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REVIEW ARTICLE

Breastfeeding and postpartum depression: state of the art review☆

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KEYWORDS
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Abstract
Objective: To review the literature on the association between breastfeeding and postpartum depression.
Sources: A review of literature found on MEDLINE/PubMed database.
Summary of findings: The literature consistently shows that breastfeeding provides a wide range of benefits for both the child and the mother. The psychological benefits for the mother are still in need of further research. Some studies point out that pregnancy depression is one of the factors that may contribute to breastfeeding failure. Others studies also suggest an association between breastfeeding and postpartum depression; the direction of this association is still unclear. Breastfeeding can promote hormonal processes that protect mothers against postpartum depression by attenuating cortisol response to stress. It can also reduce the risk of postpartum depression, by helping the regulation of sleep and wake patterns for mother and child, improving mother's self-efficacy and her emotional involvement with the child, reducing the child's temperamental difficulties, and promoting a better interaction between mother and child.
Conclusions: Studies demonstrate that breastfeeding can protect mothers from postpartum depression, and are starting to clarify which biological and psychological processes may explain this protection. However, there are still equivocal results in the literature that may be explained by the methodological limitations presented by some studies.

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PALAVRAS-CHAVE
Amamentação;
Depressão na gravidez;
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Hormônios

Amamentação e depressão pós-parto: revisão do estado de arte

Resumo
Objetivo: Revisar a literatura sobre a associação entre a amamentação e a depressão pós-parto.
Fontes: Uma revisão da literatura encontrada na base de dados MEDLINE/Pub-Med.
Resumo dos achados: A literatura mostra, de forma consistente, que a amamentação fornece uma ampla quantidade de benefícios tanto para a criança quanto para a mãe. Ainda são necessárias mais pesquisas sobre os benefícios psicológicos para a mãe. Alguns estudos apontam que a depressão na gravidez é um dos fatores que pode contribuir para a não amamentação. Outros estudos sugerem, também, uma associação entre amamentação e depressão pós-parto, não estando clara ainda a direção dessa associação. A amamentação pode promover processos hormonais que protegem as mães contra a depressão pós-parto por atenuar a resposta do cortisol ao estresse. E isso também pode reduzir o seu risco, por auxiliar na regulação dos padrões do sono e vigília da mãe e do filho, melhorando a autoeficácia e o envolvimento emocional da mãe com a criança, reduzindo as dificuldades de temperamento e promovendo uma melhor interação entre eles.
Conclusões: A pesquisa aponta que a amamentação pode proteger as mães da depressão pós-parto e começa a esclarecer que processos biológicos e psicológicos podem explicar essa proteção. Contudo, ainda existem resultados ambíguos na literatura que poderão ser explicados pelas limitações metodológicas apresentadas por alguns estudos.

Introduction

Breastfeeding has been associated with the well-being of both the child and the mother. Breastfeeding benefits for children's physical and psychological status include decreased risk of infectious diseases and obesity, decreased blood pressure, lower cholesterol levels,[1,2] and increased cognitive and motor performance.[3,4] Positive health-outcomes for the mother's physical health include decreased blood pressure and risk of breast and ovarian cancer;[5–7] for the mother's psychological health they include attenuated stress response[8–12] and enhanced sleep.[13,14] However, benefits for the mother's psychological well-being need more supportive empirical evidence.[15]

The World Health Organization (WHO),[16] the European Commission for Public Health (ECPH),[17] and the American Academy of Pediatrics (AAP)[18] recommend exclusive breastfeeding for the first six months of life. Despite the established benefits of breastfeeding, rates are still low, and even though rates of breastfeeding initiation are high, there is a marked decline in breastfeeding during the first few weeks after initiation, and exclusive breastfeeding is rare. In Portugal, despite the high rate of breastfeeding at the time of hospital discharge (91%[19] and 98.5%[20]), an accentuated decrease is observed in the following months, with only 54.7%[19] to 55%[20] of mothers breastfeeding at three months postpartum, and 34.1%[19] to 36%[20] at six months postpartum. The national health surveys provided by the Portuguese Health Ministry showed that breastfeeding initiation rates increased from 81.4% in 1995/1996 to 84.9% in 1998/1999.[21] In 2010/2011, this percentage ascended to 98.5%.[22] However, despite the increase in breastfeeding rates, these surveys also show a decrease in breastfeeding over the months. In 2010/2011, in baby-friendly hospitals, between 65.2% to 72.5% of mothers exclusively breastfeed their babies by the time of hospital discharge. At three months postpartum, the percentage of exclusive breastfeeding was 40.3%, falling to 14.7% at five months.[22] The European rates of breastfeeding initiation vary from 63% in Belgium to 99% in Norway.[23] After hospital discharge, rates start to fall and at six months the percentage of mothers who continue to breastfeed varies from 10% in Belgium to 80% in Norway.[23] Scandinavian countries present the highest rates of breastfeeding at six months postpartum (80% in Norway, 72% in Sweden, and 65% in Iceland).[23] In Brazil, a national survey conducted in 2008 showed a rate of 41% of exclusive breastfeeding in babies from 0 to 6 months.24 In the same survey, the percentage of breastfeeding in babies from 9 to 12 months old was approximately 58.7%.[24]

