Using Technology to Promote Postpartum Weight Loss in Urban, Low-Income Mothers: A Pilot Randomized Controlled Trial

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ABSTRACT

Objective: To examine the feasibility, acceptability, and initial efficacy of a technology-based weight loss intervention for urban, low-income mothers.

Methods: Eighteen obese, ethnic minority, socioeconomically disadvantaged mothers in the first year after childbirth were randomly assigned to either: 1) technology-based intervention, which included empirically supported behavior-change strategies, daily skills, and self-monitoring text messages with personalized feedback, biweekly counseling calls from a health coach, and access to a Facebook support group, or 2) usual-care control.

Results: After 14 weeks of treatment, the technology-based intervention participants had significantly greater weight loss (-2.9 ± 3.6 kg) than usual care (0.5 ± 2.3 kg; adjusted mean difference: -3.2 kg, 95% confidence interval -6.2 to -0.1 kg, $P = .04$). One-third of intervention participants (3 of 9) and no control participants lost > 5% of their initial body weight at follow up.

Conclusions and Implications: Results suggest the potential for using technology to deliver a postpartum weight loss intervention among low-income racial/ethnic minorities.

Key Words: postpartum, obesity, weight loss, technology, disparities, social media, health coach (*J Nutr Educ Behav*. 2014;46:610-615.)

INTRODUCTION

Obesity prevalence among women in the US has reached epidemic proportions,[1] with disproportionate rates among low-income and minority women. The childbearing period represents a critical life stage of heightened vulnerability for excess weight gain and new or persistent obesity,[2] especially among racial/ethnic minorities, who retain 2 to 3 times more weight after pregnancy than non-Hispanic white women.[2-8] These women may be especially disadvantaged, as they are the most likely to enter pregnancy overweight,[1] which is a strong risk factor for retaining a substantial amount of weight by the end of the first postpartum year.[2]

Efforts to reduce postpartum weight retention among low-income, racial/ethnic minorities in clinical trials have proven challenging. Four recent weight loss studies targeting these high-risk women suffered from poor intervention adherence, high attrition, and nonsignificant weight differences between intervention and control groups.[9-12] The challenge of keeping participants actively engaged in a postpartum weight loss intervention may be due to competing demands for mothers' time and energy (eg, child care, work, school responsibilities), making traditional, in-person weight control interventions targeting racial/ethnic minorities largely unsuccessful.

Text messaging and social media are innovative formats that may overcome many of these barriers.[13,14] Users can interact frequently and at their convenience, a pattern that facilitates engagement, retention, and delivers a high intervention dose—all at a low cost. These technologies have become ubiquitous, especially among young racial/ethnic minorities who are increasingly connected through their mobile devices,[15] yet no published studies have leveraged technology to support postpartum weight loss. The purpose of this pilot study was to evaluate the feasibility, acceptability, and initial short-term

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efficacy of a novel, technology-based behavioral weight control program (using text messaging, Facebook, and telephonic counseling sessions with a health coach) to promote postpartum weight loss among predominately obese, socioeconomically disadvantaged, ethnic minority women.

METHODS

Participants, Recruitment, and Randomization

In early 2013, women were recruited from the waiting rooms of 2 large outpatient practices (obstetrics, pediatrics), which served primarily Medicaid-insured patients in Philadelphia, PA. Eligibility criteria included: 1) age ≥ 18 years; 2) singleton infant delivered within the last 2 weeks to 12 months; 3) early pregnancy (first trimester) body mass index ≥ 25 kg/m^2 via prenatal records; 4) weight at enrollment that exceeded early pregnancy weight by at least 5 kg; 5) cell phone ownership with unlimited text messaging; and 6) member of Facebook. Exclusion criteria included current tobacco use and any history of cardiac, gastrointestinal, cognitive, or psychiatric disorders.

