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Association of Provider Advice and Pregnancy Weight Gain in a Predominantly Hispanic Population

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A B S T R A C T

Objectives: This study sought to determine whether women's report of gestational weight gain (GWG) advice from a health care provider is consistent with the Institute of Medicine (IOM) guidelines and the association between provider advice and women's weight gain during pregnancy.
Methods: Data came from the 2007 Los Angeles Mommy and Baby study (n = 3,402). The 1990 IOM GWG guidelines were used to define whether the provider's advice on weight gain and women's weight gain were below, within, or above the guidelines.
Results: Approximately 4 months after delivery, 18.8% of the women reported having not discussed weight gain with any health care providers during pregnancy. Among those who reported such discussions, 42% reported receiving weight gain advice from a health care provider within IOM guidelines, 16.5% below guidelines, and 10% above. An additional 13.5% reported the discussion but did not report the recommended weight gain amount. Compared with women who reported provider advice on weight gain within guidelines, women who reported advice below guidelines were 1.7 times (95% confidence interval [CI], 1.3–2.2) more likely to gain less than the IOM recommended amount. Women who reported provider advice above IOM guidelines were 2.0 times (95% CI, 1.4–2.9) more likely to exceed guidelines.
Conclusions: There is a need for more women to receive advice consistent with the IOM GWG guidelines from their prenatal care providers. Intervention strategies are needed to educate providers about IOM guidelines and how to counsel on GWG.

Gestational weight gain (GWG) outside the Institute of Medicine (IOM) guidelines is associated with many adverse health outcomes for both mother and child. Inadequate weight gain is associated with an increased risk for preterm delivery and low birth weight (Han et al., 2011; Viswanathan et al., 2008). Excessive weight gain has been found to increase the risk of gestational diabetes, preeclampsia, cesarean delivery, macrosomia, postpartum weight retention, and future overweight or obesity in the child (Lau, Liu, Archer, McDonald, & Liu, 2014; Nehring, Schmoll, Beyerlein, Hauner, & von Kries, 2011; Viswanathan et al., 2008). Despite the known risks associated with inadequate or excessive weight gain, the majority of pregnant women in the United States fail to meet the IOM guidelines (National Research Council and IOM, 2007; Olson, 2008).

Evidence suggests that provider advice during prenatal care may be an important determinant of weight gain during pregnancy (Ferrari & Siega-Riz, 2013; Herring et al., 2012; Phelan et al., 2011; Stotland et al., 2005). The American Congress of

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Obstetricians and Gynecologists and IOM recommends that providers counsel women on appropriate weight gain in pregnancy and provide advice on physical activity and diet (American College of Obstetricians and Gynecologists, 2013, 2015; IOM and National Research Council, 2009). Studies have found that anywhere from 30% to 70% of women report receiving advice on weight gain from their provider (Ferrari & Siega-Riz, 2013; McDonald et al., 2011; Phelan et al., 2011; Stotland et al., 2005; Waring et al., 2014; Wrotniak et al., 2015). Several studies found that provider advice on weight gain is associated positively with women's weight gain in pregnancy (Cogswell, Scanlon, Beck Fein, & Schieve, 1999; Herring et al., 2012), or women's target weight gain (Stotland et al., 2005). However, other studies did not find an association between provider advice and women's actual or expected weight gain (Ferrari & Siega-Riz, 2013; Phelan et al., 2011; Wrotniak et al., 2015).

A limitation in the existing literature is the lack of representation from racial and ethnic minorities (Cogswell et al., 1999; Ferrari & Siega-Riz, 2013; Phelan et al., 2011; Taffel, Keppel, & Jones, 1993; Waring et al., 2014). One study including a racially diverse sample found that African-American and Latina women are more likely to report a target weight gain below IOM guidelines than White women (Stotland et al., 2005). Another study found that Black women are more likely to report being advised to gain less than guidelines as compared with White women (Cogswell et al., 1999). Hispanic women are currently underrepresented in GWG research. Given that Hispanic women are less likely to exceed IOM guidelines than White women (Krukowski, Bursac, McGehee, & West, 2013), it is important to examine the prevalence of provider GWG advice in this subgroup. To our knowledge, only one qualitative pilot study examined knowledge, attitudes, and beliefs regarding GWG in Hispanic women (Tovar, Chasan-Taber, Bermudez, Hyatt, & Must, 2010), but no study has evaluated the association between provider advice and pregnancy weight gain in this population. This is a significant gap in the existing literature; Hispanics are the fastest growing group in the United States, comprising 16% of the total population (Ennis, Rios-Vargas, & Albert, 2011). In light of inconsistent findings, additional research is needed in racially diverse populations using contemporary datasets to further assess the association of provider advice with GWG. The aims of this study are to 1) determine the prevalence of provider advised weight gain consistent with the IOM guidelines and 2) examine the association between provider advice and women's GWG in a predominantly Hispanic population.

