Psychosocial predictors of gestational weight gain and the role of mindfulness

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ABSTRACT

Objective: To identify the psychosocial factors (i.e., stress, anxiety, depression, social support) that are associated with gestational weight gain (GWG) and the relationship of mindfulness with GWG during each trimester of pregnancy.

Design: In this cross-sectional study, an online survey that assessed physical and mental health and wellness practices was administered to pregnant women.

Participants: Pregnant women ≥ 8 weeks gestation, ≥ 18 years old, and could read and write in English.

Measurement and findings: Women who responded to the survey (N=1,073) were on average 28.7 ± 4.6 years old. Findings from a regression analysis suggest that increased levels of depression may be predictive of increased GWG in the second trimester and decreased levels of mindfulness may be predictive of increased GWG in the first trimester. Anxiety, stress, and overall social support were not associated with GWG in any trimester.

Key conclusions: Mindfulness-based strategies (e.g., yoga) may have the potential to manage both depression and excessive GWG and may be beneficial for and preferred by pregnant women. More research is warranted to determine clear relationships between psychosocial health, mindfulness, and GWG.

Implications for practice: Health care providers are encouraged to screen for depression in early pregnancy (i.e., first or second trimester) and provide resources to manage symptoms of depression and GWG to promote optimal birth outcomes. Health care providers may want to counsel patients on how to manage depression and/or GWG by suggesting mindfulness-based approaches.

Introduction

Over 50% of women in the U.S. exceed the 2009 Institute of Medicine's (IOM) gestational weight gain (GWG) recommendations for healthy weight gain during pregnancy (Deputy et al., 2015; Yaktine and Rasmussen, 2009). Excessive GWG contributes to negative maternal and fetal health outcomes. For the mother, excessive GWG increases the likelihood of post-partum weight retention which may contribute to the future development of obesity and/or metabolic dysfunction, and increases the risk of negative labor and birth outcomes (e.g., cesarean delivery, labor induction, gestational diabetes) (Guelinckx et al., 2008; Leddy et al., 2008; Rooney and Schaubinger, 2002; Walsh et al., 2014). For the fetus, excessive GWG may increase the risk for congenital abnormalities (Leddy et al., 2008; Lee and Koren, 2010) and obesity/metabolic dysfunction later in life (e.g., childhood, adolescence, adulthood) (Langer, 2008; Leddy et al., 2008; Walsh et al., 2014).

Additionally, excessive GWG adversely affects breastfeeding initiation and duration (Hilson et al., 2006), behaviors that have been shown in literature to attenuate post-partum weight retention (Kac et al., 2004) and childhood obesity (Adamo et al., 2013; Goldfield et al., 2006). One study reported that children of pregnant women who experience excessive GWG are four times more likely to be obese by age three (Oken et al., 2007).

Behavioral interventions aimed at reducing excessive GWG in pregnant women typically target improving diet and physical activity habits but many have shown limited efficacy and inconsistent findings (Skouteris et al., 2010). A review by Skouteris et al. (2010) found that interventions focused on only improving nutrition habits or physical activity were often not successful in reducing excessive GWG alone. Given this, researchers and the IOM suggest that a combination of behavioral and psychosocial factors (i.e., stress, anxiety, depression, social support) should be considered when designing interventions to...
help pregnant women manage psychosocial health and behaviors that contribute to excessive GWG. The relationship between mindfulness and excessive GWG warrants further exploration. Therefore, the purpose of this study was to identify the psychosocial factors (i.e., stress, anxiety, depression, social support) that are associated with GWG during each trimester of pregnancy. A secondary purpose of this study was to identify associations of mindfulness with GWG during each trimester of pregnancy. We hypothesize that increased levels of stress, anxiety, and depression and decreased levels of social support and mindfulness will be associated with increased levels of GWG.

**Material and methods**

The Institutional Review Board of a large university in the southwestern United States approved this study.

**Participant selection**

Women were included in the study if they were: 1) currently pregnant (≥28-weeks gestation), 2) 18 years and older, 3) a US resident, and 4) able to read and write in English.

**Procedures**

This was a descriptive, cross-sectional study using a purposive non-probabilistic sample. Research staff contacted medical centers (e.g., WIC Clinics, public hospitals, pregnancy centers), mother and baby retail stores, and pregnancy websites (e.g., babycenter.com) and asked them to advertise the study by posting provided recruitment information (e.g., flyers, blurbs) to their social media sites and/or websites, emailing listservs, or by displaying flyers at their location. Local and national organizations agreeing to advertise for the study were sent recruitment information via email. Recruitment for the study occurred between April and June of 2015 via social media (e.g., Facebook, Twitter), listservs, and websites that cater to women who are pregnant.

Women who were interested in participating were asked to complete an online survey that assessed their general physical and psychosocial health during pregnancy as well as their perceptions, uses of, and interests in complementary health approaches (e.g., yoga, meditation, mindfulness). After women were confirmed eligible to participate, they were informed of how the data would be used, confidentiality of their responses, and that completion of the survey indicated their consent to be in the study. The online survey was labeled the Pregnancy and Wellness Survey (PAWS) and was implemented using Qualtrics (Provo, Utah), a web-based survey tool. The PAWS took women approximately 30 minutes to complete. Participants who completed the PAWS were offered a $10 Target gift card to compensate for their time participating in the study (limited to the first 350 due to funding). The remaining participants were entered into a drawing to win one Jawbone UP Band or Fitbit Flex (winner’s choice) as compensation for their time.

**Survey**

The PAWS consisted of two parts. Part 1 includes multiple reliable and valid scales to describe general physical health (e.g., amount of GWG in each trimester), behavioral factors (e.g., physical activity, diet), psychosocial factors (i.e., stress, anxiety, depression, social support) and mindfulness. A detailed description of the scales are below. PAWS Part 2 includes investigator-developed questions to identify the wellness practices (i.e., perceptions, uses of, interests in complementary health approaches) of pregnant women. More information and data collected from the PAWS Part Two is reported elsewhere (Matthews et al., 2016). Demographics were collected at the end of PAWS Part 2.
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