BMI, Gestational Weight Gain and Angiogenic Biomarker Profiles for Preeclampsia Risk

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**Objective**

In May 2009, after considering short and long-term maternal/infant outcomes, the Institute of Medicine (IOM) revised recommendations for gestational weight gain (GWG) because pre-pregnancy weight was no longer the primary determinant in calculating weight gain. Although obesity is a factor in pre-pregnancy weight, some overweight and obese women are able to achieve the necessary weight gain (GWG) to meet IOM recommendations. Thus, clinicians are encouraged to evaluate preeclampsia risk by angiogenic-biomarker profile by both BMI and GWG-adherence. Given numerous studies showing adipose tissue's ability to stimulate angiogenic biomarkers, findings suggest trends that OW-OB BMI and excessive GWG associated with altered angiogenic profiles as a potential modifiable factor. Exploratory study to investigate for preeclampsia risk alteration.

**Materials and Methods**

- **Participants**
  - Pregnant subjects (22-26 weeks) enrolled from outpatient Maternal Health Care between May 2004 and January 2006.
  - Each subject had >10 samples to evaluate preeclampsia risk by angiogenic-biomarker profile by both BMI and GWG-adherence.

- **Methods**
  - SFlt1 and placenta growth factor (PlGF) and soluble endoglin (sEng) were measured by ELISA. BMI and GWG adherence categories determined by 1990 IOM recommendations.
  - Pre-pregnancy BMI Categories: Underweight (<19.8), Normal weight (19.8-26.0), Overweight (26.0-29.0), Obesity (≥29.0).
  - GWG Categories: Under-appropriate gains (U-AG), Appropriate gains (A-AG), and over-appropriate-gainers (O-AG), respectively.

- **Background**
  - In May 2009, after considering short and long-term maternal/infant outcomes, the Institute of Medicine (IOM) revised recommendations for gestational weight gain (GWG), because pre-pregnancy weight was no longer the primary determinant in calculating weight gain. Although obesity is a factor in pre-pregnancy weight, some overweight and obese women are able to achieve the necessary weight gain (GWG) to meet IOM recommendations. Thus, clinicians are encouraged to evaluate preeclampsia risk by angiogenic-biomarker profile by both BMI and GWG-adherence.

- **Results**
  - **Table 1. Demographic Comparisons.**
    - Geometric mean and 95% confidence intervals displayed for sFlt1, PlGF, and (sFlt1+sEng)/PlGF in each of 3 gestational-age windows for analytic sample included 82 subjects (342 specimens).
    - Mean sFlt1 trended lower in all windows in OG compared to U-AG (Figure 5).
  - **Table 2. GWG Adherence Comparisons.**
    - Geometric mean PlGF trended higher in OG compared to U-AG (Figure 6).
  - **Table 3. Findings suggest trends that OW-OB BMI and excessive GWG associated with altered angiogenic profiles as a potential modifiable factor.**
  - **Table 4. BMI and GWG adherence categories comparing under-/normal-weight to overweight/obese at 3 gestational age windows.

- **Analytic sample included 82 subjects (342 specimens).**

- **Bias:**
  - Small sample size limited the study’s power to detect small differences.

- **Conclusion:**
  - Ongoing study to evaluate preeclampsia risk by angiogenic-biomarker profile by both BMI and GWG-adherence.

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**BMI, Gestational Weight Gain & Angiogenic Biomarker Profiles for Preeclampsia Risk**

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**Background**

- In May 2009, after considering short and long-term maternal/infant outcomes, the Institute of Medicine (IOM) revised recommendations for gestational weight gain (GWG), because pre-pregnancy weight was no longer the primary determinant in calculating weight gain. Although obesity is a factor in pre-pregnancy weight, some overweight and obese women are able to achieve the necessary weight gain (GWG) to meet IOM recommendations. Thus, clinicians are encouraged to evaluate preeclampsia risk by angiogenic-biomarker profile by both BMI and GWG-adherence.

**Materials and Methods**

- **Participants**
  - Pregnant subjects >24 weeks gestation enrolled from outpatient Maternal Health Care between May 2004 and January 2006.
  - Each subject had >10 samples to evaluate preeclampsia risk by angiogenic-biomarker profile by both BMI and GWG-adherence.

- **Methods**
  - SFlt1 and placenta growth factor (PlGF) and soluble endoglin (sEng) were measured by ELISA. BMI and GWG adherence categories determined by 1990 IOM recommendations. Pre-pregnancy BMI categories were limited by small numbers. BMI and GWG as potentially modifiable factors merit further investigation for preeclampsia risk alteration.

- **Results**
  - **Table 1. Demographic Comparisons.**
    - Geometric mean and 95% confidence intervals displayed for sFlt1, PlGF, and (sFlt1+sEng)/PlGF in each of 3 gestational-age windows for analytic sample included 82 subjects (342 specimens).
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