Exploring gestational weight change among mothers and associated newborn weight

Poster #3375

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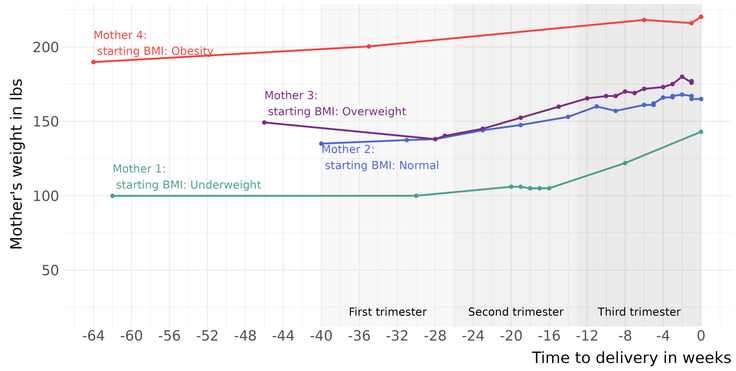
Background

- Maternal weight patterns vary widely across pregnancy. The American College of Obstetrics and Gynecology recommends pregnant women gain 28-40 lbs for those who are underweight (BMI <18.5), 25-35 pounds for those of normal weight (BMI19.0–24.9), 15–25 lbs for those with overweight (BMI 25.0–29.9), and 11-20 lbs for those with obesity (BMI ≥30.0)
- In early pregnancy, morning sickness can cause temporary weight loss. Research is sparse, however studies suggest weight loss may correlate with lower birth weight.
- The impact of maternal gestational weight change on newborn outcomes is hard to study for many reasons, i.e. longitudinal requirements and recall bias.
- We used point-of-care observational data to pull in measured weights across gestation and birth, leveraging deterministically linked mother-child data.

Objective

- Evaluate the association between gestational weight change and infant birth weight

Sampled mother's weights by time to delivery



Methods

Data + Population

- Retrospective analysis of a subset of Truveta Data, real-world US electronic health record data, which is aggregated, normalized, and de-identified from US health care systems comprising clinics and hospitals.
- Applied plausibility rules across units; excluded maternal weights outside 80–600 lbs and infant weights <3 lbs 5 oz or >13 lbs 4 oz
- Included mothers aged 18–50 years with a first live birth during Jan 2019–Aug 2025 and a linked child record; excluded preterm births and multiple gestations
- Required valid pre-pregnancy BMI and weight 37–65 weeks before delivery, a mid-pregnancy weight (23–29 weeks prior), and weight within 1 week of delivery. Pre-pregnancy weight was measurement closest to 40 wks (≥37 wks) pre delivery

Analysis

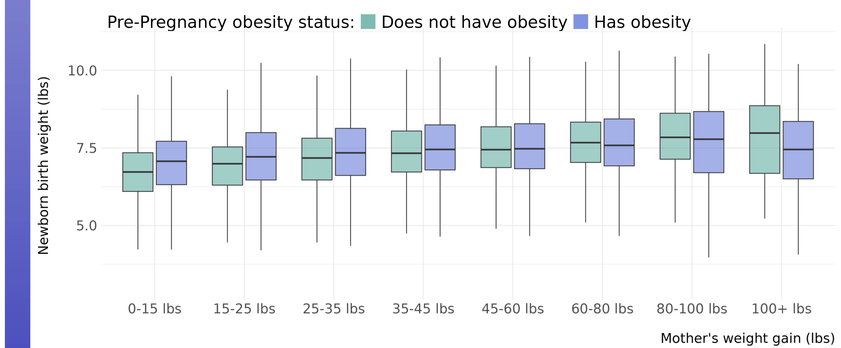
- **Total weight gain** = final − starting weight; **weight loss** = starting − minimum pregnancy weight (typically in first trimester)
- Stratified longitudinal trajectories by BMI category and evaluated associations with infant birth weight and low birth weight (<5 lbs 8 oz) by obesity status

