015.