



Madres para la Salud: Design of a theory-based intervention for postpartum Latinas

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ABSTRACT

Background: Weight gain in young women suggests that childbearing may be an important contributor to the development of obesity in women. Depressive symptoms can interfere with resumption of normal activity levels following childbirth or with the initiation of or adherence to physical activity programs essential for losing pregnancy weight. Depression symptoms may function directly to promote weight gain through a physiologic mechanism. Obesity and its related insulin resistance may contribute to depressed mood physiologically. Although physical activity has well-established beneficial effects on weight management and depression, women tend to under participate in physical activity during childbearing years. Further, the mechanisms underpinning the interplay of overweight, obesity, physical activity, depression, and inflammatory processes are not clearly explained.

Objectives: This report describes the theoretical rationale, design considerations, and cultural relevance for “*Madres para la Salud*” [Mothers for Health].

Design and methods: *Madres para la Salud* is a 12 month prospective, randomized controlled trial exploring the effectiveness of a culturally specific intervention using “bouts” of physical activity to effect changes in body fat, systemic and fat tissue inflammation, and postpartum depression symptoms in sedentary postpartum Latinas.

Summary: The significance and innovation of *Madres para la Salud* includes use of a theory-driven approach to intervention, specification and cultural relevance of a social support intervention, use of a *Promotora* model to incorporate cultural approaches, use of objective measures of physical activity in post partum Latinas women, and the examination of biomarkers indicative of cardiovascular risk related to physical activity behaviors in postpartum Latinas.

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1. Introduction

Cross-sectional and retrospective examinations of weight gain in young women suggest that childbearing may be an

important contributor to the development of obesity in women [1]. Failure to lose pregnancy weight following childbirth contributes to obesity in this subgroup, with subsequent impact on obesity-related risk and illness [2,3]. For many women, the postpartum period is characterized by a decrease in physical activity and an increase in the likelihood of postpartum depression (PPD) symptoms. Additionally, depressive symptoms can interfere with resumption of normal activity levels following childbirth or with the initiation of or adherence to physical activity programs essential for losing pregnancy weight [4].

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Factors that promote physical activity during pregnancy and postpartum among Latinas include safe physical activities conducted in a socially acceptable context [5]. Social support is the most commonly reported correlate to higher levels of physical activity for Latinas. In pregnant and postpartum Mexican-born Latinas, social support is viewed as essential to the maintenance of physical activity, especially when compared with women of other ethnic groups.

In many studies, levels of inflammatory markers are positively related to a decrease in fat estimates, such as BMI. In fact, one postulated mechanism by which physical activity and/or weight loss reduces circulating levels of the inflammatory markers is through a decrease in levels of cytokines produced by fat tissue [6]. Research has shown that depressed adult patients have higher levels of IL-6 and tumor necrosis factor alpha (TNF- α) when compared to normal controls [7]. In turn, obesity and its related insulin resistance may contribute to depressed mood physiologically as well as psychologically. Notably, mothers with PPD had higher levels of inflammation than nondepressed mothers [8].

Pregnancy-associated weight gain and failure to lose weight after birth contributes to the development of overweight and obesity in Latinas, who have prevalence rates exceeding 70%. This is of concern for Latinas because of their increasing obesity rates [9] and increased opportunity for weight gain associated with childbearing [10]. Although physical activity has well-established beneficial effects on weight management and depression, women tend to under participate or decrease physical activity during childbearing years. Further, the mechanisms underpinning the interplay of overweight, obesity, physical activity, and subsequent risk such as inflammatory processes or PPD are not clear. The purpose of this report is to describe the development and methodology of the intervention for *Madres para la Salud* [Mothers for Health], a randomized controlled trial (RCT) designed to increase physical activity among overweight or obese postpartum Latinas.

2. Methods

This study was funded by the National Institutes of Health, National Institute of Nursing Research NIH/NINR 1 R01NR010356-01A2, *Madres para la Salud* (Mothers for Health). The study protocol was approved by the Arizona State University Institutional Review Board and the Maricopa Integrated Health System Human Subjects Review Board.

2.1. Study aims

The study aims are to: 1) Examine the effectiveness of the *Madres para la Salud* intervention for reducing the distal outcomes in: (a) body fat (b) systemic and fat tissue inflammation and (c) PPD symptoms among postpartum Latinas compared with an attention control group, at 6 and 12 months, after controlling for dietary intake; 2) Test whether the theoretical mediators, intermediate outcomes, of social support and walking, and environmental factor moderators, affect changes in body fat; systemic and fat tissue inflammation, and PPD symptoms among postpartum Latinas at 6 and 12 months; and 3) Determine the relationship between the immediate outcome of walking (minutes walked per week)

and change in the distal outcomes of: (a) body fat (b) systemic and fat tissue inflammation and (c) PPD symptoms.

3. Theoretical rationale

Seminal work of Bowlby [11] and attachment theory, and Durkheim's [12] work on the intricate relationship between society and health underpins social support as a conceptual framework. Social support is the extent and conditions under which ties are supportive. Barrera et al. [13] refers to the concept of social support as 'elastic' in describing the various definitions and characteristics, including interpersonal ties and relationships, actions involved in resource provision, and affective responses to support received. Social support in this study is defined as aid and assistance exchanged through relationships and interpersonal transactions, and includes four types: (a) emotional, such as expressions of empathy, trust, caring, (b) instrumental, including tangible aid or service, (c) appraisal, including information that is used for self evaluation, and (d) informational, including advice, suggestions, and information [14].

Social support influences physical health outcomes that include the pathways of 1) behavioral processes – health behaviors – and adherence to medical regimens and behaviors that facilitate health behaviors such as exercise and 2) psychological processes that are linked to appraisals, moods or emotions [15]. Few examinations of social support have addressed the cultural specificity or cultural relevance of the framework in diverse ethnic, particularly Latinas. Recent focus group research that included Latinas from Texas shows that members of four underserved populations are likely to respond to strategies that increase social support for physical activity and improve access to venues where women can be physically active [16]. Qualitative methods have further strengthened the rationale for social support as a theoretical and culturally proficient construct. Keller and colleagues [17] analyzed focus group data, photo elicitation, and qualitative interviews with Mexican American women in community health settings to identify specific parameters contributing to: a) walking locals, b) sociocultural resources used in walking, and c) specific culture bound supports used in walking and physical activity [16,18,19]. Using these conceptualizations, we sought to identify culturally relevant activities, behaviors, or materials that would tailor each type of support specifically for the postpartum Latinas in our study. This approach is a unique addition to the literature because few studies have addressed the cultural specificity of social support for diverse groups.

The “*Madres para la Salud*” [Mothers for Health] (Fig. 1) intervention model illustrates the hypothesized mechanisms through which the culturally relevant social support intervention positively influences regular physical activity and the resulting improvement in body composition, inflammatory markers, and PPD symptoms. One moderator, two mediators, and one confounding variable are considered. Environmental factors (e.g., safety, sidewalks, and traffic) are hypothesized to moderate the effect of the intervention by influencing the number of minutes walked per week, while social support from family and friends and the dose–response of walking in minutes per week mediate the effect of the intervention on the outcomes of body fat, systemic and fat tissue inflammation, and PPD symptoms.

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