Why Breastfeeding Prevents Maternal Metabolic Syndrome and Cardiovascular Disease

Kathleen Kendall-Tackett, PhD, IBCLC, FAPA
Nothing to Disclose
• Metabolic syndrome
  – Insulin resistance
  – High LDL and VLDL cholesterol
  – High triglycerides
  – Visceral obesity

Haffner & Taegtmeyer, *Circulation* 2003; 108: 1541-1545
Breastfeeding duration lowered prevalence of metabolic syndrome in a dose-response way

Cohort analysis of 2,516 parous, midlife women (SWAN study)

85,585 and 73,418 parous women (Nurses’ Health Study I & II; Mean age=50)

- Longer duration of lactation reduced risk of Type-2 diabetes
- Each additional year decreased risk by 15%
  - Independent of BMI, diet, exercise or smoking

Stuebe et al. 2005, JAMA, 294, 2601-2610
• Exclusive breastfeeding associated with greatest reduction in diabetes risk

• Longer duration per pregnancy resulted in greater benefit

Stuebe et al. 2005, JAMA, 294, 2601-2610
1,260 Chinese women with history of gestational diabetes

Higher lactation intensity and longer duration lowered risk of postpartum diabetes and prediabetes

9,128 Chinese women, age 40-81 years who had one birth

- Longer breastfeeding associated with lower risk of hypertension and diabetes
  - Controlled for waist-to-hip ratio, employment, education, family history, postpartum BMI

Zhang et al. 2015, *Breastfeed Med, 10*(3), 163-167
Lifetime Protection For Mothers

139,681 postmenopausal women (Mean age=63)

Schwartz et al. 2009, Obstet Gyn, 113, 974-982
Why would breastfeeding lower risk?

• Some proposed mechanisms
During gestation

- Visceral fat accumulates
- Insulin resistance increases
- Lipid and triglyceride levels increase
• Breastfeeding helps reverse, or reset, these changes
• For maternal metabolism, pregnancy ends with weaning, not birth

Reset Hypothesis

Health Psychology Approach to Metabolic Syndrome
Psychoneuroimmunology
Inflammatory Response System (IRS)

Catecholamine

HPA Axis
Inflammation

Metabolic syndrome and insulin resistance

Leptin

Cardiovascular disease

Haffner & Taegtmeyer 2003, Circulation 108, 1541-1545
Negative mental states upregulate the stress response
Depression increases the risk of both metabolic syndrome and cardiovascular disease
• In women, depressive symptoms associated with increased risk of metabolic syndrome
• Metabolic syndrome in childhood predicted higher depressive symptoms in adulthood


921 men and women from Finland
Hostility also increases risk of metabolic syndrome and heart disease
Prospective study of 135 patients with no symptoms of diabetes (75 men, 60 women)

- Women with higher levels of depression and hostility had higher fasting insulin, glucose & insulin resistance
  - Independent of BMI, age, fasting triglycerides, exercise, or ethnicity

Suarez 2006, *Health Psych*, 25, 484-492
- Marital hostility increased systemic inflammation
- Hostility also impaired wound healing
  - High-hostile couples had 60% slower wound healing

Kiecolt-Glaser et al. 2005, *Arch Gen Psychiatry*, 62, 1377-1384
• Women in unsatisfying marriages had an increase in cardiovascular risk over 13-year study
  – Related to low HDL, high triglycerides, BMI, blood pressure, depression and anger

Gallo et al. 2003, Health Psych, 22, 453-463
The neuroscience of social rejection
To your brain
Social Pain = Physical Pain

Jenson-Campbell & MacDonald, 2011
Social pain (p. 3-8). Amer Psychological Assn
We physically experience threats to our relationships as threats to our survival
Social rejection in childhood can sensitize people for the rest of their lives

Eisenberger, 2011 *Social pain* (53-78); Panksepp, 2011 *Social pain* (11-51), Amer Psycholog Assn.
The Impact of Discrimination
Discrimination associated with elevated C-reactive protein levels


