

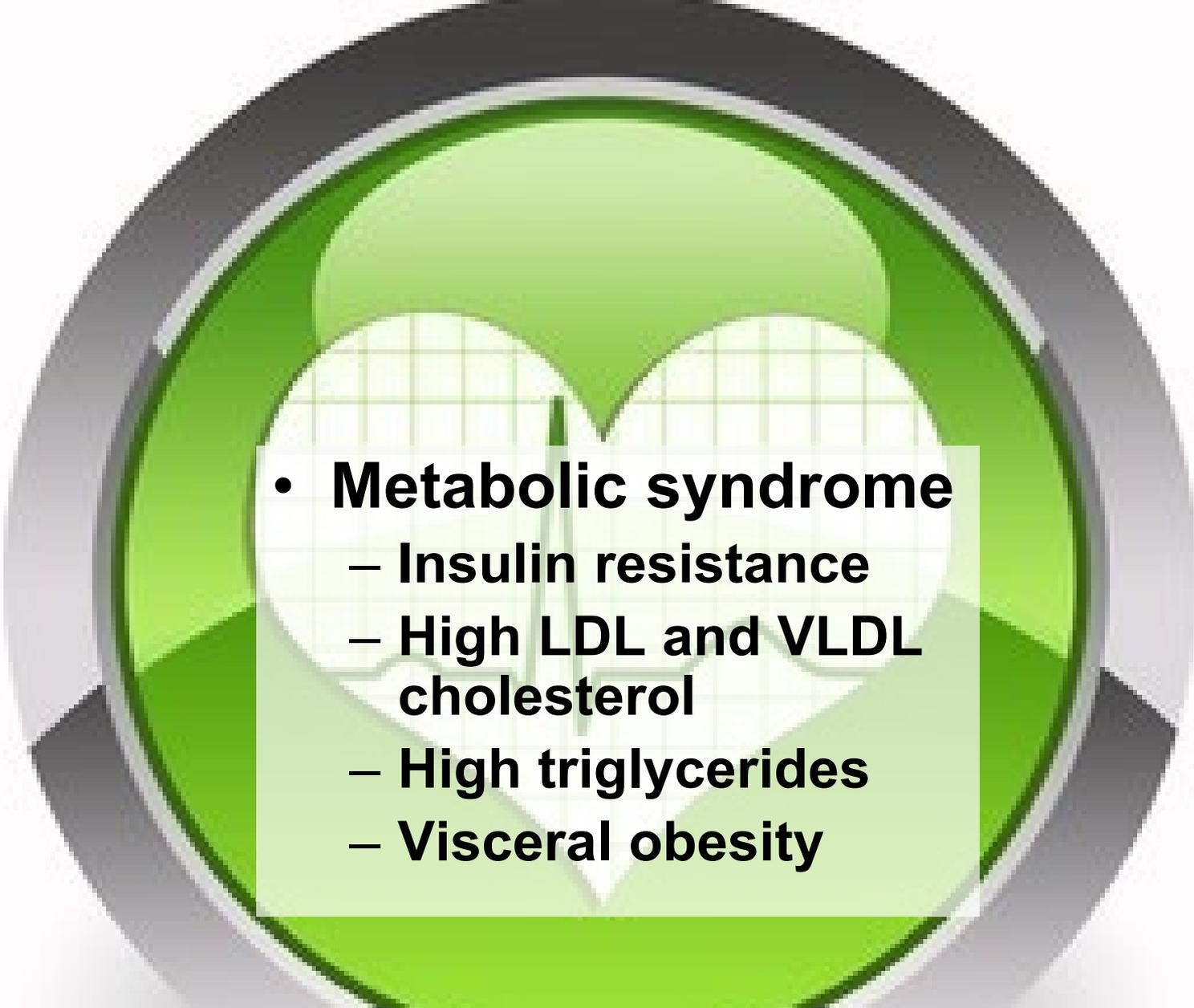


Why Breastfeeding Prevents Maternal Metabolic Syndrome and Cardiovascular Disease

Kathleen Kendall-
Tackett, PhD,
IBCLC, FAPA

Nothing to Disclose



- 
- **Metabolic syndrome**
 - Insulin resistance
 - High LDL and VLDL cholesterol
 - High triglycerides
 - Visceral obesity

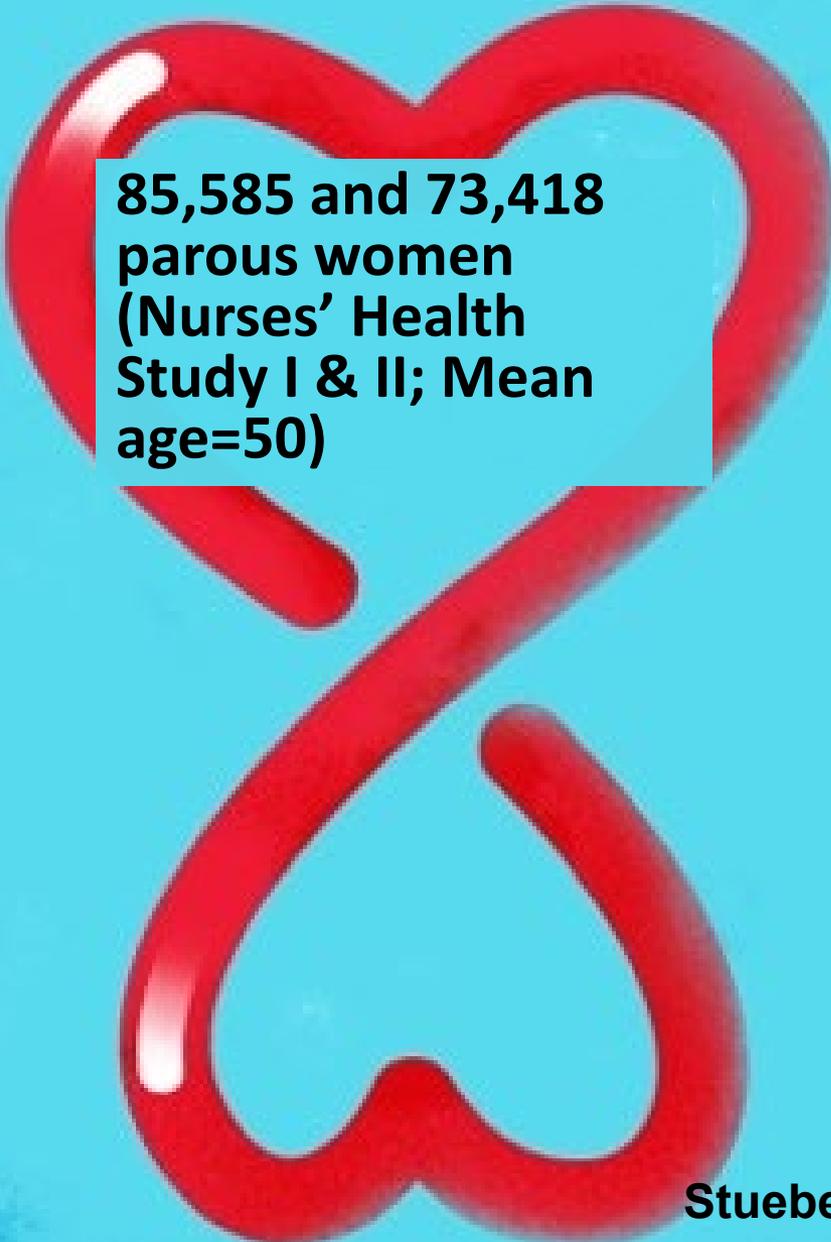
Haffner & Taegtmeier, *Circulation* 2003; 108: 1541-1545

**Breastfeeding duration
lowered prevalence of
metabolic syndrome in a
dose-response way**

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

Ram et al. 2008, *Am J Obstet Gynecol*, 198, 268e1-268e6



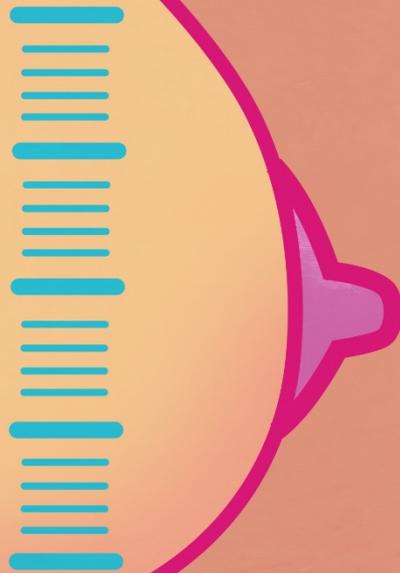


**85,585 and 73,418
parous women
(Nurses' Health
Study I & II; Mean
age=50)**

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

- **Exclusive breastfeeding associated with greatest reduction in diabetes risk**
- **Longer duration per pregnancy resulted in greater benefit**

