

Gestational Weight Gain by Obese Women and Maternal/Newborn Outcomes: A Systematic Review

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Search

- Keywords: obesity/obesity severity and gestational weight gain (GWG) and outcomes of pregnancy
- Databases: CINAHL, PubMed (Medline)
- English language: 2009-March 2012
- 66 articles retrieved: **12 retained**
- All level II cohort studies



Literature Review

- *Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement*
- Covariates: maternal age, smoking, parity included in all study analyses except one
- WHO BMI classification
- 4 studies stratified results by obesity severity (Hinkle; Park; Blomberg; Bodnar)



Outcomes Assessed

(Aggregate data for all obese women and by severity of obesity)

- GWG in obese women: Range and pooled results
- SGA^{10th} and SGA^{2SD}
- LGA
- Cesarean birth (CS)
- Postpartum weight retention (PPWR)

Results: *What is the range of GWG in obese women and does it vary with severity of obesity?*

- ◆ 15-27% gain within guideline
 - (IOM 2009; 5-9kg)
- ◆ 48-72% gain in excess of guideline
- ◆ Mean GWG (11.36 kg \pm 7.71)
- ◆ GWG decreased as obesity severity increased
- ◆ Weight loss more common in obese women and with obesity severity
- ◆ Obese parous women gain less than nulliparous

Results: *What is the risk for SGA and LGA in obese women and does it vary by severity of obesity or GWG*

- Prevalence of SGA^{10th}: 4.3-9.6%
- SGA^{10th}:
 - ◆ 10% in primigravid women (Nohr; Beyerlein)
 - ◆ 14.3% in obese adolescents (Harper)
- SGA^{2SD}: $\leq 2\%$ in 2 studies (Hinkle, Bloomberg)



Results: *What is the risk for SGA and LGA in obese women and does it vary by severity of obesity or GWG*

- Prevalence of LGA^{10th}: 13.1 to 21%
 - ◆ 6.5% in obese adolescents (Harper)
- Severity of obesity significantly influenced the impact of GWG on risk for SGA and LGA
 - ◆ Risk for SGA decreased as obesity severity increased and inverse for LGA
 - ◆ Linear relationship was muted



Results: *SGA Risk and GWG*

- Obesity as one class (Blomberg; Harper; Vesco; Zilko)
 - ◆ Risk of SGA $\leq 10\%$ with $\leq 5-9\text{kg}$
 - ◆ Obese women not at risk even with weight loss (Beyerlein) in both nulliparous and multiparous women (Nohr)

Results: *SGA Risk and GWG*

- By obesity class with $<5\text{kg GWG}$ (Hinkle, Bodnar, Blomberg, Park)
 - ◆ Class I:
 - $\text{SGA}^{10\text{th}} > 10\%$
 - $\text{SGA}^{2\text{SD}}$: risk increased but prevalence $< 5\%$
 - ◆ Class II: Mixed results
 - No risk of $\text{SGA}^{10\text{th}}$ (Park); risk increased with 3.2kg (Bodnar) at 10% (Hinkle)
 - No increase risk $\text{SGA}^{2\text{SD}}$ (Hinkle); increased but prevalence $< 5\%$ (Blomberg)

Results: *SGA Risk and GWG*

- ◆ Class III:
 - No risk for SGA with $<5\text{kg}$
 - Weight loss increased odds of SGA but prevalence $<5\%$



Results: *LGA Risk and GWG*

- LGA risk $>10\%$ with GWG 5-9 kg (Beyerlein; Bodnar; Ferraro; Hinkle; Vesco; Zilko)
- LGA $>10\%$ with no GWG (Zilko) or low GWG (Nohr)
- LGA $<10\%$ in class I women with $< 5\text{kg}$ and 5-9kg GWG
- LGA risk lowered by 23% (class I, II) and 27% with GWG $<5\text{kg}$ (class III)
- Weight loss and LGA $<10\%$ in class III (Blomberg; Park)

Results: *What are the risks for cesarean delivery and do these risks vary with obesity and GWG?*

- 4 studies
- Association b/t GWG and CS modest
- Highest increased risk when GWG >9kg
- Regardless of parity, GWG <5kg favors decreased risk
- Obesity severity affects risk with increases across all classes independent of GWG (Blomberg)
- Risk with GWG may be greatest in class I women

Results: *What are the risks for PPWR do these risks vary with obesity and GWG?*

- 4 studies
- Evaluations from 6-24 months PP
- Linear
- GWG <5kg: 70-80% reduction in PPWR
(Nohr et al., 2009)
- Overall: 44.7% of obese women had a PPWR ≥ 2.5 kg at 12-24 months

Conclusions

- Pre-pregnant weight and GWG influence outcomes
- Risks increase with $\text{GWG} > 5\text{-}9\text{kg}$
- GWG Recommendations based on risk assessment for all outcomes
 - ◆ Class I: $5\text{-}9\text{kg}$
 - ◆ Class II: $< 5\text{kg}$ but not weight loss
 - ◆ Class III: $< 5\text{ kg}$ and gestational weight loss needs further evaluation

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Thank you