Therefore, identification of women at risk for early cessation of breastfeeding and implementation of effective breastfeeding promotion strategies are considered health priorities.

Breastfeeding and depression in pregnancy and postpartum depression

Recent literature reviews suggest that breastfeeding is less common among depressed mothers, even though their infants benefit from breastfeeding.[25,26] Studies from different socio-cultural contexts show almost unequivocally that depressed mothers tend to breastfeed less or for less time than non-depressed mothers. However, the association between breastfeeding and postpartum depression remains equivocal.[25,27]

When depressed during pregnancy, women are less likely to initiate[28,29] or to maintain breastfeeding,[30–32] compared with those with no depressive symptoms. In a recent study on the association between prenatal psychosocial risk factors

and breastfeeding intention of Hispanic women, researchers found that women who scored higher in depression at the middle of gestation (about 25.7 weeks) and women who showed persistent depressive symptoms during pregnancy presented a lower intention to breastfeed their babies.[33] Other studies have shown that 1/5 of pregnant women are depressed at the third trimester of pregnancy,[34,35] and that half of these depressed pregnant women will not initiate or breastfeed for three months or more.[30] Depression scores at the third trimester were the best predictors of the length of exclusive breastfeeding, and when considering all the mothers not breastfeeding at three-month postpartum, 37% could be easily detected because of depression during pregnancy.[30] Results also showed a significant decrease in depression scores from childbirth to three months postpartum in women who maintained exclusive breastfeeding for three or more months.[30]

Exclusive breastfeeding appears to be significantly lower among depressed mothers.[36–39] Mothers who do not initiate or maintain breastfeeding are more at-risk for depression during the postpartum period.[30,40–43] Moreover, when mothers are depressed in the postpartum period, they tend to not initiate[28,29] or maintain breastfeeding.[27,36,44–50]

Some studies have shown that postpartum depression emerges in the sequence of and may result from breastfeeding interruption,[40–43] suggesting that early cessation of breastfeeding may be involved in the cause of postpartum depression. For example, an association between negative early breastfeeding experiences and depressive symptoms at two months postpartum was found.[51] Another study that aimed to assess the association between the infant feeding method and depressive symptoms showed that breastfeeding initiation among multiparous mothers was associated with significantly decreased odds of postpartum depression.[43]

Other studies suggest that postpartum depression may be involved in the cause of early breastfeeding cessation, and that depressive symptoms have been observed to precede the cessation of breastfeeding.[27,46,49,52–54] For example, a recent study screening for depression levels immediately after delivery demonstrated that mothers with higher levels of depressive symptoms have a higher likelihood to bottle-feed their infants at three months postpartum.[38] Results also showed that the odds of bottle-feeding increased with the severity of maternal depression.[38] Another recent study indicated an association between breastfeeding cessation at four months postpartum and higher depressive symptoms at one month after delivery, showing that mothers who continued to breastfeed at four months had lower depression scores at one month than those who stopped breastfeeding.[36]

Research has also been focusing on the association between breastfeeding and depression in pregnancy and postpartum depression. A recent study showed that higher levels of depression and anxiety during pregnancy were associated with breastfeeding cessation, and that breastfeeding cessation predicted higher levels of anxiety and depression after birth.[55] Moreover, the results showed an interaction effect between anxiety and depression levels at pregnancy and six months postpartum and breastfeeding cessation, so that baseline levels anxiety and depression are increased at six months postpartum by the effect of breastfeeding cessation.[55] Another recent study on the association between breastfeeding and depression in pregnancy and postpartum depression concluded that higher depression scores at the third trimester of pregnancy predicted lower exclusive breastfeeding duration.[30] This study also found a decrease in depressive symptoms in women who initiated or maintained exclusive breastfeeding for three or more months.[30]

The association between breastfeeding and depression has also been studied, taking into account both parents. A study undertaken to trigger the association between breastfeeding and mental health of both the parents concluded that the simultaneous presence of mental disorders in both the mother and the father was not associated with the early breastfeeding cessation (before four months).[56] However, mothers tended to breastfeed for a longer period of time when they felt that their partners actively supported breastfeeding.[56]

Breastfeeding and hormonal protection to postpartum depression

Research has been showing that breastfeeding promotes hormonal and psychological conditions and processes that are inversely associated with postpartum depression. However, the simultaneous study of these dimensions and their potential explanatory value in the connection between breastfeeding and pre- and postpartum depression has not yet been accomplished.