**1,260 Chinese women
with history of
gestational diabetes**



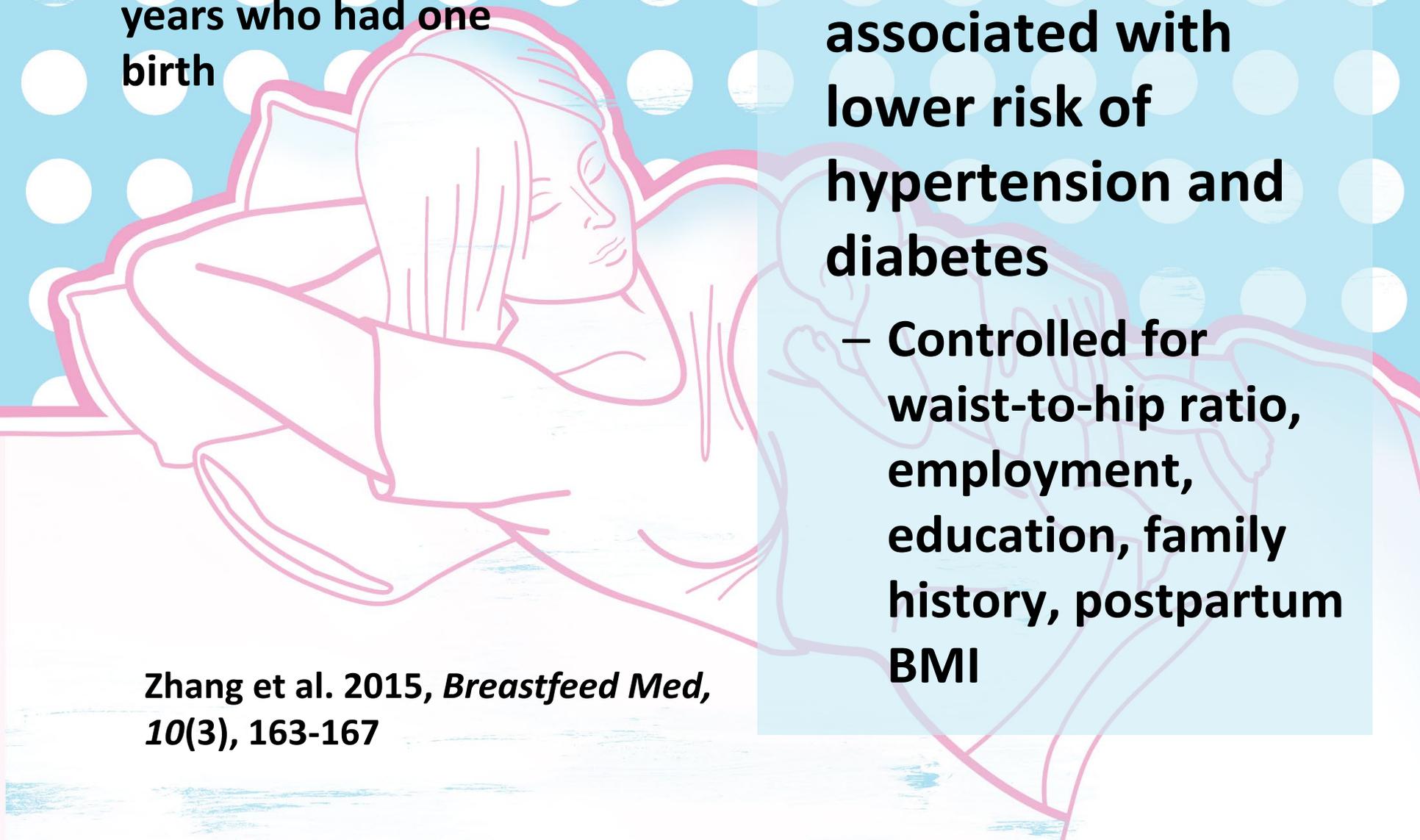
**Higher
lactation
intensity and
longer
duration
lowered risk of
postpartum
diabetes and
prediabetes**

**Shen et al. 2019, Diabetes Metab Res
Rev, e3115, doi: 10.1002/dmrr.3115**

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



Hypertension

Diabetes

CVD

**High
Triglycerides**



Lifetime Protection For Mothers

**139,681
postmenopausal
women (Mean age=63)**

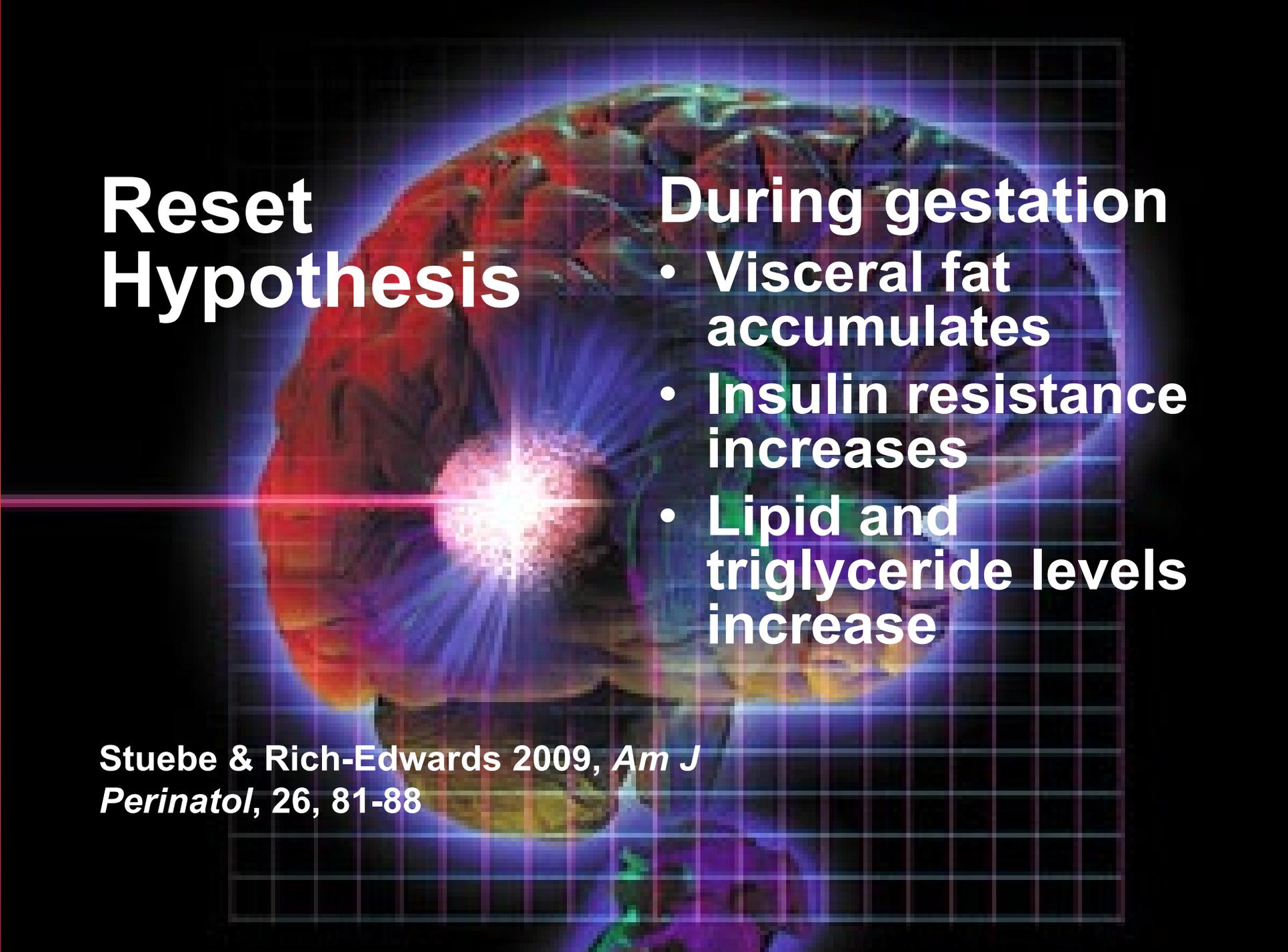
Schwartz et al. 2009, *Obstet Gyn*, 113, 974-982



**Why would
breastfeeding
lower risk?**

- **Some
proposed
mechanisms**

Reset Hypothesis



During gestation

- Visceral fat accumulates
- Insulin resistance increases
- Lipid and triglyceride levels increase

Stuebe & Rich-Edwards 2009, *Am J Perinatol*, 26, 81-88

- **Breastfeeding helps reverse, or reset, these changes**
- **For maternal metabolism, pregnancy ends with weaning, not birth**

Stuebe & Rich-Edwards 2009, *Am J Perinatol*, 26, 81-88



An illustration of an iceberg floating in a blue sea. The top part of the iceberg is white and above the water line, while the bottom part is submerged and colored a darker blue. The sky is a lighter blue with a yellow sun partially hidden behind a white cloud on the right, and another white cloud on the left.

