



## Food craving frequency mediates the relationship between emotional eating and excess weight gain in pregnancy

Lauren E. Blau<sup>a,\*</sup>, Natalia C. Orloff<sup>a</sup>, Amy Flammer<sup>b</sup>, Carolyn Slatch<sup>b</sup>, Julia M. Hormes<sup>a,b</sup>

<sup>a</sup> University at Albany, State University of New York, United States of America

<sup>b</sup> Albany Medical College, United States of America

### ARTICLE INFO

#### Keywords:

Craving  
Emotional eating  
Pregnancy  
Gestational weight gain

### ABSTRACT

An estimated 50% of pregnancies in the U.S. are associated with maternal weight gain that exceeds Institute of Medicine recommendations. The numerous adverse consequences of obesity in gestation, delivery and the postpartum have been widely documented. The role of excess gestational weight gain (GWG) as a predictor of lifetime obesity risk in mothers and their children is also increasingly recognized. Cravings and negative affect are commonly cited triggers of overconsumption in pregnant women. We sought to examine the role of food craving frequency as a mediator in the relation between emotional eating and excess GWG. In this cross-sectional study, pregnant women ( $n = 113$ ) completed the Dutch Eating Behavior Questionnaire, a measure of “restrained,” “emotional,” and “external” eating styles, along with the Food Craving Inventory, which quantifies cravings for “high fat foods,” “fast food fats,” “carbohydrates/starches,” and “sweets.” Participants also reported on pre-pregnancy weight and height, and GWG at the time of survey completion. Data supported the hypothesized mediation model, with frequency of “high fat foods” cravings fully mediating the relationship between “emotional” eating and excess GWG (Sobel test  $z = 2.40$ ,  $p = .016$ ). This study addresses the striking dearth of research examining potentially modifiable psychosocial predictors of excess GWG. Future longitudinal research should examine if salient affective states trigger food cravings, thus placing pregnant women at increased risk of excess weight gain. Findings have implications for treatment interventions targeting excess GWG, suggesting a need to teach skills to help patients better manage low moods and cravings.

Gestational weight gain (GWG) has important health outcomes for both the mother and the child. Recent research has estimated the prevalence of excess gestational weight gain in the United States ranges from 38 to 54%, depending on the state (Deputy, Sharma, & Kim, 2015). According to Institute of Medicine (IOM) recommendations, pregnant women should gain weight based on their pre-pregnancy body mass index (BMI) as follows: 28–40 lbs for BMI in the “underweight” range ( $< 18.5$ ); 25–35 lbs for normal weight women (18.5–24.9); 15–25 lbs for women with pre-pregnancy overweight (25.0–29.9); and 11–20 lbs for women with pre-pregnancy obesity ( $\geq 30.0$ ) (Rasmussen & Yaktine, 2009). Weight gain is expected to be minimal in the first trimester, with recommended average weekly weight gain in the second and third trimesters ranging from about 0.65 to 1.0 pounds depending on pre-pregnancy BMI. Accordingly, guidelines recommend that caloric intake increase over the course of pregnancy, with no additional calories (i.e., above recommended pre-pregnancy daily intake) to be consumed during the first trimester, and a recommended increase of about 340 and 450 additional calories per day during the second and

third trimesters, respectively (Wolfram, 2017).

Excess GWG is associated with an elevated risk of a number of physical and psychological problems including, but not limited to, gestational diabetes mellitus, hypertension, preeclampsia, premature birth, body dissatisfaction, and failure to initiate breastfeeding (ADA, 2002; Galtier-Dereure, Boegner, & Bringer, 2000; Hilson, Rasmussen, & Kjolhede, 1997; Rasmussen & Yaktine, 2009; Stotland, Hopkins, & Caughey, 2004; Thorsdottir, Torfadottir, Birgisdottir, & Geirsson, 2002; Vahratian, Siega-Riz, Savitz, & Zhang, 2005). Excess weight is currently among the most common and costly high-risk obstetric conditions, with evidence suggesting an increased risk of cesarean deliveries and post-operative complications in mothers who gain in excess of these formal guidelines for GWG (Galtier-Dereure et al., 2000; Stotland et al., 2004). Excess GWG can also be detrimental to the health of the newborn child and has been identified as a strong predictor of macrosomia, large for gestational age neonates, and low Apgar scores (Gante, Amaral, Soares, & Almeida, 2015).