Characteristics of Mothers and Their Linked Infants, N = 117,752

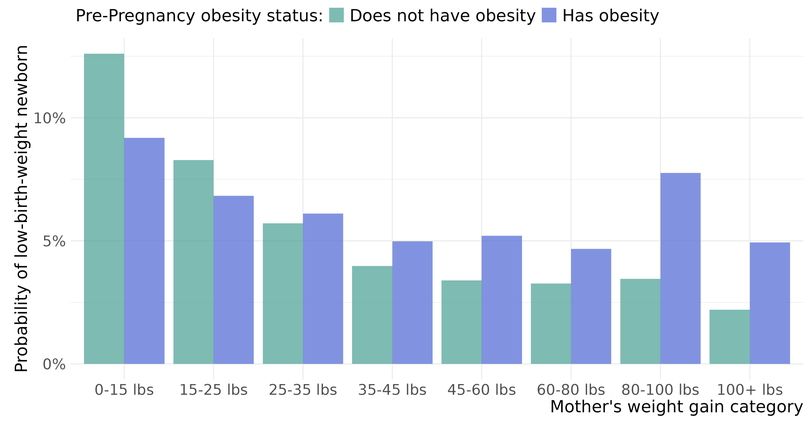
Characteristic	N (%)
Mother's Age Group	
18-24	17,834 (15.1%)
25-29	29,836 (25.3%)
30-39	63.600 (54.0%)
45-50	6,482 (5.5%)
Mother's BMI Category	
Underweight	2,360 (2.0%)
Normal	42,424 (36.0%)
Overweight	32,026 (27.2%)
Obesity	40,942 (34.8%)
Mother's Race	
American Indian or Alaskan Native	1,050 (0.9%)
Asian	7,512 (6.4%)
Black or African American	16,978 (14.4%)
Native Hawaiian/Other Pacific Islander	741 (0.6%)
White	76,874 (65.3%)
Other or Unknown Race	14,597 (12.4%)
Mother's Ethnicity	
Hispanic or Latino	20,638 (17.5%)
Not Hispanic or Latino	93,823 (79.7%)
Unknown	3,291 (2.8%)
Average # of Weight Measurements	12
Mother's average weight loss* (lbs)	6.9
Mother's average weight gain (lbs)	31
Infant Sex	
Male	57,711 (49%)
Female	59,975 (51%)
Average Newborn Birthweight (lbs)	7.2

*Among those mothers that lost weight

Newborn birth weight by mother's gestational weight gain and obesity status



Probability of low-birth-weight newborn (<5 lbs 8 oz) by mother's gestational weight gain



Results

- The cohort included 117,752 mothers and their linked infants. Mothers had an average of 12 weight measurements recorded during pregnancy.
- The median gestational weight gain was 30 lbs. Gestational weight gain decreased as pre-pregnancy BMI increased. Mothers with underweight/normal BMI gained 34.0 lbs, compared to 31.0 lbs (overweight) and 23.5 lbs (obesity). Median weight gain for mothers with overweight/obesity were slightly over recommended amounts.
- 45% of mothers experienced weight loss, primarily during the first trimester. Among mothers who lost weight, the median weight loss was 6.9 lbs.
- The median infant birth weight was 7.2 lbs. Infant birth weight increased with higher maternal weight gain. Median birth weights ranged from 7.0 lbs (0–15 lbs gained) to 7.8 lbs (80–100 lbs gained).
- Among mothers without obesity, those gaining 0–15 lbs during pregnancy had the highest rate of low birth weight infants. The low birth weight rate in this group was 12.6%.

Conclusions

- This analysis highlights the role that objective observation weight and BMI data, collected as a standard part of prenatal care, can play to accurately calculate weight loss and gain over the course of a woman's pregnancy.
- By relying on objective data rather than maternal recall, this method avoids many of the limitations of retrospective or survey-based analyses, providing more reliable and accurate estimates of weight change.
- Mothers who gained under 15 pounds had increased likelihood of a low-birth-weight infant.

Greater weight gain during pregnancy was associated with higher birthweight; **mothers who gained <15 lbs had increased probability of a low-birth-weight infant.**

Disclosures: All authors are employees of Truveta Inc.