Research Article

Design and Outcomes of a *Mothers In Motion* Behavioral Intervention Pilot Study

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ABSTRACT

Objective: This paper describes the design and findings of a pilot *Mothers In Motion* (P-*MIM*) program.

Design: A randomized controlled trial that collected data via telephone interviews and finger stick at 3 time points: baseline and 2 and 8 months post-intervention.

Setting: Three Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) sites in southern Michigan.

Participants: One hundred and twenty nine overweight and obese African-American and white mothers, 18-34 years old.

Intervention: The 10-week, theory-based, culturally sensitive intervention messages were delivered via a series of 5 chapters on a DVD and complemented by 5 peer support group teleconferences.

Main Outcome Measures: Dietary fat, fruit, and vegetable intake; physical activity; stress; feelings; body weight; and blood glucose.

Analysis: General linear mixed model was applied to assess treatment effects across 2 and 8 months post-intervention.

Results: No significant effect sizes were found in primary and secondary outcome variables at 2 and 8 months post-intervention. However, changes in body weight and blood glucose showed apparent trends consistent with the study's hypotheses.

Conclusions and Implications: The P-*MIM* showed promise for preventing weight gain in low-income overweight and obese women. However, a larger experimental trial is warranted to determine the effectiveness of this intervention.

Key Words: diet, physical activity, stress management, low-income women, prevention of weight gain (*J Nutr Educ Behav*. 2010;42:S11-S21.)

INTRODUCTION

In the United States (US), overweight and obese women of childbearing age, especially those with low incomes, are at a risk of major weight gain.[1,2] Nearly three-quarters (74%) of African American and almost half (46%) of white women 20-39 years old are overweight or obese.[3] Overweight and obesity are associated with weight retention and weight gain during the postpartum period.[1,4] For example, overweight and obese low-income women in New York state were found to retain about 5 pounds more of the weight they gained during pregnancy than low-income women with normal or low body mass index (BMI).[5] A Texas study reported that loss of excess weight gained during pregnancy reached an early plateau (2-3 weeks postpartum) in an ethnically and racially mixed group of 26 low-income women who were mostly overweight or obese.[6]

Low-income women's high rates of overweight and weight gain have been strongly associated with poor diet and physical inactivity,[7-9] which may both be exacerbated by stress.[10] During periods of high stress in their daily lives, these mothers experienced the most difficulty in following nutrition and physical activity recommendations.[10-13] To cope with stress, some women engage in emotional eating and increase their intake of energy-dense food, for example, candy and potato chips.[10,14,15] Therefore, health promotion programs aimed at prevention of further weight gain of low-income women of childbearing age should incorporate stress management. The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is an important community-based setting for this type of intervention. The WIC program is a federally funded program that provides nutrition consultation and other services to low-income pregnant women, new mothers, and

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young children (< 5 years). In 2004, more than 8.5 million low-income women and young children received benefits from WIC.[16]

Researchers have used interactive CD-ROMs to deliver nutrition education and physical activity information to WIC mothers in WIC clinics[17-20] and to individuals with diabetes.[21] Studies using a single dose of an intervention to WIC mothers have found significant improvement in nutrition knowledge,[18-20] attitudes,[19,20] and self-efficacy,[18] but not dietary intake behavior changes.[18] However, a study using a combination of interactive CD-ROM and individual telephone consultation found significantly reduced dietary fat intake, increased fruit and vegetable intake, and increased physical activity.[21] These studies suggest that repeated contact and a combination of these modes might be needed to effectively change behaviors. However, repeated contact with interactive CD-ROM in WIC clinics is not feasible.[18] An alternative is for the participant to view a DVD with equipment (a television and a DVD player) in the participant's home, since most American households have a television (99%) and use a DVD player (80%).[22]

Interventions that use peer support group teleconferences (PSGTs) have resulted in significant gains in coping, support satisfaction, perceived support and information,[23-25] and decreased feelings of isolation and loneliness.[24,26] The teleconference environment is comfortable and convenient, provides privacy, is readily accessible without transportation, and can increase participation.[27,28] Also, group intervention can be effective because it provides empathy, social support, and a healthful dose of competition.[29] However, the implementation of PSGT has not been documented in low-income overweight and obese mothers or in similar populations for healthful eating or physical activity interventions.

Based on literature review and our previous formative research with the target audience (described later), we chose to deliver intervention messages via a DVD and PSGTs. Since the feasibility of combining these modes of intervention has not been documented for this target audience, we piloted the intervention. This paper describes design and results of the pilot *Mothers In Motion* (P-*MIM*) program. This paper also discusses challenges and lessons learned in developing a culturally sensitive DVD that featured peers who were trained in eliciting healthful lifestyle behavioral changes from the target audience.

METHODS

Overview of the P-*MIM* Program

The *MIM* aims to prevent weight gain in low-income overweight and obese mothers 18-34 years old by promoting healthful eating (decreased fat intake and increased fruit and vegetable intake), physical activity, and stress management. This P-*MIM* was a 2-year, community-based, randomized controlled trial. This intervention integrated cultural preferences of overweight and obese African American and white WIC mothers and contextual issues, identified through our formative research,[10] with principles of Social Cognitive Theory (SCT).[30] The 10-week intervention delivered theory-based, culturally sensitive intervention messages via a series of 5 chapters on a DVD (10-15 minutes/chapter) complemented by 5 PSGTs (30-minutes/PSGT) at alternate weeks. Intervention participants viewed the DVD that featured peers from the target audience at home and participated in PSGTs at convenient locations led by WIC educators.

Community Partnership

Partnerships for the P-*MIM* program were developed over a 2-year period. With assistance from the State of Michigan WIC, we contacted 11 local WIC programs that are within 85 miles of Michigan State University. Six programs collaborated in formative research, and 3 WIC programs participated in this pilot. These 3 collaborating WIC programs comprise predominantly African Americans and whites and are located in urban and suburban areas.

Community Advisory Group

A WIC coordinator from each of 3 participating counties and a nutrition consultant from the State of Michigan WIC served on the community advisory group. The purposes of the community advisory group were to (1) select, plan, and review components and topics of intervention; (2) collaborate to plan and implement recruitment, intervention, and data collection; and (3) support and maintain progress of the intervention program by teleconference as often as necessary. This group also reviewed the first and second rough-cuts of the DVD and provided suggestions for revision to ensure that the DVD was culturally sensitive to the target audience.

Peer Advisory Group

The peer advisory group consisted of 9 overweight and obese WIC mothers 18-34 years old (5 African-Americans and 4 whites). They were recruited from one of the collaborating WIC programs via personal invitation. A predetermined set of screening questions was used to screen potential members for necessary attributes such as verbal articulation skills. The peer advisors reviewed the first and second rough-cuts of the DVD and gave suggestions for revision to ensure that the DVD was culturally sensitive to the target audience.

Intervention Development

Formative research. Formative research was conducted prior to the development of the P-*MIM* to (1) explore barriers to and motivating factors for prevention of weight gain; (2) identify key concepts for the DVD; (3) identify culturally sensitive ways to make the intervention and messages relevant and appropriate for the target audience; and (4) to identify facilitators of recruitment and active participation. Participants were overweight and obese African-American and white WIC mothers 18-35 years old. Design, sampling, formative research procedures, and results related the first objective have been published elsewhere.[10]

The focus group participants said that they favored a DVD that could be viewed at home as a conduit for educational messages. The most frequently requested topics included healthful eating, physical activity,

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