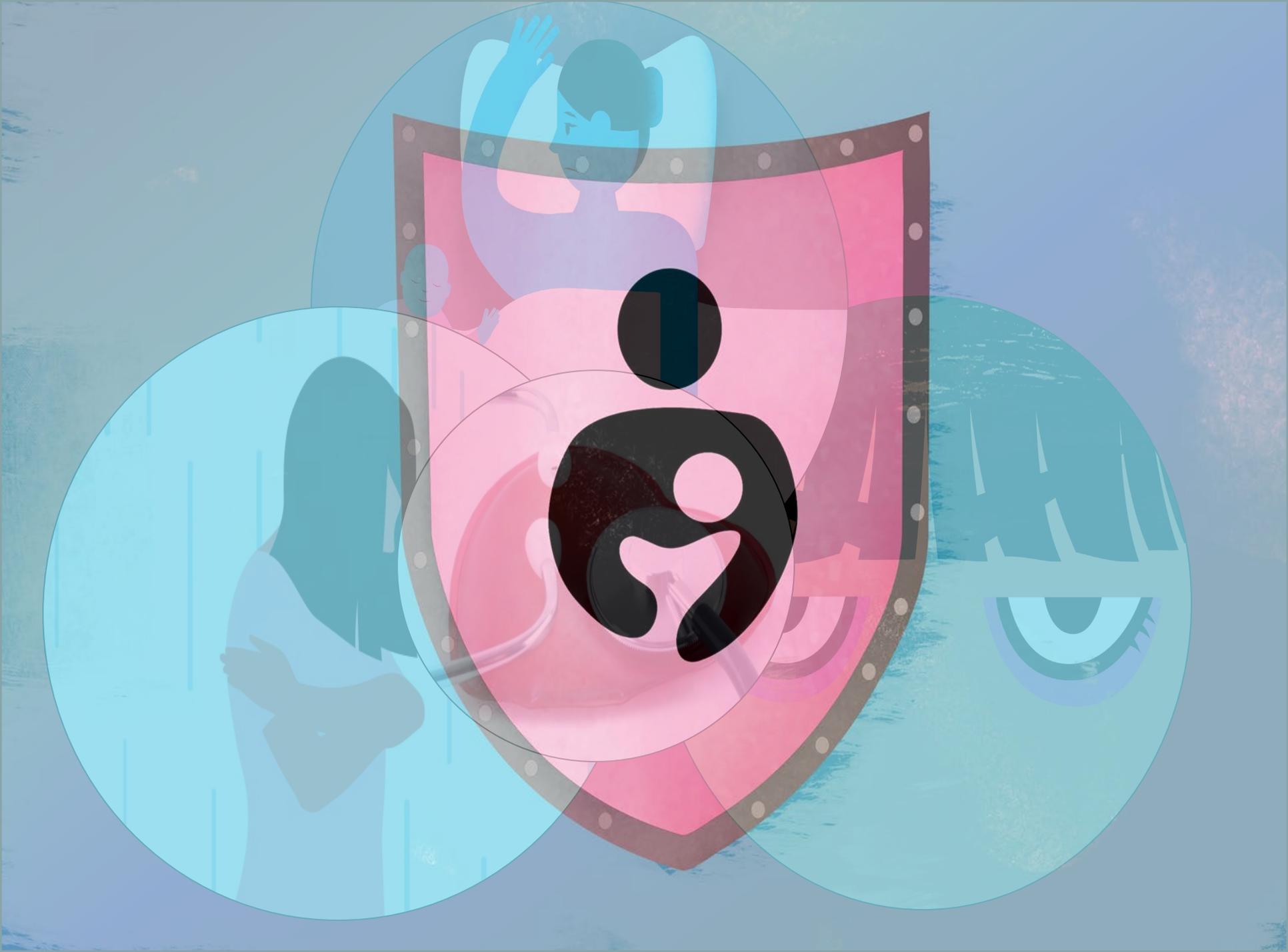
Reset Hypothesis

**Health Psychology Approach
to Metabolic Syndrome**

Psychoneuroimmunology









Stress

Stress

Stress

Stress

Stress

Stress

**Inflammatory Response
System (IRS)**

Catecholamine

HPA Axis

Inflammation

The diagram features a central illustration of a blood vessel with red blood cells. Four yellow boxes with black text are connected to this central image by white arrows. An arrow points from the 'Inflammation' box to the 'Leptin' box. Another arrow points from the 'Inflammation' box down to the 'Metabolic syndrome and insulin resistance' box. A third arrow points from the 'Metabolic syndrome and insulin resistance' box up to the 'Cardiovascular disease' box. A fourth arrow points from the 'Leptin' box down to the 'Cardiovascular disease' box. The background is a dark red, textured surface.

Leptin

**Cardiovascular
disease**

**Metabolic
syndrome
and insulin
resistance**

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



- 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



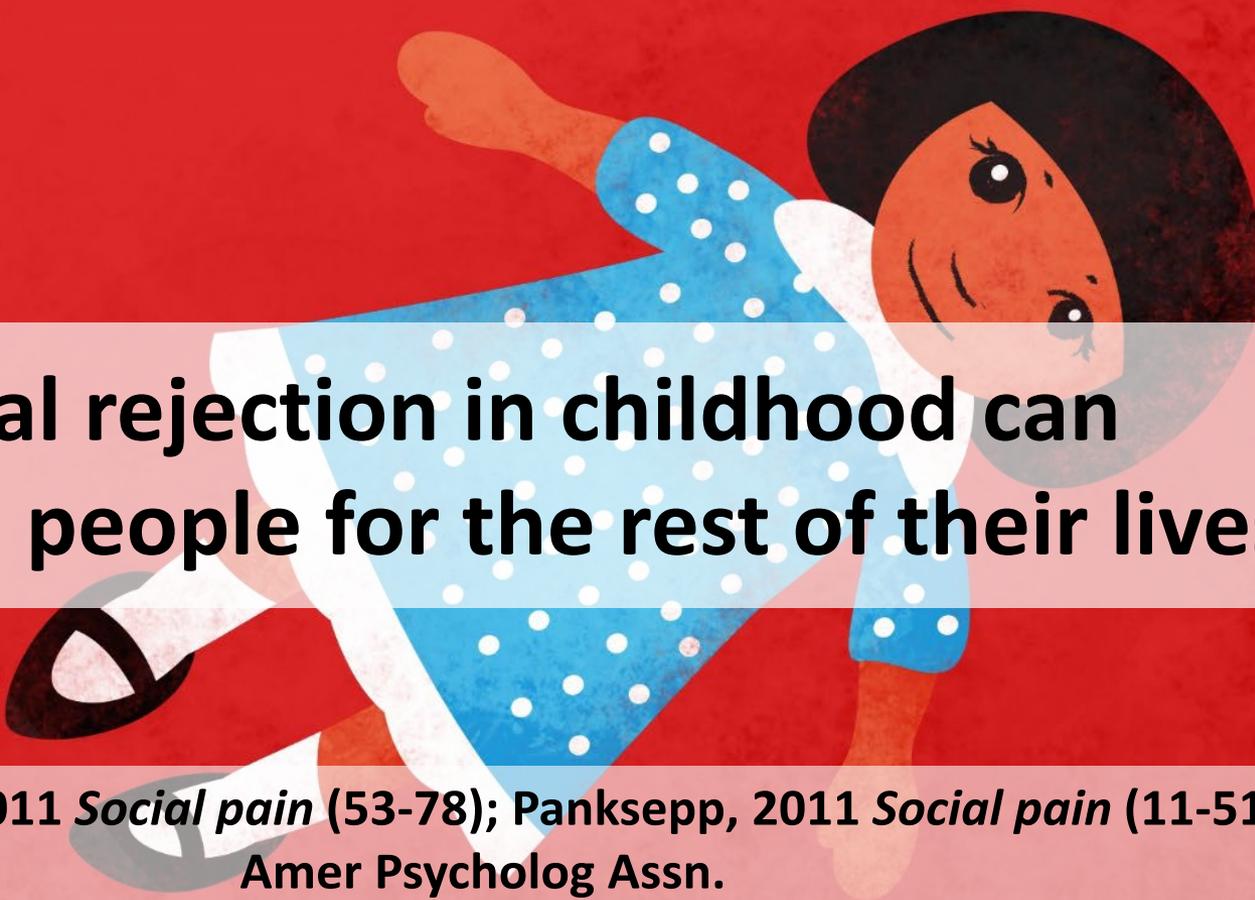
To your brain

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



296 African Americans

**Discrimination
associated with
elevated C-reactive
protein levels**

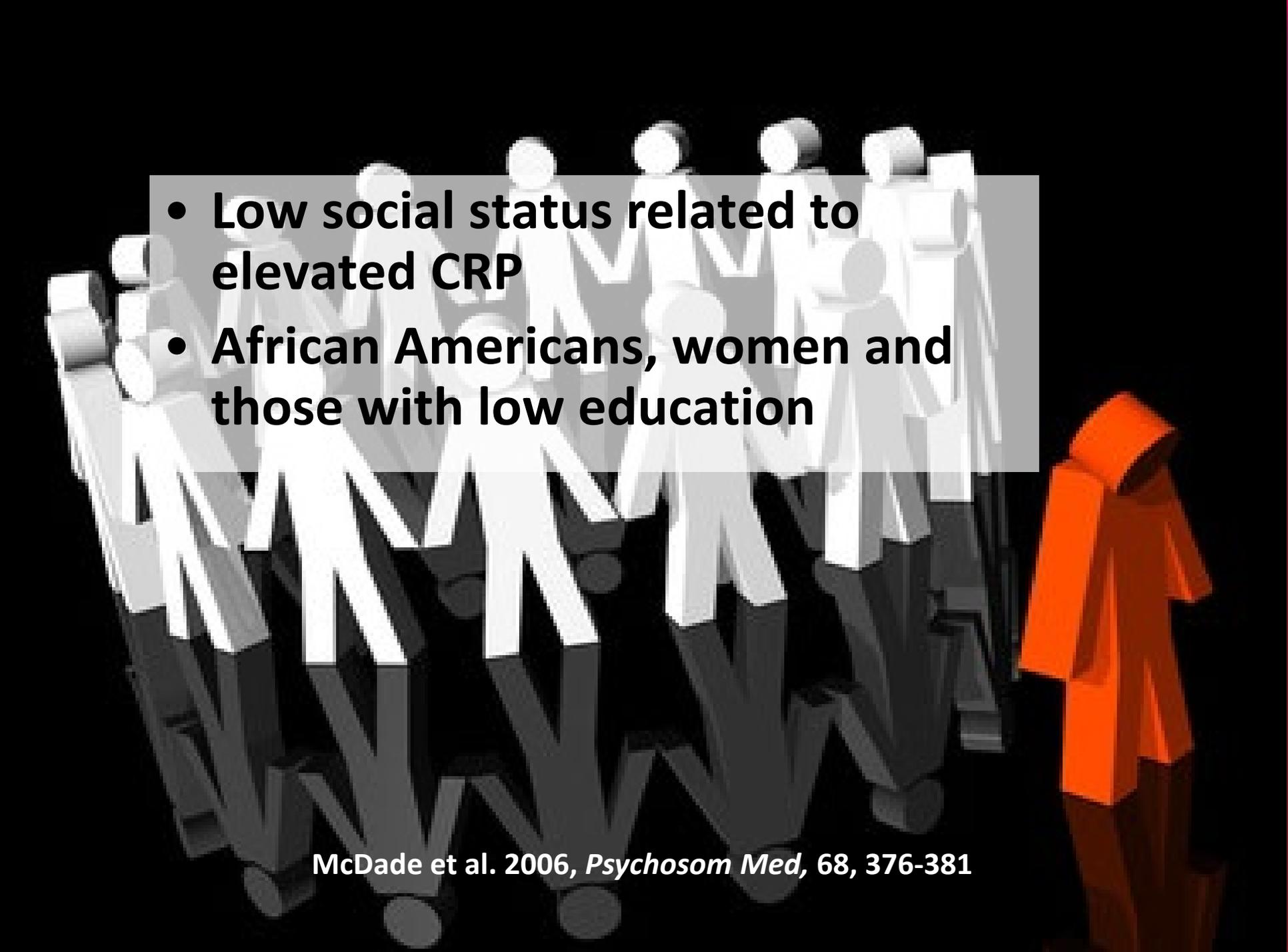
Lewis et al. 2010, *Brain Behav Immun*, 24(3), 438-443