In addition to this host of immediate adverse consequences, excess

\* Corresponding author.

E-mail address: [lblau@albany.edu](mailto:lblau@albany.edu) (L.E. Blau).

<https://doi.org/10.1016/j.eatbeh.2018.09.004>

Received 27 February 2018; Received in revised form 20 August 2018; Accepted 14 September 2018

Available online 20 September 2018

1471-0153/© 2018 Elsevier Ltd. All rights reserved.

GWG is predictive of obesity risk across the lifespan. It increases the likelihood of maternal postpartum weight retention and obesity later in life (Mamun et al., 2010; Siega-Riz et al., 2009). Pre-pregnancy maternal weight and GWG are also associated with increased offspring body mass index (BMI) at three years of age (Oken, Taveras, Kleinman, Rich-Edwards, & Gillman, 2007; Stamnes Koepf et al., 2012). This impact has been shown to continue into adolescence (Laitinen et al., 2012; Oken, Rifas-Shiman, Field, Frazier, & Gillman, 2010), increasing the likelihood of cardiovascular disease and adverse metabolic health outcomes throughout the offspring's lifetime (Gaillard, 2015).

There has been a proliferation of studies documenting the adverse consequences of excess GWG in recent years. However, there remains a relative dearth of research specifically designed to identify risk factors for excess GWG that could serve as targets for more effective prevention and treatment interventions. Numerous published studies test the efficacy of interventions targeting diet and physical activity as a means of promoting healthy gestational weight gain (Hill, Skouteris, Fuller-Tyszkiewicz, & McPhie, 2016; Liu, Wilcox, Whitaker, Blake, & Addy, 2015; McGivern et al., 2015; Olson, Strawderman, & Reed, 2004; Polley, Wing, & Sims, 2002; Skouteris et al., 2010). Unfortunately, systematic reviews suggest that these studies demonstrate, at best, small effects only in specific BMI subgroups of pregnant women (Skouteris et al., 2010). For example, the “Fit for Delivery” program, leading in the prevention of excess GWG, is effective in normal weight women, but has no significant impact on GWG in overweight or obese women (Phelan et al., 2011). There is thus a strong need for research to identify modifiable predictors of excess GWG that can be targeted by intervention efforts.

As many as 70% of women experience cravings or strong, irresistible urges for specific foods at some point in pregnancy (Bayley, Dye, Jones, DeBono, & Hill, 2002b; Fairburn, Stein, & Jones, 1992; Flaxman & Sherman, 2000; Hormes & Rozin, 2010; Pope, Skinner, & Carruth, 1992), with cravings for “sweets” and “carbohydrates” being most commonly endorsed (Orloff & Hormes, 2014). Preliminary research suggests that food craving frequency increases markedly in the second trimester of gestation and drops off subsequently (Bayley, Dye, Jones, DeBono, & Hill, 2002a; Harries & Hughes, 1958; Pope et al., 1992). Early on in pregnancy, women tend to endorse cravings for savory substances (Belzer, Smulian, Lu, & Tepper, 2010), with urges for sweets reaching peak intensity during the second trimester (Bowen, 1992), and cravings for salty substances emerging later in pregnancy (Bowen, 1992; Crystal, Bowen, & Bernstein, 1999; Skinner, Pope, & Carruth, 1998). Food cravings are one of the most significant barriers to healthy eating in pregnant women (Goodrich, Cregger, Wilcox, & Liu, 2013), and craving frequency was previously found to account for as much as one third of the variance in excess weight gain in pregnancy (Orloff et al., 2016).

There is little evidence to support a role of hormonal fluctuations, nutritional deficits or needs of the developing fetus, or pharmacologically active ingredients in the emergence of food cravings, including in pregnancy (Orloff & Hormes, 2014). Instead, cravings are now widely conceptualized as cognitively motivated states. For example, the Elaborated Intrusion (EI) Theory of Desire views cravings as a product of a two-step process: (1) external (e.g., the smell of a favorite treat) or internal (e.g., boredom or anxiety) cues trigger an automatic thought about the target of the craving and (2) the automatic thought is actively elaborated upon (e.g., thinking about the last time the craved food was consumed, picturing its appearance and texture, and making plans to obtain it in the future) (Kavanagh, Andrade, & May, 2005). Research in non-pregnant populations is consistent with EI Theory. For example, prior work suggests that food craving mediates the effect of external eating (i.e., eating in response to cues in the environment) on BMI (Burton, Smit, & Lightowler, 2007).

