Descriptive Analysis of Lipid Panels and Other Biomarkers in Early and Late Pregnancy in the Hoosier Moms Cohort

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Background/Objective: Early identification of and intervention for pregnant persons with a high risk of developing gestational diabetes mellitus (GDM) may lead to better health outcomes for both mother and infant. We aimed to assess both biomarkers and clinical predictors in early and late pregnancy to aid in the future development of an early pregnancy predictive model for GDM.

Methods: This project is part of the Hoosier Moms Cohort, a prospective, longitudinal cohort study of pregnant women followed from early pregnancy through the postpartum period. Blood samples were taken in early and late pregnancy to discover clinical laboratory biomarkers which could be used for GDM risk prediction. Other pertinent medical history and findings were collected through patient surveys and chart abstraction. Data analysis included general descriptive statistics, Pearson's correlation, and nonparametric tests.

Results: 409 participants' data were analyzed. Many biomarkers weakly correlated with maternal age and BMI in early and late pregnancy. Early pregnancy HbA1c was moderately correlated with BMI (0.32, $p<0.001$), and fructosamine was moderately negatively correlated with BMI (-0.43, $p<0.001$). Total cholesterol (TC), fructosamine, HDL, LDL, and triglycerides (TG) were weakly correlated with maternal age in early pregnancy. Blood glucose (BG) and TG were weakly correlated with BMI, and HDL was weakly negatively correlated with BMI in early pregnancy. Similar correlations were found with the biomarkers later in pregnancy with maternal age and BMI. White women had significantly lower HbA1c and higher TC and HDL levels when compared to Black/African American and "other race/ethnicity" women. Black/African American women had significantly lower fructosamine levels. LDL and TG were significantly lower and higher in "other race/ethnicity" women, respectively.

Conclusion: BMI and race/ethnicity have significant relationships with biomarkers in early pregnancy that must be adjusted for in the development of a GDM predictive model.