

## Maternal pre-pregnancy obesity associated with failure to meet prenatal breastfeeding goals

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**Background:** The American Academy of Pediatrics recommends exclusive breastfeeding (EBF) to six months of age, with continued breastfeeding for at least one year. Maternal obesity (BMI $\geq$ 30) has inconsistently been associated with differences in duration of any and exclusive breastfeeding, but while metabolic health differs by obesity class, few of these studies have stratified maternal BMI to examine a dose-response mechanism. We compared breastfeeding initiation, duration, and achievement of pre-natal EBF intentions by maternal pre-pregnancy BMI category in PREVAIL, a CDC-funded birth cohort in Cincinnati, OH.

**Methods:** Enrolled subjects completed a questionnaire in the third trimester of pregnancy, including family demographics, pre-pregnancy weight and height, and intention to EBF to 6 months. BMI was calculated as kg/m<sup>2</sup> and categorized as Healthy (<25), Overweight (25-29.9), Obesity I (30-34.9), or Obesity II+ ( $\geq$ 35). Breastfeeding initiation, exclusivity, and duration were reported by the mother via quarterly study questionnaires. Multivariable logistic regression was used to examine the odds of breastfeeding intention, initiation, and meeting EBF goals across BMI categories while controlling for race, income, and maternal education. Differences in median duration were compared using Kruskal-Wallis.

**Results:** Of N=245 enrolled subjects, the pre-pregnancy maternal obesity rate was 40.4% ( $n=99$ ), with 23.7% ( $n=58$ ) meeting Obesity II+ criteria. Overall, 53.4% ( $n=131$ ) intended to EBF the recommended 6 months and 86.5% ( $n=212$ ) initiated breastfeeding, with no significant differences in intention or initiation by BMI category. Of those who intended EBF to month 6, mothers with Obesity II+ were less likely to EBF to 6 weeks (aOR 0.12 (95%CI 0.02-0.47)) or 6 months (aOR 0.09 (95%CI 0.00-0.60)) than mothers with a healthy BMI. In comparing breastfeeding duration, mothers with Obesity II+ provided any breastfeeding for fewer days (28 (IQR 4.3, 84.5)) than mothers with a healthy BMI (265 (IQR 46, 430),  $p<0.001$ ).

**Conclusions:** No differences were found by BMI category in intention to EBF to 6 months of age or breastfeeding initiation. However, mothers with Obesity II+ were less likely to achieve their prenatal EBF intentions and provided any breastfeeding for shorter durations than those with a healthy BMI.

Research is needed to identify causes of early breastfeeding cessation in mothers with Obesity II + to inform interventions designed to support these mothers in meeting their breastfeeding goals.

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Logistic Models; Intention to EBF Min 6 months												
Predictors	EBF 6 weeks, univariable			EBF 6 weeks, multivariable			EBF 6 months, Univariable			EBF 6 months, multivariable		
	Odds Ratios	CI	p	Odds Ratios	CI	p	Odds Ratios	CI	p	Odds Ratios	CI	p
Intercept	1.60	0.92 – 2.84	0.099	2.65	1.39 – 5.39	<b>0.004</b>	0.93	0.53 – 1.60	0.782	1.61	0.85 – 3.16	0.151
Overweight	0.39	0.14 – 1.01	0.057	0.36	0.12 – 1.01	0.056	0.09	0.01 – 0.35	<b>0.002</b>	0.07	0.01 – 0.29	<b>0.001</b>
Obesity I	0.18	0.06 – 0.49	<b>0.002</b>	0.17	0.05 – 0.53	<b>0.003</b>	0.19	0.05 – 0.57	<b>0.006</b>	0.19	0.05 – 0.66	<b>0.013</b>
Obesity II+	0.08	0.02 – 0.27	<b>&lt;0.001</b>	0.13	0.02 – 0.51	<b>0.007</b>	0.04	0.00 – 0.23	<b>0.003</b>	0.10	0.00 – 0.66	<b>0.042</b>
Black				0.64	0.18 – 2.16	0.469				0.40	0.05 – 2.19	0.320
<\$25k				0.17	0.03 – 0.78	<b>0.031</b>				0.33	0.03 – 2.66	0.301
\$25-50k				0.37	0.10 – 1.23	0.113				0.09	0.00 – 0.56	<b>0.031</b>
Observations	131			131			131			131		
R <sup>2</sup> Tjur	0.172			0.269			0.206			0.302		

#### Caption

The Pediatric Respiratory and Enteric Virus Acquisition and Immunogenesis Longitudinal (PREVAIL) Cohort is a CDC-funded birth cohort in Cincinnati, OH. Enrolled subjects (N=245) completed a questionnaire in the 3rd trimester of pregnancy, including intentions to exclusively breastfeed (EBF) to 6 months of age, pre-pregnancy weight and height, and family demographics. Maternal pre-pregnancy body mass index (BMI) was calculated as kg/m<sup>2</sup> and categorized as healthy (<25), overweight (25-29.9), obesity I (30-34.9) and obesity II+ (≥35). Comparisons were limited to subjects who indicated a positive intention to EBF to 6 months of age (n=131). Mothers self-reported date of EBF cessation, defined as first supplementation with infant formula. Duration of EBF by maternal pre-pregnancy BMI category was compared using univariable (BMI category) and multivariable logistic regression models (BMI category, maternal race (Black or not Black), family income category (<\$25,000/year, \$25-50,000/year, >\$50,000/year), and maternal education level (completion of any post-secondary education or training (>HS) or not (≤HS)).

## Maternal Weight Status

