Research Article

Associations Between Preterm Birth, Low Birth Weight, and Postpartum Health in a Predominantly Hispanic WIC Population

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ABSTRACT

Objective: To describe the postpartum health of predominantly Hispanic participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and identify how health characteristics differ between mothers who delivered preterm or low birth weight infants and those who did not.

Design: Cross-sectional survey among postpartum WIC mothers.

Setting: Los Angeles and Orange Counties, CA.

Participants: WIC participants within 1 year of delivery (n = 1,420).

Main Outcome Measures: Postpartum health behaviors, health characteristics, and birth spacing intentions and behaviors.

Analysis: Frequencies of health characteristics were estimated using analyses with sample weights. Differences were assessed with chi-square and Fisher exact tests with Bonferroni correction for pairs of tests.

Results: Many women exhibited postpartum risk factors for future adverse health events, including overweight or obesity (62.3%), depressive symptoms (27.5%), and no folic acid supplementation (65.5%). Most characteristics did not differ significantly ($P > .025$) between mothers of preterm infants and full-term infants or between mothers of low birth weight and normal birth weight infants.

Conclusions and Implications: Despite few differences between postpartum characteristics of mothers who delivered preterm or low birth weight infants and those who did not, a high percentage of mothers had risk factors that need to be addressed. Current postpartum educational activities of WIC programs should be evaluated and shared.

Key Words: postpartum period, postnatal care, premature birth, low birth weight (*J Nutr Educ Behav*. 2014;46:499-505.)

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INTRODUCTION

The behaviors and health of a woman after she gives birth affect the long-term health of herself, her infant, and her future children.[1-4] The time after delivery may best be conceptualized as the interconception period, a term emphasizing that a woman's pregnancies fall along the continuum of her life course. Interconception care has received increasing attention lately because improvements in prenatal care have not decreased low birth weight or prematurity in infants, or obesity and diabetes in mothers and children.[3-7] On the contrary, these health conditions are more common now than they were in 1990.[5-7] Low-income women in particular are at elevated risk of preterm delivery and low birth weight, which puts them at increased risk of these birth outcomes in future pregnancies.[4,8-11] Low-income mothers are also less likely to receive adequate preconception and interconception care.[8]

Regarded in the framework of the social ecological model,[12] interconception health is embedded in a social environment, with multiple levels influencing women's health-related behaviors. The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) has the potential to influence low-income women at multiple levels—from regular interpersonal interactions to effecting national policy changes. These features put WIC in an ideal position to educate, monitor, support, and refer low-income women during the interconception period.

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To inform WIC's efforts, however, more information is needed on the postpartum health of its participants. Current understanding of women's health behaviors and characteristics during the interconception period is fragmented and incomplete.[4,8,10,11] Although the importance of interconception health is well-established for women with adverse birth outcomes, little is known about how these mothers may differ from other mothers during the postpartum period.[4,8] In addition, WIC and other health educators in many parts of the US are increasingly serving women of Hispanic origin; yet, research on interconception health and birth outcomes in Hispanic women has been limited.[10,13,14] More evidence is needed to gain a comprehensive understanding of women's health behaviors and characteristics after delivery, particularly among low-income Hispanic women who have delivered preterm or low birth weight infants.

The objectives of this study were to (1) describe the postpartum health behaviors and characteristics of predominantly Hispanic WIC participants in Southern California and (2) compare these characteristics between women who gave birth to preterm or low birth weight infants and those who did not. This study focused on postpartum characteristics known or suspected to be risk factors for preterm delivery and/or low birth weight, which were hypothesized to be more prevalent in women with preterm or low birth weight infants.[4,10,11,15]

METHODS

Study Population and Sampling Design

The study population consisted of postpartum mothers participating in WIC in Southern California. Two samples of women were collected. The first was a random, cross-sectional sample of postpartum WIC mothers in Los Angeles and Orange Counties. The second was a random, augment sample of postpartum WIC mothers in these counties who, according to WIC records, gave birth to preterm infants. Participants in the 2 samples were compared and duplicates removed.

Contact by telephone was attempted for 4,309 women, including 2,974 women for the cross-sectional sample and 1,335 for the augment sample. Up to 16 attempts were made to reach and interview participants. Of the women contacted, 225 were ineligible for the study because they did not speak English or Spanish, were currently pregnant, or did not give birth within the past year. A total of 1,493 eligible subjects completed the interview, including 1,026 women in the cross-sectional sample and 467 in the augment sample. Of those who completed the interview, the researchers excluded 73 from analyses because they had multiple births within the past year, and preterm delivery and low birth weight are more common and have different etiologies when there are multiple births. A total of 1,420 participants were included in the final analyses.

The survey questionnaire was administered using a computer-assisted telephone interviewing system and took approximately 20 minutes to complete. All interviews were completed between July 30 and August 17, 2010. This research was approved by the Ethical and Independent Review Services Institutional Review Board and verbal consent was obtained from each respondent.

Study Questionnaire and Variables

The research team developed the survey questionnaire through careful review of validated questionnaires related to interconception health topics. Self-reported survey data from this study's WIC population had been validated in a previous study.[16] The study questionnaire was developed in English, translated into Spanish, and then programmed onto a computer-assisted telephone interviewing system. All interviewers received data collection training, conducted mock interviews, and attended a briefing session on the study. Debriefings and retraining sessions were also held for interviewers during the data collection period to ensure consistent procedures. Before the full-scale data collection, the survey instrument was pretested in both English and Spanish among a small convenience sample of postpartum WIC mothers. Project leaders monitored each pretest interview and the English and Spanish questionnaires and survey administration were revised accordingly. The final survey was piloted among 10 English-speaking and 10 Spanish-speaking women, whose data are included in this study.

The questionnaire included items on maternal prepregnancy characteristics, including date of birth, race/ethnicity, education, country of birth, health insurance status, weight, height, and gravidity. Detailed questions were also asked about birth outcomes and maternal postpartum health characteristics and behaviors, such as changes in maternal weight, infant birth weight, maternal alcohol use postpartum, and medical conditions, among others. Postpartum metrics were reported as of the time of the survey. For example, a woman's postpartum weight is the weight she reported as current at the time of the survey.

Several variables used in analyses were derived from survey question responses. Body mass index (BMI) values were calculated from self-reported maternal heights and weights for the month before pregnancy, the end of pregnancy, and the time of the survey. Because of the small number of underweight women (n = 24 postpartum), BMI values were categorized into normal weight or underweight (< 25 kg/m^2), overweight (25–29.9 kg/m^2), and obese (≥ 30 kg/m^2). Gestational weight gain was calculated as the difference between weight at the end of pregnancy and in the month before pregnancy. Gestational weight gain was then categorized based on the Institute of Medicine recommended ranges for each prepregnancy BMI category.[17]

Preterm birth was defined as < 37 weeks' gestation, using mothers' self-report of birth more than 3 weeks before the due date. Low birth weight was defined as $< 2{,}500$ g at birth, using mothers' self-report of birth weight in pounds and ounces. All birth weights $\geq 2{,}500$ g were grouped together owing to the low prevalence of high birth weight (n = 69).

The authors assessed postpartum diabetes and high blood pressure by self-report. Postpartum depression was assessed by 2 questions adapted