296 African Americans
Perceived discrimination

• You are treated with less courtesy other people
• You are treated with less respect than other people
• You receive poorer service than other people at restaurants and stores
• People act as if they think you are not smart

• Low social status related to elevated CRP
• African Americans, women and those with low education

Low parental education predicted high school students

- Higher insulin levels
- Higher glucose
- Greater insulin resistance
- Higher-LDL, lower HDL
- Higher waist circumference
- Higher BMI

The Role of Sleep
Sleep problems increase the risk of metabolic syndrome and heart disease.
Subclinical sleep disorders also increase risk for CVD, hypertension, Type-2 diabetes, metabolic syndrome and all-cause mortality.

Suarez & Goforth. 2010 In Psychoneuroimmunology of Chronic Disease: American Psychological Association
Even short periods of sleep deprivation can elevate cortisol and glucose levels, and increase insulin resistance.

Short sleep related to:
Abdominal obesity
Elevated fasting glucose
Hypertriglyceridemia

Hall et al. 2008, *Sleep*, 31(5), 635-643
187 adults

**Blacks**
- 25 min to sleep
- 3.6% SWS

**Whites**
- 16 min to sleep
- 6.8% SWS

Sleep Time

Trauma
Collaborative Perinatal Project (1959-1972), 355 offspring (M age=42)

Slopen et al. 2015, *Psychoneuroendocrinology*, 51, 403-413

Prenatal adversity increased inflammation for the baby in adulthood by 3 times
Women exposed to adversity are at particular risk for obesity, sleep disruption, and interpersonal conflict.

Adversity related to increased IL-6 and CRP during pregnancy.

214 pregnant women, assessed 5-31 weeks gestation.

Veterans with a history of early-life trauma had 3 times the risk of cardio-metabolic syndrome and 2 times the risk of elevated triglycerides.

Post-9/11 veterans, N=262 (n=hx early trauma, n=no trauma)

Franz et al. 2019, Health Psych, 38(2), 113-121
At 32 years, those who experienced adverse childhood experiences (low SES, maltreatment or social isolation) had higher rates of:

- Major depression
- Systemic inflammation
- > 3 metabolic risk markers

Why does breastfeeding help?
Breastfeeding

• Downregulates stress
• Improves mood
• Decreases risk of depression
• Decreases hostility
• Improves mother-infant bond
• Breastfeeding downregulates the stress response

• Directs mother toward milk production, conservation of energy and nurturing behaviors

Groër et al. 2002, JOGNN, 31, 411-417
Breastfeeding improves mother-infant interaction and stops intergenerational transmission of abuse and trauma.
15-year longitudinal study, 7,223 Australian mother-infant dyads

Mothers who breastfed for 4 months were 3.8 times less likely to neglect their children

And 2.6 times less likely to physically abuse them

Abuse-lowering effects of breastfeeding may be due to oxytocin release, which:

• Reduces anxiety
• Elevates mood
• Increases maternal responsiveness
• Lowers maternal stress
• Increases attachment

Breastfeeding also improves maternal sleep
Does breastfeeding help trauma survivors decrease risk of metabolic syndrome and cardiovascular disease?
Hours Mothers Sleep

- Breastfeeding
- Mixed/Formula

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 lowers risk of metabolic syndrome and CVD by

- Decreasing depression and hostility
- Increasing mother-infant bond
• Breastfeeding also
  – Improves sleep quality
    • Total sleep hours
    • Minutes to fall asleep
  – Attenuates the effects of trauma
    • Decreasing trauma-related sleep problems
    • Improving maternal well-being
Breastfeeding—particularly exclusive breastfeeding—protects women’s physical and mental well-being.

These effects persist long past the perinatal period.
New Edition
Available at PraeclarusPress.com
Find Me on Social Media

Kathleen Kendall-Tackett
Kathy Kendall-Chick
Kathleen Kendall-Tackett

Email: kkendalltt@gmail.com