In addition to cravings, pregnant women also commonly identify both emotional and social factors as influencing their eating behavior (Paterson, Hay-Smith, Trehan, Herbison, & Howarth, 2016). For

example, both general and pregnancy-related stress are associated with unhealthy eating habits and emotional eating (i.e., eating in response to internal, affective states) during gestation (Chang, Nitzke, Guilford, Adair, & Hazard, 2008; Lobel et al., 2008). Worry over weight gain was found to be associated with higher GWG and greater likelihood of high infant weight (Swann et al., 2009). To the best of our knowledge, the predictions of EI Theory have not yet been tested empirically in pregnant women.

Three types of eating patterns or “styles” – quantified by the widely used and well-validated Dutch Eating Behavior Questionnaire – have emerged as significantly related to weight gain in the general population: external (eating in response to an external food cue), emotional (eating in response to an emotion or mood state), and restrained (restrictive eating) (Burton et al., 2007; Van Strien, Frijters, Bergers, & Defares, 1986). This study was designed to examine the relationships between these specific eating styles, food cravings, and excess weight gain in pregnancy, with the goal of laying the foundation for future research to identify suitable targets for promoting healthy gestational weight. Based on prior findings, and consistent with the predictions of EI Theory, we hypothesized that craving frequency mediates the relationship between emotional and external eating styles and excess GWG.

## 1. Method

All methods were reviewed and approved by the local Institutional Review Board. Respondents were informed of the nature and purpose of the research and consented prior to the completion of questionnaires.

### 1.1. Participants and design

Participants in this cross-sectional study were 113 pregnant women (mean age  $M = 30.70$ ,  $SD = 4.65$ ) recruited at a local academic medical center (54.9%,  $n = 62$ ) and online (45.1%,  $n = 51$ ). Participants self-identified as white (72.6%,  $n = 82$ ), black/African-American (17.7%,  $n = 20$ ), Asian (8.0%,  $n = 9$ ), and Hispanic/Latino (6.2%,  $n = 7$ ). Inclusion criteria included being 18 years or older, proficient in English, and enrolled in routine prenatal care. Online participants were recruited on social media sites and were not given any incentives for participation. Recruitment at the hospital was conducted as part of an ongoing longitudinal study of eating behaviors and psychological health of pregnant women and women were given gift cards upon completion of the survey.

Average weeks of gestation at survey completion was 24.05 ( $SD = 8.84$ ). Half of all respondents (49.1%,  $n = 54$ ) were in the second trimester of pregnancy at the time of survey completion ( $M = 20.70$  weeks of gestation,  $SD = 3.98$ ), 39.1% ( $n = 43$ ) were in the third trimester ( $M = 20.70$ ,  $SD = 3.98$  weeks of gestation), and 11.8% ( $n = 13$ ) completed the questionnaire during the first trimester ( $M = 8.62$  week of gestation,  $SD = 2.96$ ). At the time of survey completion, almost half of participants reported pre-pregnancy BMI in the under- or normal weight range (i.e., BMI < 24.9, 46.1%,  $n = 47$ ), 22.5% ( $n = 23$ ) reported body mass in the overweight range (i.e., BMI 25.0–29.9), and 31.4% ( $n = 32$ ) endorsed pre-pregnancy obesity (i.e., BMI > 30.0). There were no statistically significant differences in FCI craving “frequency” or frequency of “giving in” to cravings by trimester ( $p = .52$ , 0.74, respectively) or by pre-pregnancy BMI ( $p = .94$ , 0.62). We therefore combined all respondents in subsequent analyses.

### 1.2. Measures

#### 1.2.1. Dutch Eating Behavior Questionnaire (DEBQ)

The DEBQ is a 33-item self-report measure that quantifies “emotional” (Cronbach's  $\alpha = 0.96$  in the present sample), “external” (Cronbach's  $\alpha = 0.88$ ), and “restrained” (Cronbach's  $\alpha = 0.91$ ) eating styles (Van Strien et al., 1986). “Emotional” eating refers to excessive

Download English Version:

<https://daneshyari.com/en/article/11004479>

Download Persian Version:

<https://daneshyari.com/article/11004479>

[Daneshyari.com](https://daneshyari.com)