''It is possible that the positive effects of breastfeeding may outweigh the positive effects of antidepressants''.[26] Even when the potential harmful effects of medication are taken into account, some studies suggest that women with postpartum depression who are taking antidepressant should not discontinue breastfeeding.[57] Lactogenic hormones, oxytocin and prolactin, are associated with anti-depressant and anxiolytic effects.[43] Some studies suggest that breastfeeding may have a protective effect on maternal psychological health because it attenuates stress responses.[15,58,59] Lactation has been associated with attenuated stress responses, especially that of cortisol.[8–12] Attenuated cortisol stress responses,[8–10] as well as attenuated total cortisol and free cortisol stress responses,[11] were observed in lactating mothers compared to the non-lactating. These results suggest that lactation attenuates neuro-endocrine responses to stress,[8] a factor that has been related with fewer postpartum depressive symptoms.[60–62] In a recent study on maternal adreno-corticotropic hormone (ACTH) and cortisol release patterns during a breastfeeding session, researchers found that breastfeeding was associated with a significant decrease in ACTH and cortisol levels.[63] Skin-to-skin contact before sucking the breast was shown to play an important role in the reduction of these levels; the longer the duration of skin-to-skin contact, the lower the maternal cortisol levels.[63]

Additionally, the usual diurnal pattern of cortisol, consisting of high morning levels and gradual decline throughout the day (also associated with fewer postpartum depressive symptoms),[64] was found to be more common in multiparous breastfeeding women compared with the non-breastfeeding.[12] Despite the fact that some studies did

not report differences in daily cortisol levels in depressed pregnant or postpartum women,[8,65–67] cortisol has also been found to be lower,[10] as well as higher in depressed mothers when compared with their non-depressed counterparts.[60,68] A recent study suggested that depressed mothers present a down regulated HPA axis, showing lower salivary cortisol levels compared with non-depressed mothers.[62] Conversely, another recent study found significantly higher levels of serum cortisol in the group of depressed mothers.[69] A different diurnal pattern of cortisol, with higher cortisol levels at waking and no increase from waking to 30 minutes (compared to a significant increase in cortisol levels from waking to 30 minutes found in non-depressed women), was reported in postpartum depressed women.[64]

These data support the possibility that postpartum depression may be associated with a deregulated HPA axis. However, empirical evidence is equivocal, probably due to the presence of a variety of procedures (for example, diurnal pattern or daily cortisol levels in saliva, blood, or urine) to measure different HPA axis functions.

Results suggest that breastfeeding might promote a tighter regulation of diurnal basal cortisol secretion,[8–12] and the stability of diurnal cortisol secretion lowers the risk of postpartum depression.[64] However, most studies regarding postpartum depression do not control for breastfeeding, and most studies about breastfeeding do not control for depression. In addition to the high correlation between breastfeeding and depression in studies, there is a possible effect of these variables on the functioning of the HPA axis.

Breastfeeding and psychological protection from postpartum depression

Another important associated change during breastfeeding relates to the regulation of sleep and wake patterns for both the mother and the child, helping the mother to feel less tired, which could also prevent symptoms of depression. Parents of infants who were exclusively breastfed slept an average of 40-45 minutes more and self-reported less sleep disturbance than parents of infants given formula.[14] Women with postpartum depression experienced poorer sleep than women without postpartum depression, and sleep quality worsened with increasing postpartum depression symptom severity.[61,70,71] Maternal sleep patterns are enhanced by breastfeeding,[13] while this deregulation may cause postpartum depression.[61,70,71]

Research also shows that breastfeeding improves some psychological conditions and processes that can protect mothers from emerging postpartum depression. Maternal self-efficacy, a condition inversely associated with postpartum depression,[72] is improved in mothers who breastfeed.[45,73] Regardless of maternal depression, mothers who breastfed rather than bottle-fed their infants had higher confidence levels and rated their infants as less alert and less irritable during feedings.[45] However, breastfeeding self-efficacy appears to play an important role on postpartum depression; mothers who show higher levels of breastfeeding self-efficacy present lower levels of postpartum depression symptoms.[74]