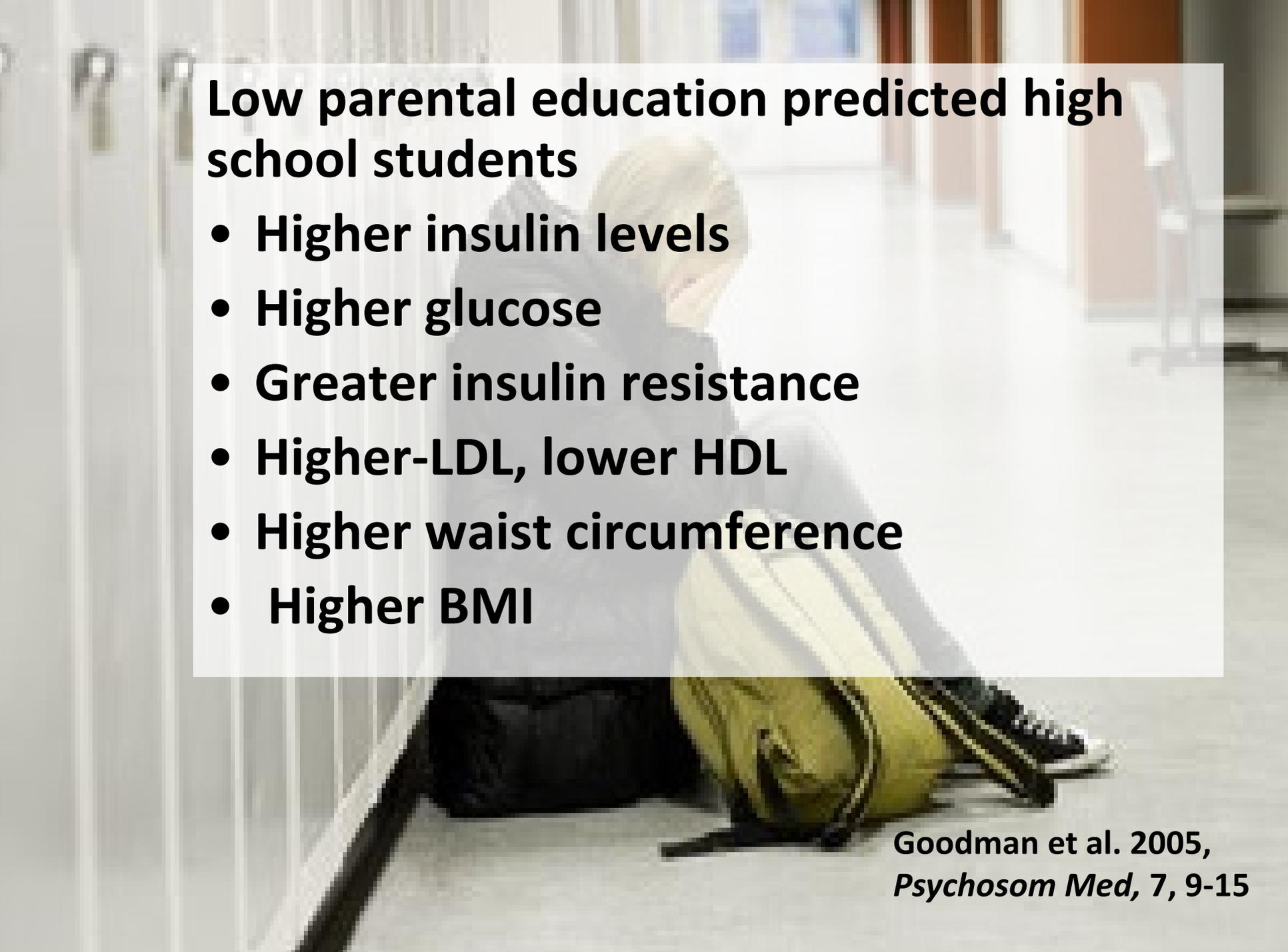
Perceived discrimination

- 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

Lewis et al. 2010, *Brain Behav Immun*, 24(3), 438-443

- 
- A group of stylized human figures holding hands in a circle, with one figure on the right wearing a red hooded garment.
- **Low social status related to elevated CRP**
 - **African Americans, women and those with low education**

McDade et al. 2006, *Psychosom Med*, 68, 376-381

A person with blonde hair, wearing a dark long-sleeved shirt and dark pants, is sitting on a yellow exercise ball in a gym. They are leaning forward, resting their head on their hand. The background shows a blurred gym environment with a window and some equipment.

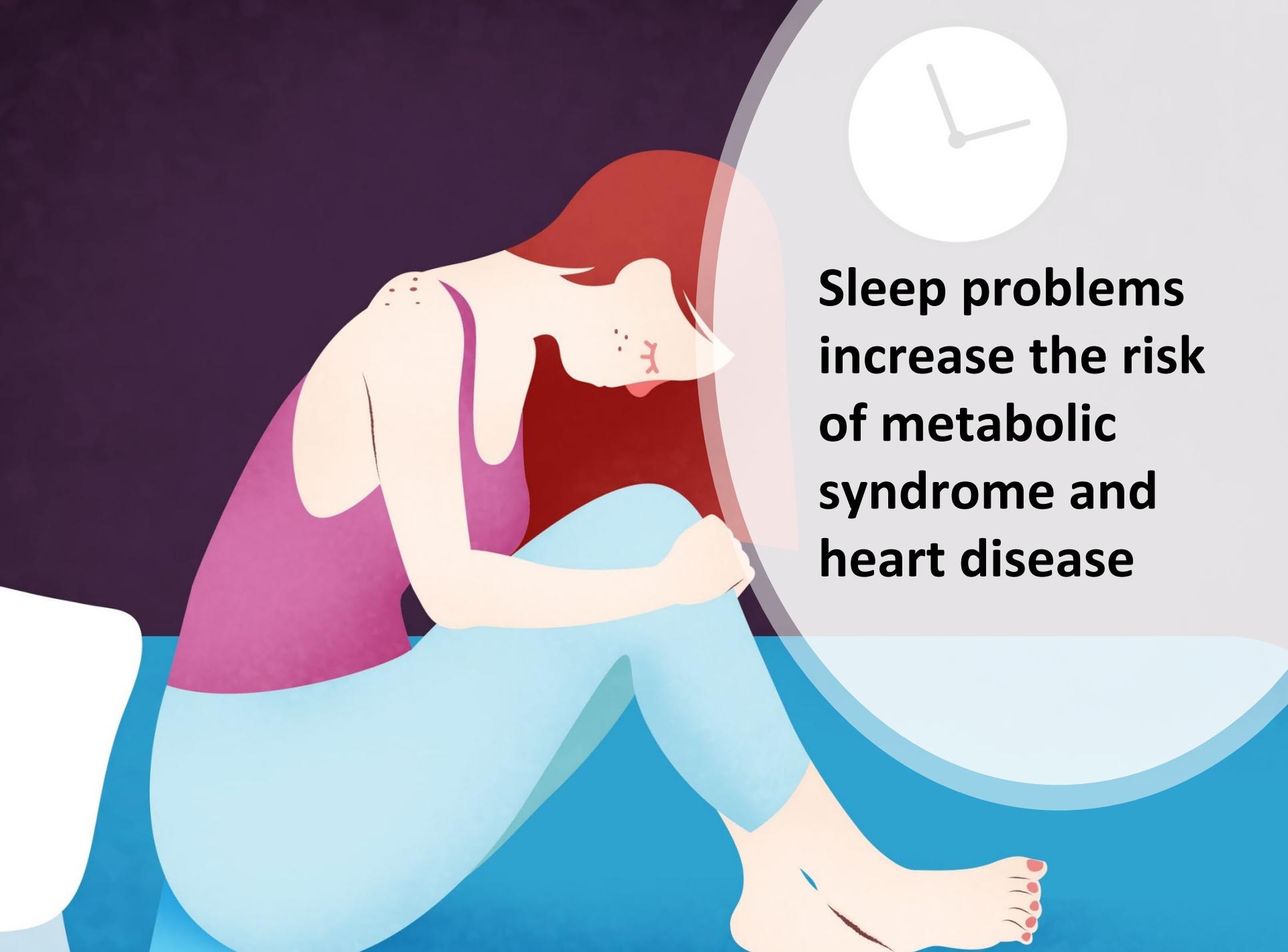
Low parental education predicted high school students

