Does Breastfeeding Protect Maternal Mental Health? 
*The Role of Oxytocin and Stress*

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Breastfeeding protects maternal mood

Depression is a direct threat to breastfeeding

What does “breastfeeding” mean? 
• Is it exclusive?

• Stress/oxytocin system 
• Birth interventions 
• Sleep

The Stress/Oxytocin System
Paraventricular Nucleus

High oxytocin means mothers are highly suggestible and vulnerable to criticism.

Hypothalamus
- CRH/CRF

Pituitary
- ACTH

Adrenal cortex
- Cortisol

Inflammatory Response System (IRS)

Catecholamine

HPA Axis
Inflammation

- IL-1β
- IL-6
- TNF-α

Proinflammatory cytokines rise in last trimester
When women's risk of depression is highest

Does breastfeeding protect women's mental health?

Prospective studies
Physiological changes
Regulation of sleep

Are breastfeeding mothers healthier to begin with?
Prospective study of 2,072 mothers 36-38 weeks gestation to 3 months postpartum, Sabah, Malaysia

Significantly lower EPDS scores at 3 months postpartum for EBF mothers

Yusuff et al. 2016, J Hum Lact, 32(2), 277-281

Women who were breastfeeding at 3 months had significantly lower depression at 24 months

Prospective study, N=205, assessed 5 times prenatally, 3, 6, 12, & 24 mos postpartum

Hahn-Holbrook et al. 2013, Arch Women’s Ment Health, 16, 411-422

• Less depression for BF 9 times/day vs 4 times/day
• Mothers depressed during pregnancy are less likely to breastfeed and weaned 2.3 months earlier

Hahn-Holbrook et al. 2013, Arch Women’s Ment Health, 16, 411-422

Baby at the Breast Lowers Mothers’ Stress

Heinrichs et al. 2001, J Clin Endo Metabol, 86, 4798-4804

Short-term lessening of the stress response
Response to induced stressor
ACTH
Cortisol

ACTH negatively correlated with suckling
Longer skin to skin lowered cortisol
Oxytocin lowered ACTH and cortisol

Handlin et al., 2009, Breastfeeding Med, 4(4), 207-220

63 primips, 2 days postpartum
Lifetime Protection For Mothers

139,681 post-menopausal women (Mean age=63)

Schwartz et al. 2009, Obstet Gyn, 113, 974-982

Women who breastfed 47-432 months had 67% decreased risk of depression compared to those for breastfed 0-23 months
• 29% decreased risk for each additional infant
• 9% decreased risk for each additional year

Park & Cnoi 2019, J Affect Dis, 248(1), 13-17

What if there’s pain or other problems?

Birth Interventions

5,332 mothers in the UK

More breastfeeding problems at 3 months following forceps-assisted and unplanned cesarean births

Rowlands & Redshaw 2012, BMC Preg Childbirth, 12, 128

1,280 mothers and infants from Hong Kong

Induction Opiods Emergency cesarean

Any Exclusive

Bai et al., 2013, J Midwif Wom Health, 58(1), 25-32
Women who had Epidurals were more likely to:
• Partially breastfeed
• Have difficulties in the first week
• Stop breastfeeding by 24 weeks

Prospective study of 1280 Australian women, 1 to 24 weeks postpartum

Survey of Mothers’ Sleep and Fatigue
Survey 6,410 mothers of infants 0-12 months, 59 countries

Feeding Method by Delivery Type
Kendall-Tackett et al. 2015, Clin Lact, 6(3), 87-96

Epidural by Feeding Method
Kendall-Tackett et al. 2015, Clin Lact, 6(3), 87-96

Pain Medications by Feeding Method
Kendall-Tackett et al. 2015, Clin Lact, 6(3), 87-96
Depression and Birth Interventions

Following elective cesarean

Kuo et al., 2014, PLoS ONE, 9, e86653

Depression by Birth Type

Kendall-Tackett et al. 2015, Clin Lact, 6(3), 87-96

• For women with history of depression or anxiety, peripartum oxytocin increased the risk of postpartum depression or anxiety by 36%
• Among those with no history, oxytocin increased the risk by 32%

