

Maternal & Infant Nutrition Briefs



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Blood Glucose Levels and Birth Weight in Hispanics

A research-based newsletter prepared by the University of California for professionals interested in maternal and infant nutrition



Blood Glucose Levels and Birth Weight in Hispanics

A number of studies have examined the social, dietary, and behavioral aspects of the Hispanic culture that may explain the relatively low risk of low birth weight observed in this population. However, in the U.S., Hispanic mothers are also at increased risk of obesity, insulin resistance, and type II diabetes. While the risk of diabetes to the fetus and mother are well-known, much less attention has focused on the implications of borderline-high levels of blood glucose on birth weight in Hispanics. The purpose of this study was to examine the relationship of maternal glucose levels to birth weight in the Hispanic community.

The study included all women (n=442) who self-identified as Hispanic and were served through a community health center in Detroit, Michigan. Ninety percent of the women were of Mexican descent, 81% were foreign-born, and most were low-income. At 24-28 weeks, a one-hour glucose challenge test with 50 gm of glucose was used to screen for high blood sugar. Those women with blood sugar levels above 140 mg/dL were given a 3-hour 100-gm glucose tolerance test (GTT), using cutoffs of 105, 190, 165, and 145 mg/dL at fasting, 1-, 2-, and 3- hours to diagnosis diabetes. Date of last menstrual period or ultrasound was used to determine gestational age. Large-for-gestational age was defined as birth weight above the 90th for gestational age and small-for-gestational age, less than the 10th percentile.

In this study, 5.1% of the women were found to have diabetes and 21.5% had a blood sugar level above 135 mg/dL. As maternal blood sugar levels increased, so did birth weight adjusted for gestational age ($p < 0.001$). Among women without diabetes, a 10 mg/dL increase in blood sugar was associated with a 30.5 g increase in birth weight and increased the risk of delivering large-for gestational age baby by 17%. Conversely, the risk of delivering a small-for-gestational age baby was 30% lower.

As discussed in last month's Maternal and Infant Nutrition Brief (Sept/Oct. 1999), birth weight above the 90th percentile places an infant at risk of childhood obesity. Among women

who had borderline-high blood glucose levels (> 135 mg/dL), rate of hypertension disorders was more than twice as high as that of women with values below 135 mg/dL. Since this study was conducted, lower 3- hr. GTT cutoffs for diagnosing diabetes have been adopted by the American Diabetes Association (95, 180, 155, and 140 mg/dL). Unfortunately, this study lacked the sheer numbers and follow-up that would be needed to evaluate risks to mother and baby of having a blood sugar above 135 mg/dL but not high enough to be diagnosed with maternal diabetes. With the increasing prevalence of obesity and type II diabetes in Hispanic children, this issue needs serious attention.

Source: Kieffer EC, Nolan GH, Carman WJ, Sanborn CZ, Guzman R, and Venture A. 1999. Glucose tolerance during pregnancy and birth weight in a Hispanic population. *Obstet. and Gynecol.* 94: 741-6.

Maternal and Infant Nutrition Briefs is a research-based newsletter prepared by Dr. Lucia Kaiser (llkaiser@ucdavis.edu), a Cooperative Extension Specialist in the Department of Nutrition, University of California at Davis. This newsletter is written for health professionals interested in nutrition of mothers and young children.

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