HbA1c as a predictor of pregnancy outcomes among GDM women

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ABSTRACT

Introduction: HbA1c is commonly measured once gestational diabetes mellitus (GDM) is diagnosed, yet its clinical utility during pregnancy remains uncertain. Clinicians often rely on a non-pregnancy cut-off value, but whether this applies during pregnancy is questionable. This study aims to determine whether HbA1c can predict adverse pregnancy outcomes, identify which outcomes are best predicted, and establish appropriate trimester-specific cutoff values. **Objective:** To assess the predictive value of maternal HbA1c for adverse pregnancy outcomes and determine optimal cut-off levels and timing of measurement. **Materials and Methods:** A retrospective study of 553 women with GDM delivering at Hospital Canselor Tuanku Mukhriz from 2020-2020 was conducted. HbA1c levels measured in either the second (n=293) or third trimester (n=260) were analysed for their ability to predict caesarean section (CS), preterm birth (PTB), and large for gestational age (LGA) infants using ROC analysis. **Results:** The mean HbA1c was 5.40% in the second trimester and 5.42% in the third. Second trimester HbA1c showed better predictive value for LGA (AUC 0.68, optimal cutoff 5.65%) compared to the third trimester (AUC 0.53, cutoff 5.75%). Conversely, third trimester HbA1c modestly predicted CS (AUC 0.639, cutoff 5.45%) compared to the second trimester (AUC 0.513). No meaningful predictive value was found for PTB. **Conclusion:** Second-trimester HbA1c demonstrates moderate potential in predicting LGA, while third-trimester values show a modest association with CS. The conventional HbA1c of 6.5% may not be appropriate in pregnancy; trimester-specific lower cutoffs may offer better clinical utility. Further prospective studies are warranted to validate these findings.