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

**Goodman et al. 2005,
Psychosom Med, 7, 9-15**



The Role of Sleep

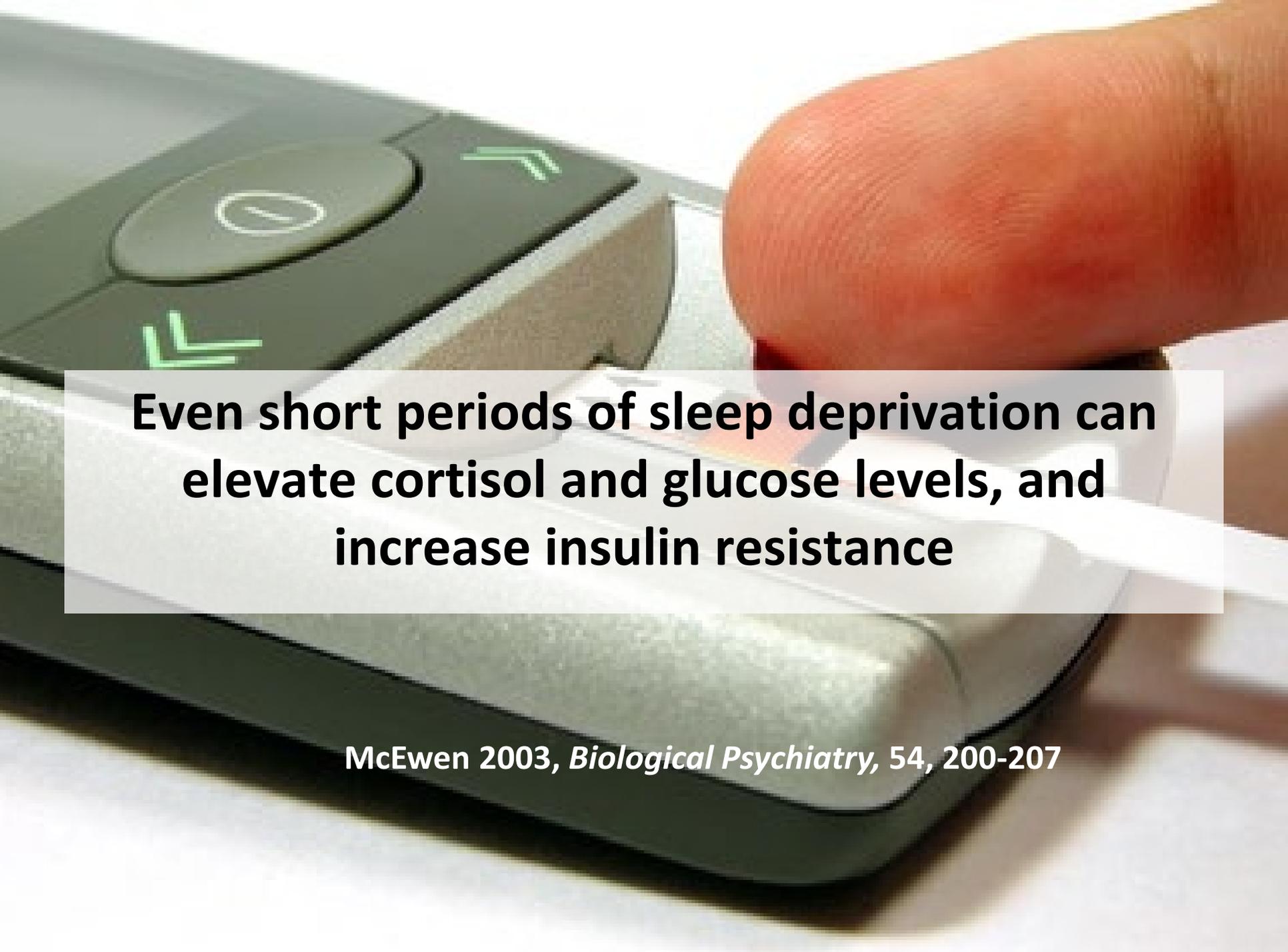


**Sleep problems
increase the risk
of metabolic
syndrome and
heart disease**

Subclinical sleep disorders also increase risk for CVD, hypertension, Type-2 diabetes, metabolic syndrome and all-cause mortality

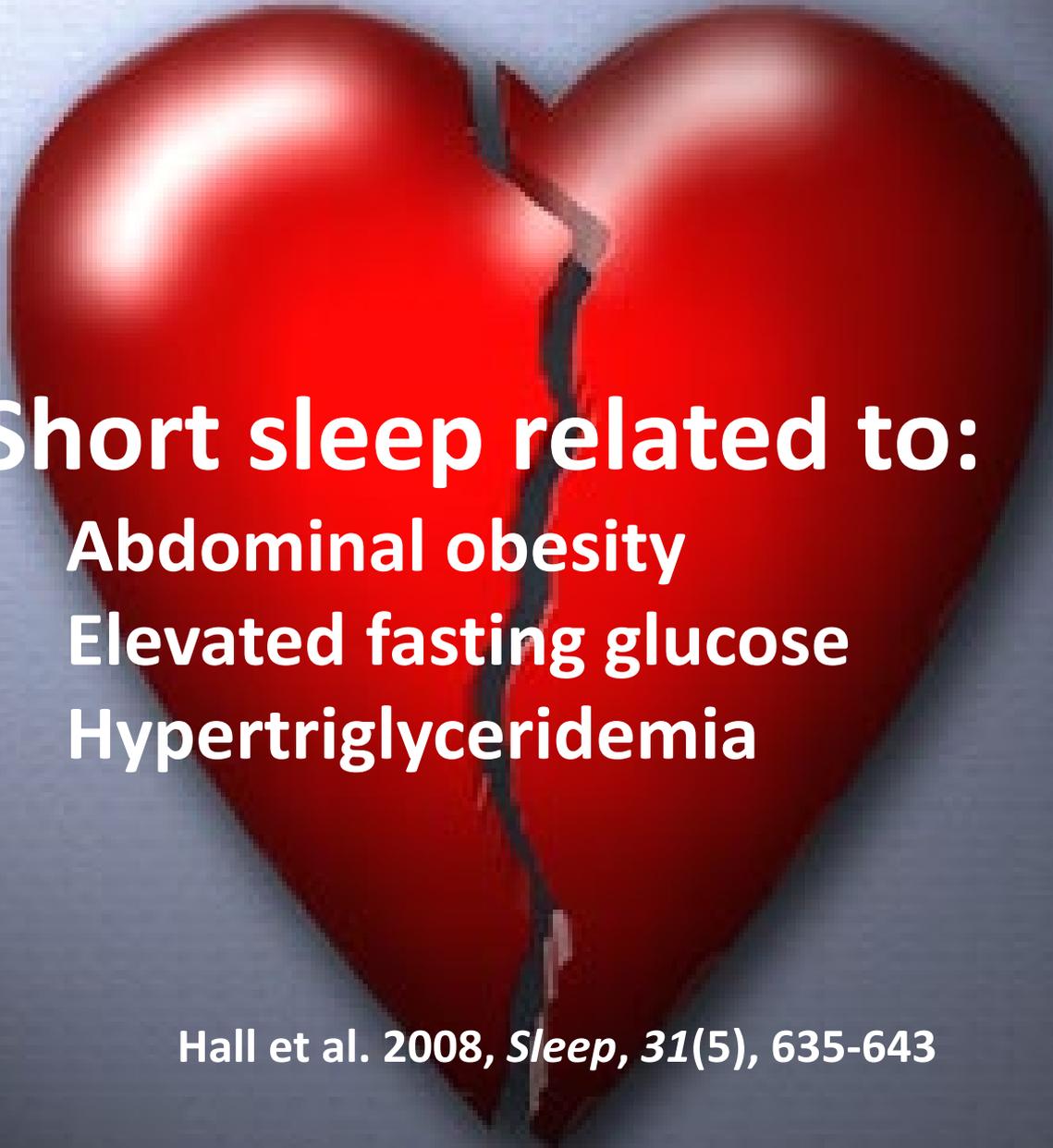


Suarez & Goforth. 2010 In *Psychoneuroimmunology of Chronic Disease*: American Psychological Association



Even short periods of sleep deprivation can elevate cortisol and glucose levels, and increase insulin resistance

McEwen 2003, *Biological Psychiatry*, 54, 200-207



Short sleep related to:

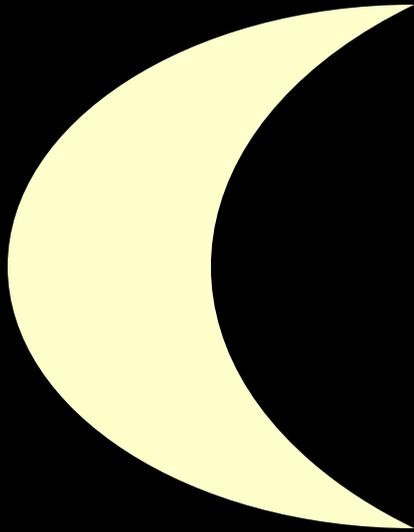
Abdominal obesity

Elevated fasting glucose

Hypertriglyceridemia

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

187 adults



Whites

16 min
to sleep

6.8% SWS

Sleep Time

Blacks

25 min to
sleep

3.6% SWS

Mezick et al. 2008,
Psychosom Med, 70, 410-416

Trauma





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

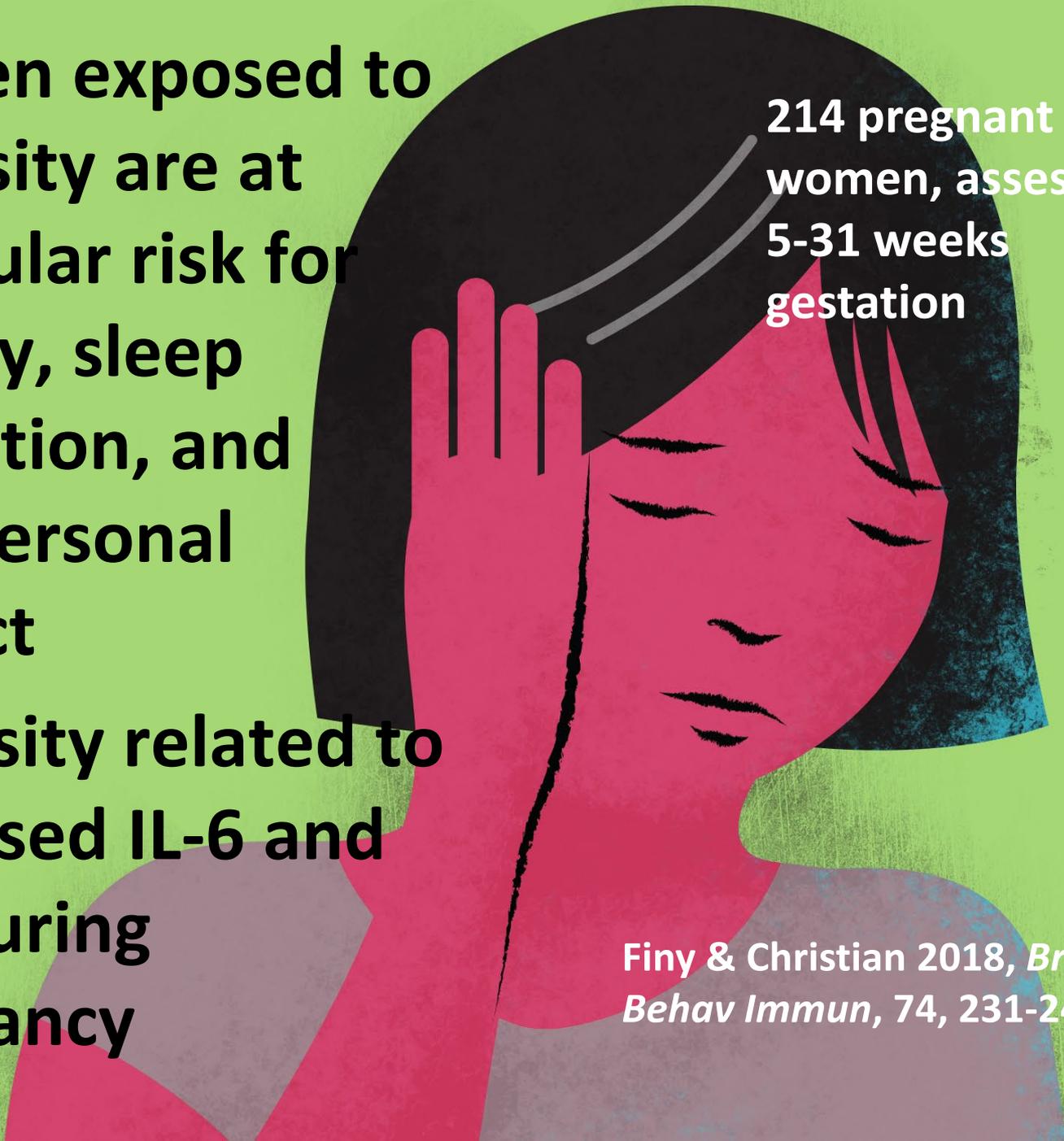
**Prenatal
adversity
increased
inflammation for
the baby in
adulthood by 3
times**

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

- **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

Finy & Christian 2018, *Brain Behav Immun*, 74, 231-240



- 
- **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**

Dunedin
Multidisciplinary
Health and
Development
(N=1,037), age 32

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

Danese et al. 2009, *Arch Ped Adolesc Med*, 163, 1135-1143



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**



Strathearn et al. 2009, *Pediatrics*, 123, 483-493



**And 2.6 times
less likely to
physically abuse
them**

Strathearn et al. 2009, *Pediatrics*, 123, 483-493



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

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

Strathearn et al. 2009, *Pediatrics*, 123, 483-493

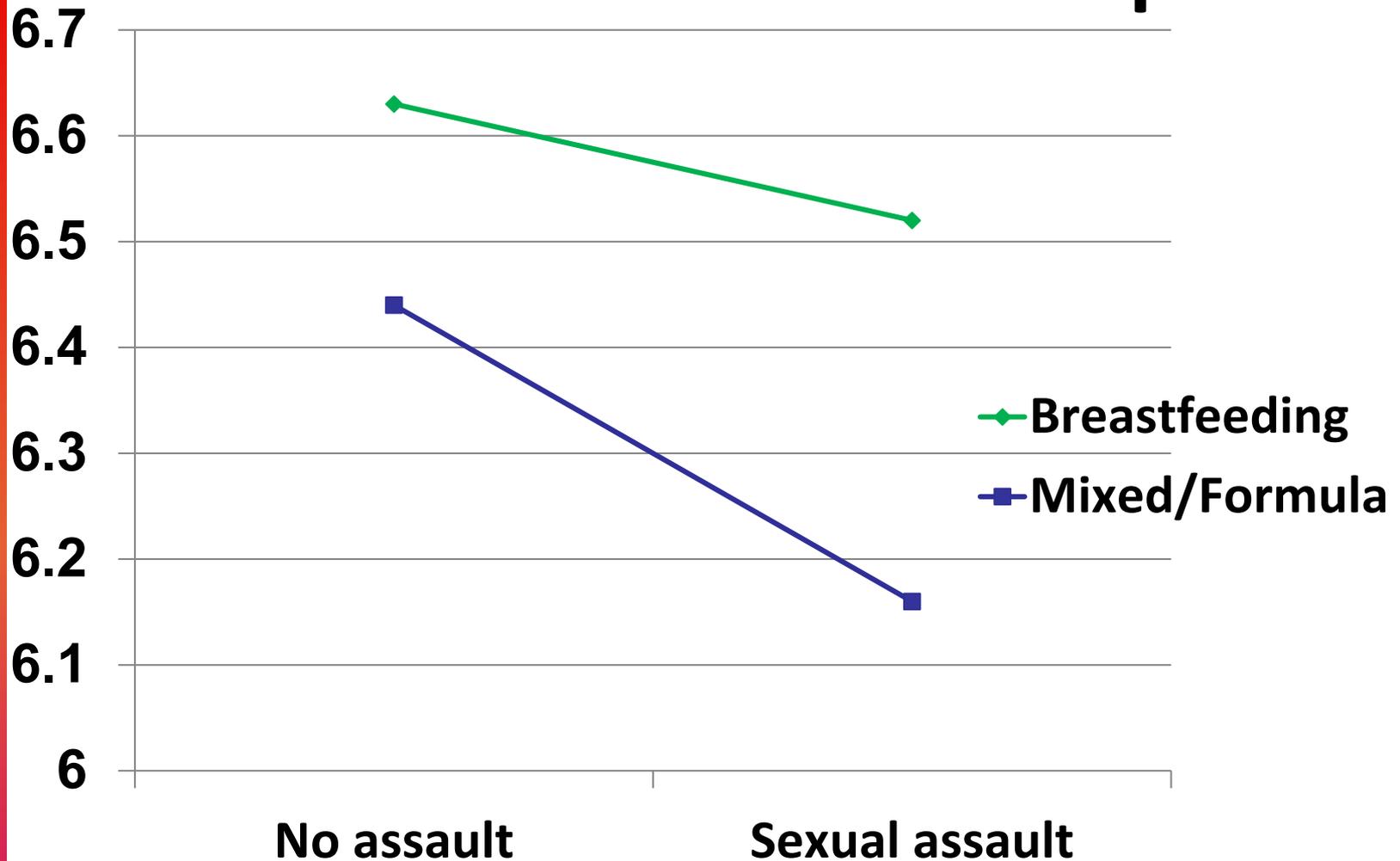
**Breastfeeding also
improves maternal
sleep**



An illustration of a woman with short, straight pink hair, wearing a blue long-sleeved shirt. She is shown in profile, holding a baby wrapped in a white blanket. The background is a light blue sky with several dark grey clouds and vertical blue lines representing rain falling. The overall style is simple and graphic.