Material and Methods

Data Source

Data came from the 2007 Los Angeles Mommy and Baby (LAMB) study, a cross-sectional, population-based, mail/telephone survey of a stratified random sample of women who had recently delivered a live birth in Los Angeles County in 2007. The survey focused on preconception, prenatal, and postpartum correlates of adverse maternal and child health outcomes. The 2007 LAMB Study was a collaboration between the University of California, Los Angeles and the Los Angeles County Department of Maternal, Child and Adolescent Health (MCAH) and was approved by the institutional review boards at both institutes.

The 2007 LAMB study used a multistage and clustered design in which all census tracts in Los Angeles county were divided into two strata that correspond with high and low perinatal health risk. A random sample of 200 tracts from the high-risk stratum and additional 100 tracts from low-risk stratum were sampled from the target enrollment area. MCAH had identified 150 high-risk zip codes within the county using six perinatal indicators including number and proportion of women of reproductive age living on incomes below 200% of poverty, births to mothers receiving Medi-Cal (California's Medicaid program), births to mothers age 18 and under, low birth weight births, percent of late onset or no prenatal care, and infant mortality rate. All census tracts within these high-risk zip codes were categorized as high-risk tracts and the remaining tracts in the county were low-risk tracts. Every 3 months, the Office of Health Assessment and Epidemiology provided MCAH with a list of county residents who had a recent live birth (<4 months) and residing in the 300 sampled census tracts. Women giving birth to low birthweight (<2,500 g) and preterm (<37 completed weeks' gestation) babies were oversampled. A total of 4,028 women with singleton live births responded to the survey, with a response rate of 56% after adjusting for faulty addresses, language issues, maternal deaths, and loss to follow-up owing to inability to locate the respondent. The survey was administered in English, Spanish, and Chinese, with translators available for other languages. Details on the stages of recruitment for the 2007 LAMB study are available in another published study (Wakeel, Witt, Wisk, Lu, & Chao, 2014). Each woman's response from the survey was linked with her child's birth certificate.

Provider's Advice on GWG

The 2007 LAMB survey asked women to report whether a doctor, nurse, or other health care worker had talked to her during a prenatal care visit about how much weight to gain during pregnancy. The answer options were yes, no, or don't know. The survey reminded the women to only count the discussions at prenatal care visits, not including information learned through reading materials or videos. Women were then asked to report how many pounds the health care provider said they should gain during pregnancy.

In 1990, the IOM released a report that included BMI-specific weight gain guidelines for pregnant women (IOM Committee on Nutritional Status During Pregnancy and Lactation, 1990). Specifically, women who were underweight (body mass index [BMI] $< 19.8\ kg/m^2$) before pregnancy were recommended to gain 28 to 40 lbs for a 40-week pregnancy. The ranges of total GWG were 25 to 35 lbs for normal weight women (BMI, 19.8–26.0 kg/m^2) and 15 to 25 lbs for overweight women (BMI, 26.1–29.0 kg/m^2). The 1990 IOM guidelines included only a minimal recommended weight gain (15 lbs) for obese women (BMI $> 29.0\ kg/m^2$).

Because the 1990 IOM guidelines for weight gain during pregnancy were in use by providers at the time of the study (i.e., 2007), it was used to define whether the health care provider's advice on weight gain was within these guidelines, based on the woman's prepregnancy BMI. Information on prepregnancy BMI was available from the LAMB survey and birth certificates and the correlation of data from two sources were high (0.86) in our data. Thus, our primary data source for this variable was birth certificates, which were abstracted from medical records. When it was missing in birth certificates but not in the survey, the information from the LAMB survey was used for 429 women. The