Kroll-Desrosiers et al. 2017, Depress Anxiety, 34(2), 137-146

Epidurals

Ding et al., 2014, Anesthes Analges, 119, 383-392

Impact of Epidural on PPD

Kendall-Tackett et al. 2015, Clin Lact, 6(3), 87-96

214 mothers from China

• 15 depressed with epidural
• 37 depressed without epidural
Controlled for
• All other birth interventions
• Primip vs multip
• Number of hours in labor
• Income
• Education
• History of depression
• History of sexual assault
• Current anxiety
• Current anger/irritability

Interventions still related to depression
• Postpartum hemorrhage
• Postpartum surgery
• Epidurals

Kendall-Tackett et al. 2015, Clin Lact, 6(3), 87-96

Parasympathetic Activation

Sympathetic Activation
Depression and Breastfeeding Cessation

Anxiety at 3 months reduced odds of exclusive breastfeeding by 11% at 6 months

Adedinsewo et al. 2014, J Hum Lact, 30(1), 102-109

Reasons for breastfeeding cessation (EPDS > 9)
- Too many household duties
- Breastfeeding was too painful or tiring
- Sore or cracked nipples
- Breasts were engorged

Bascom & Napolitano, 2016, J Hum Lact, 32(2), 282-291

Women with complex pregnancies had 30% lower odds of EBF

Supportive hospital practices increased any or exclusive breastfeeding 2 to 4 times

Kozhimannil et al. 2014, PLoS One, 9(8), e104820

Supportive hospital practices increased any or exclusive breastfeeding 2 to 4 times

Kozhimannil et al. 2014, PLoS One, 9(8), e104820

Infant Feeding Practices Study II (N=4,902)

Supportive hospital practices increased any or exclusive breastfeeding 2 to 4 times

Kozhimannil et al. 2014, PLoS One, 9(8), e104820
Increase oxytocin
- Skin-to-skin contact
- Touch
- Positive social interaction
- Safety
- Warmth

Mother-infant sleep

Study of 2,830 women at 7 weeks postpartum

Poor sleep was an independent risk factor for depression
Dorheim et al. 2009, Sleep, 32, 847-855

Factors associated with poor sleep
- Depression
- Previous sleep problems
- Primiparity
- Younger or male infant
- Not exclusively breastfeeding
Dorheim et al. 2009, Sleep, 32, 847-855

Hours Mothers Sleep
N=6,410, Survey of Mothers' Sleep and Fatigue

Kendall-Tackett et al. 2011, Clin Lactation, 2(2), 22-26

Mothers' Daily Energy
N=6,410, Survey of Mothers' Sleep and Fatigue

Kendall-Tackett et al. 2011, Clin Lactation, 2(2), 22-26
What About Sexual Assault Survivors?

Percentage who are Breastfeeding

Kendall-Tackett et al., 2013, Breastfeed Med, 8(1), 16-22

Breastfeeding vs. Mixed/Formula

Kendall-Tackett et al., 2013, Breastfeed Med, 8(1), 16-22

Current Depression

Kendall-Tackett et al., 2013, Breastfeed Med, 8(1), 16-22

Hours Mothers Sleep

Kendall-Tackett et al., 2013, Breastfeed Med, 8(1), 16-22

Minutes to Get to Sleep

Kendall-Tackett et al., 2013, Breastfeed Med, 8(1), 16-22

Depression

Kendall-Tackett et al., 2013, Breastfeed Med, 8(1), 16-22
Breastfeeding protects maternal mood
• Best protection is from exclusive breastfeeding
• Breastfeeding problems can cause depression

Birth interventions impact both breastfeeding and maternal mental health

Apparent contradictions in data disappear when we understand the underlying physiology

• Depressed mothers can breastfeed
• Don’t give up on mothers, even when they have risk factors
Increase oxytocin!

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