Preconception Health: A Focus on Obesity

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• There are no financial or other conflicts of interest to report.

Objectives
• Recognize the complications of pregnancy related to maternal obesity
• Discuss strategies for prevention of prematurity related to maternal obesity

March of Dimes
• Perinatal morbidity and mortality
• Neonatal morbidity and mortality

Table 1: World Health Organization Body Mass Index Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>Less Than 18.5</td>
</tr>
<tr>
<td>Normal-weight</td>
<td>18.5–24.9</td>
</tr>
<tr>
<td>Overweight</td>
<td>25.0–29.9</td>
</tr>
<tr>
<td>Obesity class I</td>
<td>30.0–34.9</td>
</tr>
<tr>
<td>Obesity class II</td>
<td>35.0–39.9</td>
</tr>
<tr>
<td>Obesity class III</td>
<td>40 or greater</td>
</tr>
</tbody>
</table>

Abbreviation: BMI, body mass index.
Weight in kilograms divided by height in meters squared (kg/m²).
Prevalence of obesity

- From 1999-2010: Women age 20-39 yo
  - Increased from 28.4% to 34%
  - Higher in non-Hispanic black and Mexican American women
- 2011-2012 CDC
  - Overall increase has leveled off
  - BUT: Increase in class II and class III obesity

Flegal et al., JAMA, 2010
Flegal et al., JAMA, 2012

Obesity and Pregnancy

**COMPICATIONS**

Do you want the short list or the long list??

Obesity related complications in pregnancy

**LONG LIST**
- Congenital anomalies
- Recurrent pregnancy loss
- Gestational diabetes
- Preeclampsia
- Stillbirth
- Cardiac dysfunction
- Nonalcoholic fatty liver disease
- Proteinuria
- Sleep apnea

**SHORT LIST**
- Hypertensive disease in pregnancy
- Preeclampsia

Obesity and hypertensive disease in pregnancy

- Dietary factors
- Inadequate physical activity

Callaway et al., Hypertension in Pregnancy. Vol 28 2009
Obesity and pregnancy complications

- Higher risk of having chronic hypertension
- Higher risk of having pre-existing type 2 diabetes

BOTH INCREASE RISK OF PREECLAMPSIA

Preeclampsia

- With and without severe features
- Early-onset vs. late-onset

Preeclampsia

- With severe features (SF)
  - BP: >160 and/or >110
  - HELLP
  - Symptoms (HA, RUQ pain, vision changes)
  - Serum creatinine (double baseline, >1.1)

- Without severe features (SF)
  - BP: >140 and/or >90, 4 hours apart
  - Cath Pr:Cr ratio 0.3 or greater

Preeclampsia

- Early-onset: delivery <34 wk
  - Greater perinatal death
  - Greater severe neonatal morbidity
  - Greater severe maternal morbidity and mortality
  - Pathogenesis:
    - Poor placental implantation
    - Chronic placental insufficiency
    - Subsequent inflammatory cascade

- Late-onset: delivery >34 wk
  - Less perinatal death
  - Less severe neonatal morbidity
  - Less severe maternal morbidity and mortality
  - Pathogenesis:
    - Placenta (less)
    - Maternal metabolic and CV RF

Let’s look at the evidence
Incidence of hypertensive disorders of pregnancy increases in proportion to a woman’s pre-pregnancy body mass index (BMI).

It is unknown:
- How does the severity of pre-pregnancy maternal obesity influence the gestational age at which a woman destined to develop preeclampsia will be diagnosed.
- The timing (EGA) at which preeclampsia is diagnosed is a strong predictor of not only maternal disease severity but also fetal/neonatal outcomes.

Young et al
- retrospective cohort study of primiparous women with singleton gestations
- Deliveries from January 2003 to April 2014.
- Cases were stratified by delivery occurring either at 37 weeks or < 37 weeks.
- Pre-pregnancy maternal obesity was defined as a body mass index (BMI) ≥ 30 kg/m².

Young et al, Obesity. Feb 2016

Durst et al, AJOG 2016
- Retrospective cohort
- Deliveries 2004-2008 with known BMI at admission to L and D
- N=10,218

Durst et al, AJOG 2016
- Demographics
  - Obese and morbidly obese women more likely to be:
    - Older
    - African-American
    - Multiparous
    - Greater rates of diabetes and chronic hypertension.
  - Normal-weight women were more likely to:
    - Use tobacco and illicit drugs
    - The groups were similar with regards to payor status and alcohol use.
What can we do??

- Preconception care
- Postpartum (fourth trimester)
- Interconception care

Weight loss strategies

ACOG Committee Opinion No. 423:
Motivational Interviewing: A Tool for Behavioral Change
Obstetrics & Gynecology: January 2009 - Volume 113 - Issue 1

Cochrane Review
Adegboye et al

- Randomised studies to assess the impact of dieting or exercise, or both, on women’s weight loss in the months after giving birth.
- Particular attention to breastfeeding women to be sure that breastfeeding was not compromised
- 14 studies, with 12 studies involving 910 women

Cochrane Review
Adegboye et al

- Findings:
  **Diet combined with exercise or diet alone compared with usual care VS.**
  Exercise alone compared with usual care
There was not sufficient evidence to be sure that exercise or diet did not interfere with breastfeeding though it appeared not to in the included studies.

It seems preferable to lose weight through a combination of dieting and exercise, compared to dieting alone.

**HOWEVER, exercise is thought to improve circulation and heart fitness, and to preserve lean body mass.**

**Further research is needed.**

**Cochrane Review 2013**

Adegboye et al

- Increased prevalence of obesity
- Increased hypertensive disease in pregnancy
- Increased prevalence of indicated preterm birth
- Possible benefit to even small weight loss before next pregnancy
- "Fourth trimester"