

Association Between 1-Hour Glucose Challenge Test Values and Infant Birth Weight in a Prospective Cohort From Dhulikhel, Nepal

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Objectives: Elevated blood glucose level during pregnancy is known to be associated with adverse birth outcomes including macrosomia. However, data is lacking from low-income and low nutritional status countries like Nepal. This study examined the association between maternal glucose levels after a 1-hour 50g glucose challenge test (1-hr 50g GCT) and infant birthweight (BW) in a periurban pregnancy cohort from Dhulikhel, Nepal.

Methods: A prospective cohort of singleton pregnant women (N = 195; age 26.1 ± 4.1 years) was recruited from a tertiary, periurban hospital in Nepal. All women underwent 1-hr 50g GCT between 24–29 weeks of gestation. BW was abstracted from medical records. Primary outcomes included low BW (LBW; BW < 2500g) compared to normal BW (2500g-4500g), and small for gestational age (SGA, BW < 10th percentile) and large for gestational age (LGA, BW > 90th percentile), compared to appropriate for gestational age (AGA, BW 10th-90th

percentile). Using logistic regression, we estimated the odds ratios (OR) and 95% confidence intervals (CI) for the association of 1-hr 50g GCT value with each BW outcome, adjusting for a priori covariates including age, education, and pre-pregnancy BMI.

Results: The mean GCT value in our sample was 115.5 ± 25.9 mg/dL and the mean infant BW was 2958.9 ± 412.3g. The prevalence of LBW was 13.3% (n = 26); 8.8% were SGA, and 18.1% were LGA. There was a quadratic (inverted U) association between GCT levels and BW (p = 0.08). GCT levels were higher in both women with SGA (120.2 mg/dL ± 28.1) and LGA babies (122.7 mg/dL ± 21.4), compared to women who gave birth to AGA babies (112.4 mg/dL ± 23.9), but this was only statistically significant for LGA vs. AGA (p = 0.047). After controlling for age, education, and pre-pregnancy BMI, the association between GCT and LGA was no longer significant. However, GCT value was significantly and positively associated with increased risk of LBW even after controlling for age, education, and pre-pregnancy BMI (OR = 1.03, CI: 1.01–1.05; p = 0.004).

Conclusions: Elevated GCT value is significantly associated with increased risk of LBW in a cohort from Nepal. Further research with larger samples is warranted to confirm these findings and clarify the underlying physiological mechanisms involved.

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