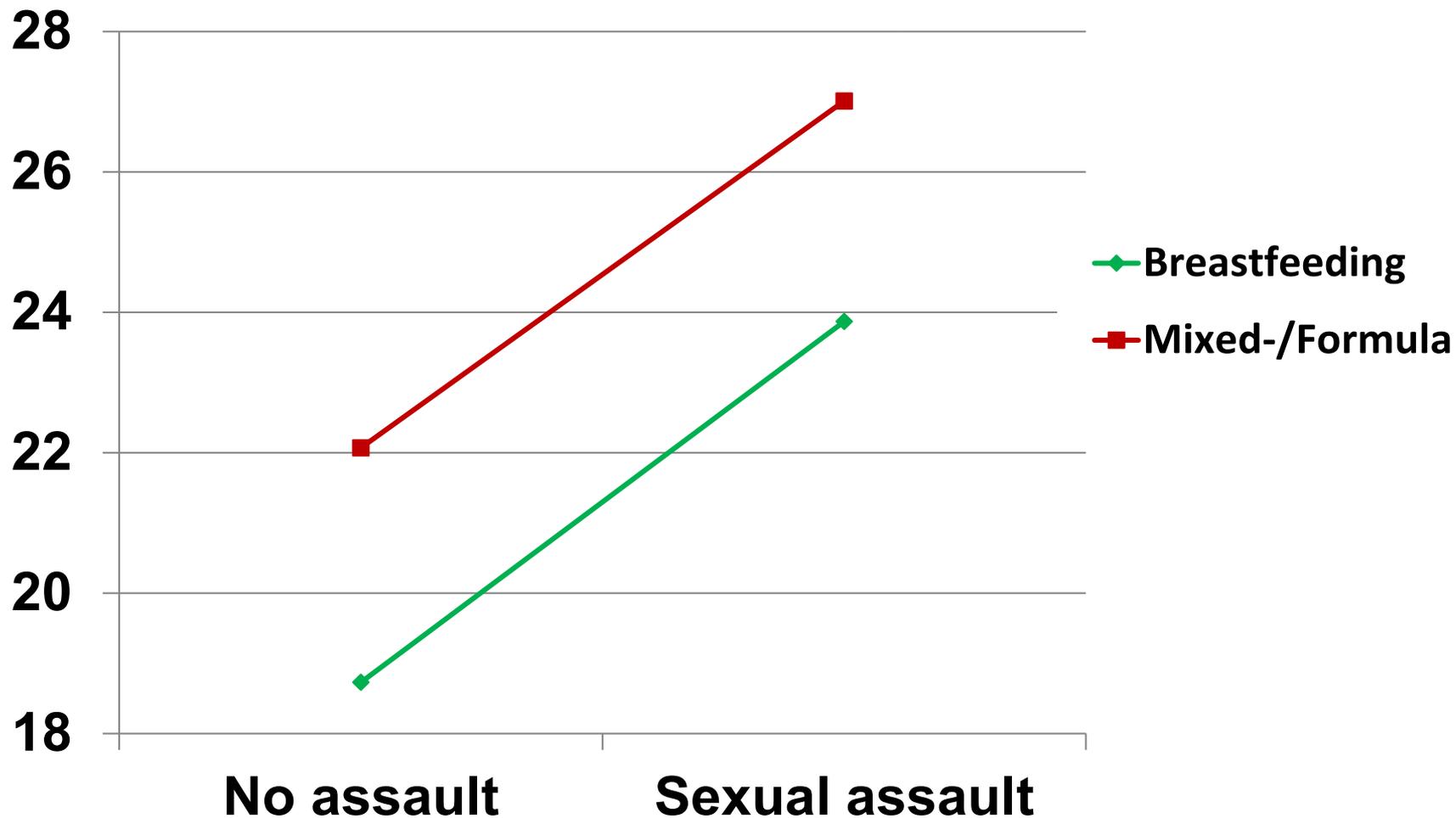
**Does breastfeeding
help trauma
survivors decrease
risk of metabolic
syndrome and
cardiovascular
disease?**

