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

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Does breastfeeding protect women's mental health?

- Breastfeeding women are less likely to be depressed

Are breastfeeding mothers just healthier to begin with?

Depression is a direct threat to breastfeeding
• What does “breastfeeding” mean?
• Exclusivity is key

The Stress/Oxytocin System

• Stress/oxytocin system
• Birth interventions
• Sleep

Inflammatory Response System (IRS)

Catecholamine
HPA Axis

Paraventricular Nucleus

• IL-1β
• IL-6
• TNF-α

Proinflammatory Cytokines
Breastfeeding protects maternal mood

Prospective studies
- Non-depressed mothers to start, compare by feeding method
- Physiological changes
  - Inflammation
  - HPA axis
  - Regulation of sleep

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 exclusively breastfeeding mothers after controlling for covariates

Yusuff et al., 2016, J Hum Lact, 32(2), 277-281
• Women breastfeeding at 3 months, significantly lower depression at 24 months

Prospective study, N=205, assessed 5 times during pregnancy, 3,6,12, & 24 months postpartum

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

Mothers who breastfed 9 times/day were less depressed than mothers who breastfed 4 times/day

If depressed during pregnancy, mothers are less likely to breastfeed

Depressed mothers 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

Breastfeeding lowered ACTH and cortisol

Skin-to-skin contact contributed to this effect

ACTH negatively correlated with suckling

Longer skin to skin lowered cortisol

Oxytocin lowered ACTH and cortisol

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

What if there’s pain or other problems?

139, 681 postmenopausal women (Mean age=63)

Schwartz et al. 2009, Obstet Gyn, 113, 974-982
Depression and Birth Interventions

Following elective cesarean

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

25%-28% depression
30%-37% anxiety

Depression by Birth Type

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

• Contrary to hypothesis, 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%

Retrospective study of peripartum synthetic oxytocin use, population-based data, n=9,684 exposed, n=37,048 unexposed

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

Impact of Epidural on PPD

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

Epidurals

214 mothers from China
15 depressed with epidural
37 depressed without epidural

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

Increase oxytocin
  • Skin-to-skin contact
  • Touch
  • Positive social interaction
  • Feelings of safety
  • Warmth

Mother-infant sleep
### Hours Mothers Sleep

<table>
<thead>
<tr>
<th>Sleep Hours</th>
<th>Breastfeeding</th>
<th>Mixed</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.7</td>
<td>6.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.6</td>
<td>6.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.5</td>
<td>6.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.4</td>
<td>6.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td>6.2</td>
<td></td>
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</tbody>
</table>

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

### Mothers’ Daily Energy

<table>
<thead>
<tr>
<th>Energy (Kcal)</th>
<th>Breastfeeding</th>
<th>Mixed</th>
<th>Formula</th>
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<tbody>
<tr>
<td>3.2</td>
<td>3.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8</td>
<td>2.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6</td>
<td>2.79</td>
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<tr>
<td>2.4</td>
<td>2.79</td>
<td></td>
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</tbody>
</table>

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

### Mothers’ Depression

<table>
<thead>
<tr>
<th>Depression Score</th>
<th>Breastfeeding</th>
<th>Mixed</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>1</td>
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<td></td>
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<tr>
<td>1</td>
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<tr>
<td>0.5</td>
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</tbody>
</table>

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

### What About Trauma Survivors?

### Percentage who are Breastfeeding

<table>
<thead>
<tr>
<th>Assault</th>
<th>Breastfeeding</th>
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</thead>
<tbody>
<tr>
<td>No</td>
<td>78.6</td>
</tr>
<tr>
<td>Sexual</td>
<td>78.9</td>
</tr>
</tbody>
</table>

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

### Current Depression

<table>
<thead>
<tr>
<th>Depression Score</th>
<th>No Sexual Assault</th>
<th>Sexual Assault</th>
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</thead>
<tbody>
<tr>
<td>1.2</td>
<td>0.853</td>
<td>1.11</td>
</tr>
</tbody>
</table>

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

- **Breastfeeding**
- **Mixed/Formula**


### Minutes to Get to Sleep

- **Breastfeeding**
- **Mixed-/Formula**


### Depression


### Angry or Irritable


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**Increase oxytocin**
- Skin-to-skin contact
- Touch
- Positive social interaction
- Feelings of safety
- Warmth
What can we conclude?

• Breastfeeding protects maternal mood
  • Best protection is from exclusive breastfeeding
  • Breastfeeding problems can cause depression

• Apparent contradictions in data disappear when we understand the underlying physiology

• Birth interventions impact both breastfeeding and maternal mental health

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

Increase oxytocin!
NEW edition of Depression in New Mothers, from Routledge

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