The Figure outlines study enrollment and retention flow. A total of 18 women completed a baseline visit, at which a trained research assistant measured body weight and height and administered a number of questionnaires assessing demographics, diet quality (using questions from the Dietary History Questionnaire II, focusing exclusively on weight-related behaviors such as soda, fruit drinks, chips, and fast- or fried-food consumption),[16] physical activity (via the International Physical Activity Questionnaire, which has fair agreement [$r = 0.36$] with accelerometer-determined physical activity in black subjects),[17,18] health literacy (using the short form of the Rapid Estimate of Adult Literacy in Medicine, which has moderate evidence for validity using the Wide Range Achievement Test-Revised as the standard [$r = 0.64$] and demonstrated reliability [Cronbach $\alpha = .91$]),[19] and mood (via the Edinburgh Postnatal Depression Scale, which has high sensitivity [86%] and specificity [78%] for all forms of depression when compared to diagnostic clinical interviews).[20] Similar self-report instruments have been used previously in other studies of pregnant and postpartum mothers with relationships found between these variables and weight-related outcomes.[21-23] Following completion of baseline assessments, participants were randomized 1:1 by computer-generated numbers in sealed envelopes to technology-based intervention (n = 9) or usual care (n = 9). The intervention was delivered for 14 weeks, after which participants in both treatment groups again completed in-person anthropometric measures and questionnaires assessing diet quality and physical activity, along with program satisfaction. Twenty dollars was provided to participants for attending each assessment. All participants gave written informed consent to take part in the study, which was approved by the Institutional Review Board at Temple University.

Treatment Groups

Technology-based intervention. Using the interactive obesity treatment approach as our guide,[24-27] the intervention (Healthy4Baby) was designed to create an energy deficit sufficient to produce weight loss by focusing on the modification of evidence-based, weight-related lifestyle behaviors. During our formative work, a set of 6 empirically supported weight-related behavior change strategies were identified and prioritized that were relevant to the patient population, could be communicated simply, and were easily self-monitored through text messaging.[28] The resulting set of weight-related behavior change strategies included (as provided to all participants): "Limit sugary drinks like juice and soda to no more than 1 per day," "Limit junk and high fat foods to no more than 1 per day," "Aim for 1,200–1,500 calories per day," "Walk 30 minutes or 5,000 steps every day," "Sleep at least 7 hours per day," "Weigh yourself weekly." Strategies were implemented one at a time, for 2 to 4 weeks, after a problem-solving session with a bachelor's-level health coach by phone. Participants were encouraged to set personal goals around each of the 6 behavioral strategies; for example, if a participant was drinking 4 cups of sugary drinks a day at the start of the program, she would be asked by her coach to set a realistic goal around changing her sugary drink consumption, which might have been to cut her drink consumption in half. Mothers who were breastfeeding were encouraged to set caloric goals at or above 1,800 calories per day. The health coach was trained in methods of behavioral weight control and prioritized the order by which each of the strategies was executed (based on participant weight loss progress and preference). Calls were 15 minutes in length and conducted
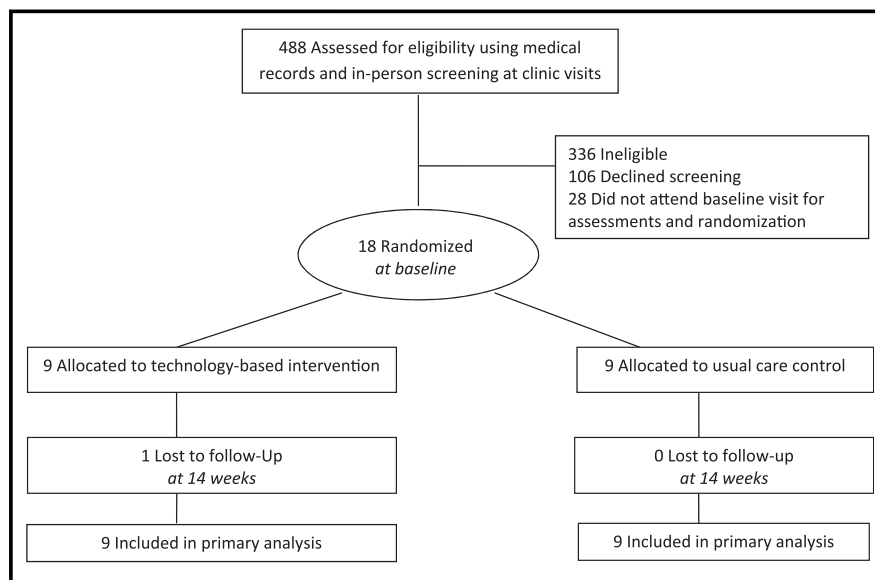

488 Assessed for eligibility using medical records and in-person screening at clinic visits

336 Ineligible
106 Declined screening
28 Did not attend baseline visit for assessments and randomization

18 Randomized
at baseline

9 Allocated to technology-based intervention

9 Allocated to usual care control

1 Lost to follow-Up
at 14 weeks

0 Lost to follow-up
at 14 weeks

9 Included in primary analysis

9 Included in primary analysis

Figure. Flowchart for enrollment, randomization, and follow-up of study participants.