Hours Mothers Sleep

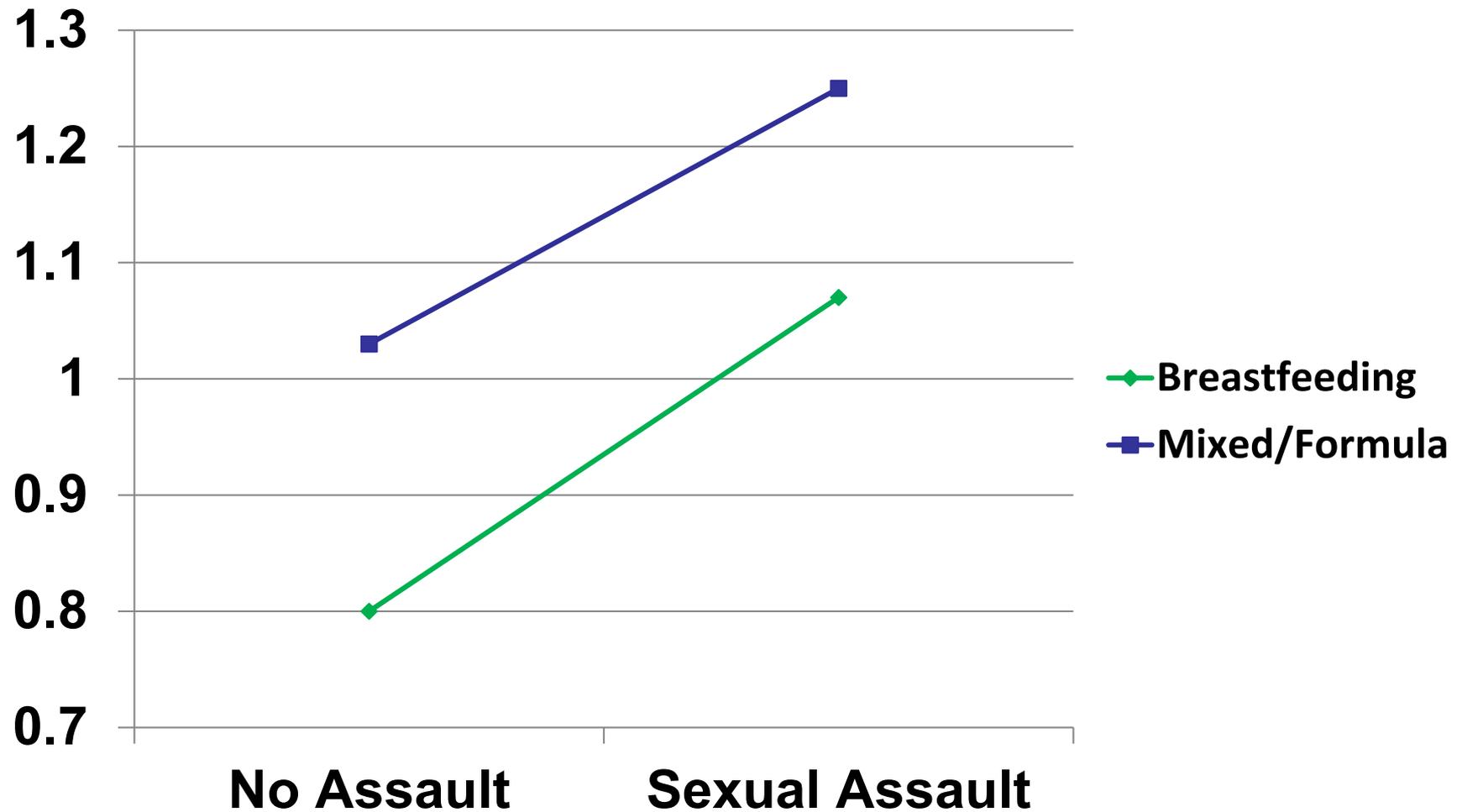


Kendall-Tackett et al. 2013, *Breastfeed Med*, 8(1), 16-22

Minutes to Get to Sleep

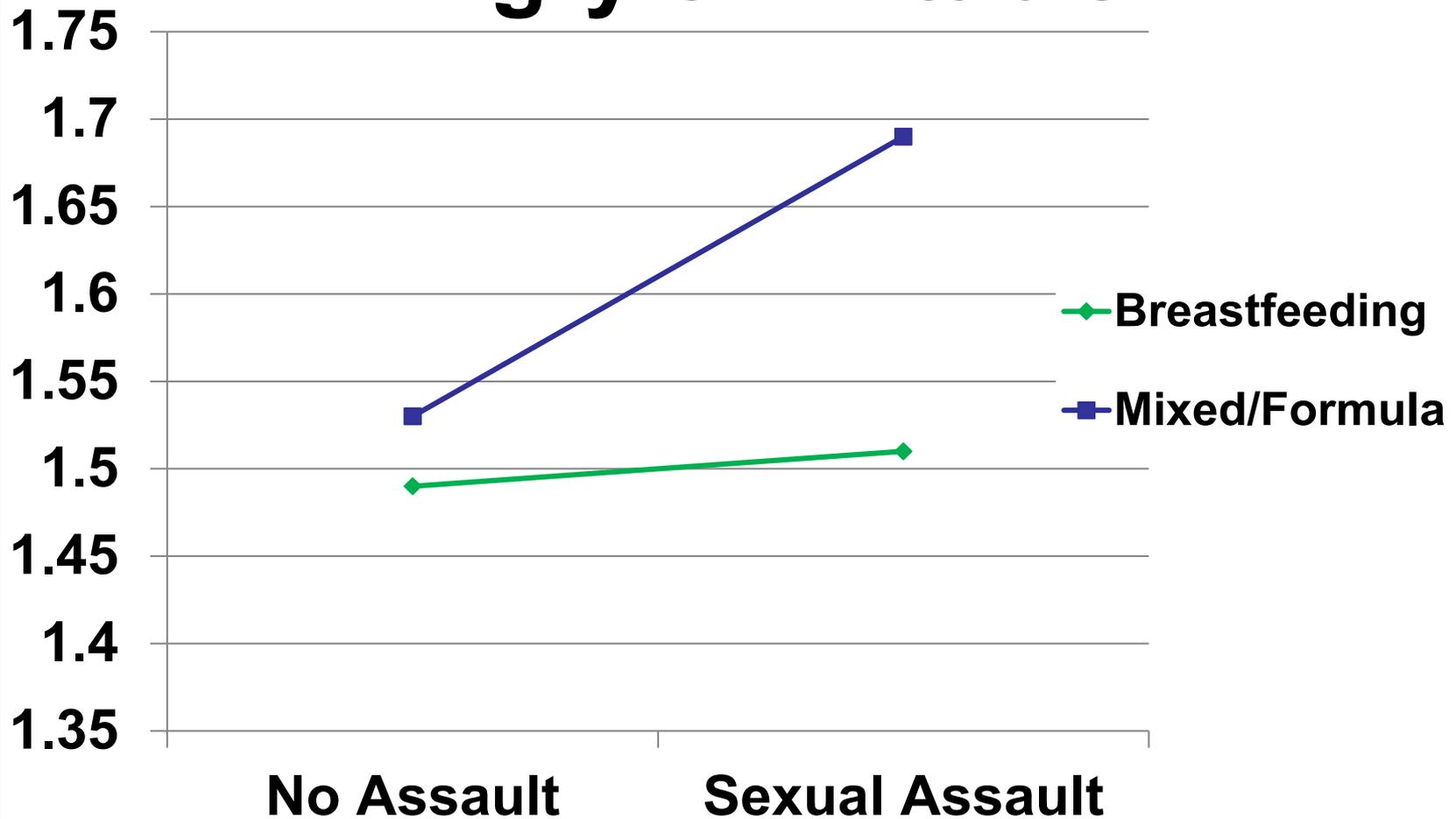


Depression



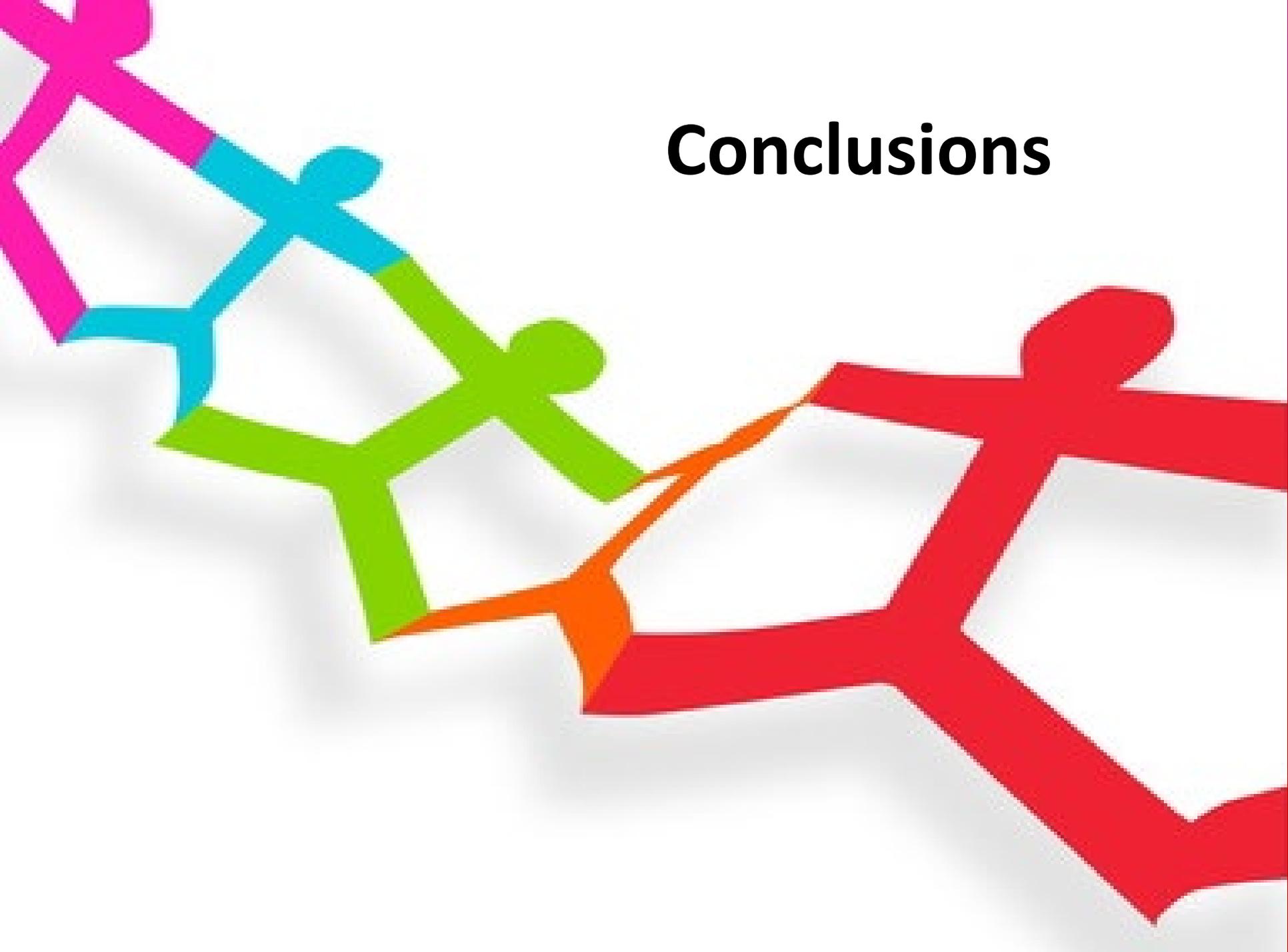
Kendall-Tackett et al. 2013, *Breastfeed Med*, 8(1), 16-22

Angry or Irritable



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

Conclusions



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**

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Section Header: **Psychology of Trauma 101**

Text: Lesia Ruglass, Kathleen Kendall-Tackett

Image:

Author: **Kathleen Kendall-Tackett**
Writer

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Windows Taskbar: Includes icons for File Explorer, Chrome, Word, PowerPoint, and other applications. System tray shows 5:33 PM on 3/12/2015.

Third Edition

Depression in New Mothers

Causes, consequences and
treatment alternatives



Routledge

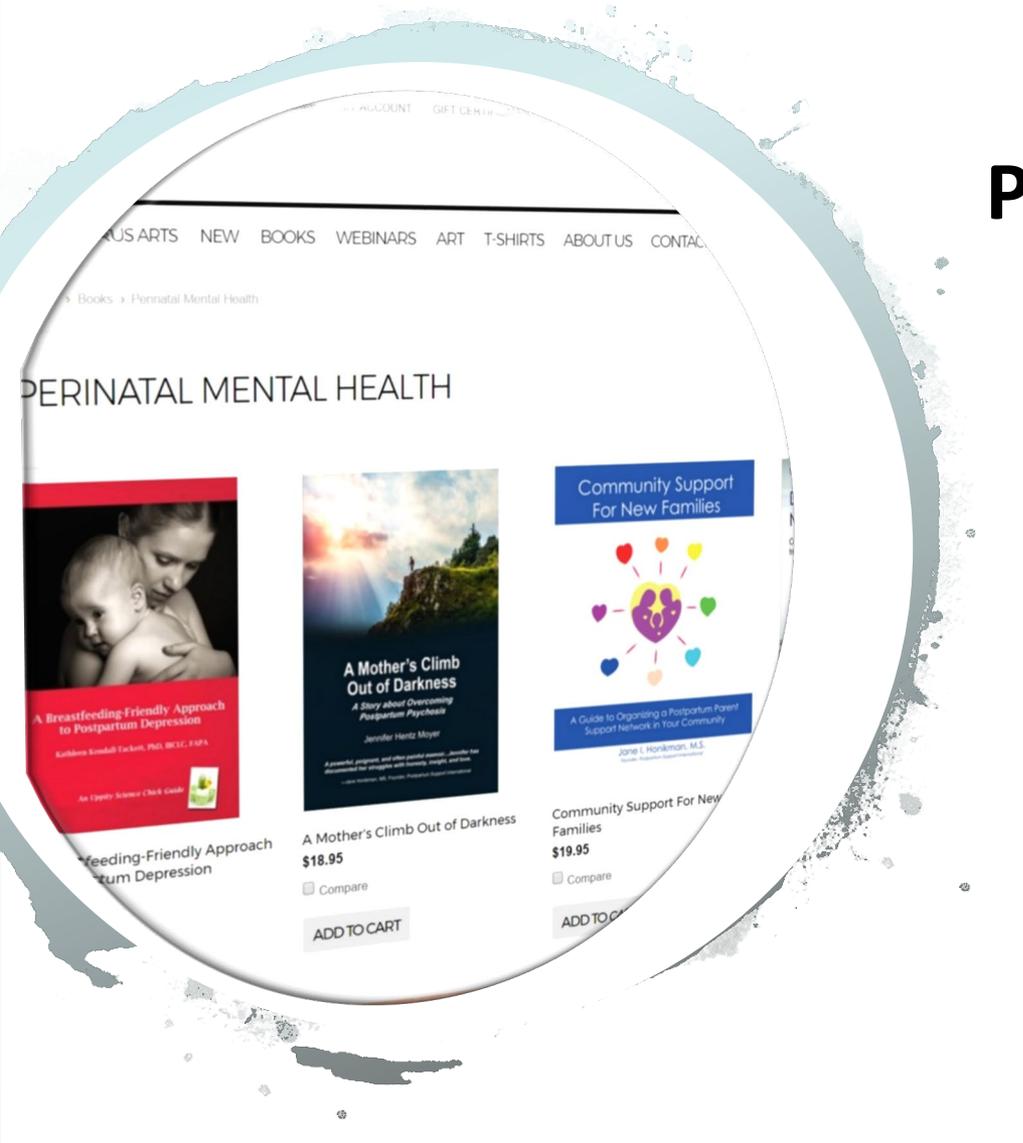


Kathleen A. Kendall-Tackett
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