ABSTRACT

Background: Continuous glucose monitoring (CGM) has been shown to improve neonatal outcomes in pregnancies affected by type 1 diabetes (T1D), however its effectiveness has not been assessed in a racially and socioeconomically diverse setting.

Objective: The aim of this study was to examine the clinical effectiveness, assessed through maternal glucose control and maternal and neonatal health outcomes, of CGM use compared to self-monitoring of blood glucose (SMBG) in pregnancies associated with T1D in a real-world setting.

Research Design and Methods: We retrospectively identified 160 pregnancies at the Barbara Davis Center for Diabetes (BDC) managed with either CGM therapy (n=82) or SMBG (n=78) over a 6.5-year period (1/1/14 to 8/31/20) for T1D. Obstetric care was provided at obstetric practices across Colorado and Wyoming. CGM use was defined as $\geq$60% wear in the 2nd and 3rd trimesters of pregnancy. Baseline characteristics and maternal/fetal outcomes data were obtained from the BDC electronic medical record system and the vital statistics departments of Colorado and Wyoming. We used student's t-test for continuous variables and chi-squared test for categorical variables to compare outcomes between groups.

Results: At baseline, CGM users were less likely to have Medicaid. CGM users were more likely to meet HbA1C goals in all trimesters (p<0.01 in each trimester). More than half of the women in the SMBG group did not meet HbA1C goals in any trimester (p=0.004). CGM use significantly increased the likelihood of meeting trimester-specific HbA1c goals in each trimester throughout pregnancy among women with T1D. CGM users had infants with lower mean birth weights (grams and percentile) and lower rates of large-for-gestational-age infants.

Conclusions: CGM use significantly improved maternal glucose levels and neonatal health outcomes in a racially and socioeconomically diverse cohort in a real-world setting.