Maternal emotional involvement with the infant is also improved by breastfeeding[75] and is negatively correlated with postpartum depression.[65,76] In fact, feeding patterns appear to influence mother-child bonding, with non-breastfeeding mothers presenting more difficulties to establish an emotional involvement with the infant than breastfeeding mothers.[77] Regarding the relationship with the partner, studies relate breastfeeding initiation with stronger parental bonds.[78]

Temperamental difficulties and sleep problems are reduced when the child is breastfed,[79] while the presence of those problems has been associated with postpartum depression.[72,80] Depressed breastfeeding mothers were less likely to have infants with highly reactive temperaments.[45,79] Infant competencies are enhanced by breastfeeding,[4,81] and are adversely affected in the presence of postpartum depression.[80,82]

Breastfeeding also facilitates mother-infant interaction,[45,83] which is poorer when the mother is depressed.[78] Breastfeeding is associated with better mother-infant interactions, with breastfed infants showing more physical contact, vocalizations, and positive play, and mothers exhibiting more proximity towards the infant.[68,79,83,84] Data also specifically suggests that depressed mothers and their infants, not unlike non-depressed mothers and their infants, may benefit from breastfeeding: depressed mothers and infants are more relaxed during breastfeeding versus bottle-feeding interactions.[83] Furthermore, studies also showed that breastfeeding may act as a protector against maternal child maltreatment, especially child neglect.[85] This association may depend on the protective effect of breastfeeding on maternal depression, as depression is the best predictor of child maltreatment and neglect. The impact of breastfeeding on the maternal attention sensitivity towards infant distress was also recently shown.[86]

Discussion

Literature consistently shows that breastfeeding provides a wide amount of benefits for both the child and the mother. The psychological benefits for the mother are still in need of further research.

Despite the high rate of breastfeeding initiation, a large decrease in the number of mothers who breastfeed from the first few weeks postpartum is observed. Public health authorities' efforts to promote breastfeeding initiation have been successful; however, the same has not been observed regarding its maintenance for a recommended period of time, which is for two years or more, and exclusively during the first six months.[16–18] Identifying the possible underlying factors to this situation is a goal for research in this field. Maternal mental health may be one of the reasons behind this reality. A recent empirical study conducted in Portugal suggests that screening for depression symptoms during pregnancy can help identify women at risk for early cessation of exclusive breastfeeding.[30] There is now empirical evidence that pregnancy depression is one of the factors that may contribute to breastfeeding failure.[29,30,32,33,45,56]

Studies suggest an association between breastfeeding and postpartum depression, and the direction of this

association is still unclear. While some suggest a negative association between breastfeeding and postpartum depression,[40–43] others point to a negative association between postpartum depression and breastfeeding.[27,46,49,52–54]

Results from several studies provide empirical evidence that breastfeeding may act as a protective factor for depression during the postpartum, improving both maternal psychological well-being (namely through the regulation of sleep and awake patterns[13,14] and increased self-efficacy)[45,73] and adequate parenting, through the enhancement of the emotional involvement with the infant,[75,77] mother-infant interaction,[45,83] attention sensitivity towards infant stress,[86] and protection against child neglect.[85] Breastfeeding can also protect women from depressive symptoms, by aiding the regulation of the HPA axis (throughout the regulation of diurnal basal cortisol secretion),[8–12] which has been consistently shown to be deregulated in the presence of depressive symptoms.[62,64,69]

Other relevant variables significantly related with both breastfeeding and postpartum depression that may play a part on this association are also highlighted in the literature: parity, related with breastfeeding[12,43] and postpartum depression;[35,70] quality of the relationship with the partner, related with breastfeeding[75,87,88] and postpartum depression;[89,90] and anti-depressant use, related with breastfeeding[26,91] and postpartum depression.[92] It is also important control for potential confounding variables such as parity, quality of the relationship with the partner, and medication use, and this has not always been accomplished. Moreover, few studies have defined breastfeeding according to standardized categories, few studies included a clinical diagnosis of postpartum depression, and few studies were prospective and completed adequate statistical analysis to capture a sequential relationship between depressive symptoms and breastfeeding initiation and duration. These may be some of the reasons for equivocal results in the literature.

Data, in a general way, demonstrate that breastfeeding failure is unequivocally associated with the presence of depression during pregnancy and postpartum. Some recent prospective studies clarify that depression during pregnancy is a risk factor for unsuccessful breastfeeding, and that breastfeeding is a protective factor for postpartum depression. Research is also starting to clarify which biological and psychological processes may explain this protection. However, there are still equivocal results in the literature that may be explained by the methodological limitations presented by some studies.

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Conflicts of interest

The authors declare no conflicts of interest.

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