

Abstract

Background Fetal macrosomia occurs in approximately 10% of all pregnancies taking place in the United States. Babies born LGA are placed at a greater risk for shoulder dystocia, perinatal trauma, cesarean section, jaundice, hypoglycemia, and neonatal intensive care admission. Even more, the long-term impacts are severe and include increased risk of becoming overweight or obese and developing type 2 diabetes later in life. Women with gestational diabetes mellitus (GDM) have higher rates of delivering macrosomic offspring due to insulin resistance taking place beyond what is normal during a pregnancy. Additionally, maternal obesity, socioeconomic status, and race/ethnicity have been associated with maternal and fetal risk during pregnancy.

Objectives This study sought to ascertain the role that race/ethnicity, income level, and pre-pregnancy BMI has on the risk for delivering a LGA infant when women are diagnosed with gestational diabetes mellitus.

Subjects Women diagnosed with gestational diabetes mellitus that gave birth at Spectrum Health Butterworth Hospital between January 1, 2010 and December 31, 2016.

Methods Eligible participants' age, race/ethnicity, form of insurance, zip code, pre-pregnancy BMI, diagnosis of LGA/macrosomia, shoulder dystocia, and form of delivery were obtained through retrospective chart reviews to investigate the association of interest. Zip codes were utilized to create rounded estimated household incomes based on census data.

Analyses Means \pm standard deviations were used to describe continuous characteristics and frequencies were used to describe discrete characteristics in this sample. Cross tabulations and

confidence intervals of proportions were used to determine any significant relationship among or within the categorical variables. Logistic regression was performed to estimate the odds of delivering a LGA or macrosomic newborn using demographic characteristics of the mother.

Results The overall prevalence of macrosomia in this patient population was 11.8%. Rates of shoulder dystocia were significantly higher in babies born LGA when compared to those born of normal or smaller size in this cohort. When age, pre-pregnancy BMI, race/ethnicity, and annual income were considered together in a logistic regression model, the odds of delivering a LGA baby was 10.7 times greater for those with Medicaid/Medicare. This study also discovered a decreased likelihood of African American and Hispanic women of having a large baby when compared to Caucasian women.

Conclusion Shoulder dystocia takes place more often in babies born LGA than those that were of normal or smaller size. Women with government funded health insurance are at an increased likelihood of having an LGA baby, while Hispanic and African American race/ethnicity places women at a decreased likelihood. Future studies are warranted to identify the existence and extent of confounding variables. Additionally, more research is needed on the social determinants of health, including prenatal care adequacy, paternal race/ethnicity, social support, and WIC participation.