

# Feasibility and Potential Benefits of a Self-Monitoring Enhanced Lifestyle Intervention to Prevent Excessive Gestational Weight Gain in Women Who Are Overweight and Obese

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## ABSTRACT

**Objective:** To evaluate the feasibility and potential benefits of a self-monitoring enhanced lifestyle intervention to prevent excessive gestational weight gain in women who are overweight and obese.

**Design:** A one-group, prospective design involving 8 weeks of healthy eating and physical activity and self-monitoring of weight, nutrition, and walking.

**Setting:** Recruitment and enrollment in prenatal clinics and self-monitoring at home.

**Participants:** Women ( $N = 22$ ) at 14 to 24 gestational weeks, with body mass indexes of 25 to 40 kg/m<sup>2</sup>, without Q1 medical and psychiatric diseases that affected cognition or walking.

**Methods:** Participants self-monitored weight and nutrition intake for the first 4 weeks and weight, nutrition intake, and walking in the second 4 weeks. Feasibility data were collected weekly (attrition, self-monitoring adherence, program safety, participant feedback) or at the end of Week 8 (satisfaction ratings). Potential benefits included weight, nutrition, and physical activity, measured at baseline (T1), the end of Week 4 (T2), or the end of Week 8 (T3).

**Results:** Attrition rates were 27.3% by T2 and 40.9% by T3. Adherence to log return was 100%. No adverse effects were noted, but food craving was persistent, and stress levels were high. Program satisfaction was high. Trends for improved activity and reduced *trans* fat consumption were seen.

**Conclusion:** Our findings indicate that the intervention is worthy of further development and testing with a randomized controlled trial.

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## Approximately 38% to 55% of pregnant women gain more pregnancy weight than recommended by the Institute of Medicine.

was designed to help pregnant women who are overweight and obese gain the IOM recommended amount of gestational weight. The purpose of this study was to evaluate the feasibility and potential benefits of the program.

### Literature Review

#### Lifestyle Behaviors and EGWG

Energy imbalance is the most common causal theory for EGWG. Increased total energy intake from diet and decreased energy expenditure from physical inactivity contribute to EGWG (Garner, Wardle, Poston, & Croker, 2011). Foods with high fat, animal lipids, high energy density, and low dietary fiber are associated with EGWG (Maple-Brown, Romen, Thomas, Presley, & Catalano, 2013; Olafsdottir, Skuladottir, Thorsdottir, Hauksson, & Steingrimsdottir, 2006). Physical activity often declines as gestational age increases (Fell, Joseph, Armson, & Dodds, 2009). To date, practice guidelines for EGWG prevention are aimed at decreasing energy intake or improving energy imbalance. For instance, the American College of Obstetricians and Gynecologists (2005) and the American Dietetic Association (2008) recommended that care providers offer EGWG prevention education and counseling to pregnant women so that they will engage in healthy eating and physical activity. Interventions designed to enhance adherence to the IOM's recommended weight gain in pregnant women often are focused on changes to lifestyle behaviors relative to nutrition, physical activity, or both (Garner et al., 2011).

#### Self-Monitoring of Lifestyle Behaviors

Lifestyle behavior change is a complex process. As many as 40 different behavior change strategies for healthy eating and physical activity have been identified in previous studies (Michie et al., 2011). Among them, self-monitoring with at least one of the other four self-regulatory strategies (prompt intention, specific goal setting, review of behavioral goals, and feedback) are significantly more effective than interventions without these strategies in changing lifestyle behaviors (effect size = .54 vs. .24 for healthy eating and .38 vs. .27 for physical activity; Bird et al., 2013; Michie, Abraham, Whittington, & McAteer, 2009). Among

nonpregnant adults who perform self-monitoring, increased frequency of self-monitoring of diet, physical activity, or weight is linked to eating less fat and getting more exercise and to decreased waist circumference and weight loss (Burke et al., 2012; Conroy et al., 2011; Kong et al., 2012). Self-monitoring may help lifestyle change because it increases self-awareness of specific behavior goals and empowers people to engage in self-evaluation and behavior modification (Donaldson, Fallows, & Morris, 2013). Self-monitoring of one health behavior also has the potential to improve other health behaviors (Johnson & Wardle, 2012).

#### Self-Monitoring of Lifestyle Behaviors and EGWG

To date, only a handful of researchers have incorporated self-monitoring in interventions to prevent EGWG. In two of those studies, self-monitoring of weight was used (Harrison, Lombard, & Teede, 2014; Jeffries, Shub, Walker, Hiscock, & Permezel, 2009); in two, self-monitoring of diet was used (Guelinckx, Devlieger, Mullie, & Vansant, 2010; Kinnunen et al., 2007); in one, self-monitoring of exercise was used (Hui et al., 2012); in one, self-monitoring of diet and physical activity was used (Mottola et al., 2010); and in three, self-monitoring of weight, diet, and physical activity was used (Olson, Strawderman, & Reed, 2004; Phelan et al., 2014; Rauh et al., 2013). These researchers adopted self-monitoring as an intervention component or as a data collection method. Many stated that self-monitoring was encouraged or prompted. Information on how to conduct self-monitoring and self-monitoring adherence data were not reported. In previous self-monitoring studies in nonpregnant adults who were overweight/obese, authors reported compliance rates of 22% to 72%, ranging from 6 weeks to 18 months of self-monitoring (Burke et al., 2012; Conroy et al., 2011; Donaldson et al., 2013; Hood, Corsica, Cvebgris, & Wyatt, 2013; Kong et al., 2012; Steinberg, Levine, Askew, Foley, & Bennett, 2013; Wing et al., 2006). Information on how pregnant women respond to and comply with performance of self-monitoring has not been well documented in the literature.

#### Study Purpose

The purpose of this study was to evaluate the Right Weight Program, an 8-week self-monitoring enhanced lifestyle intervention designed to help pregnant women who are obese or overweight achieve IOM recommended weight gain. Specific aims were to evaluate feasibility (attrition, self-monitoring adherence, program safety, program

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