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**EVOLIUCINĖ MEDICINA:
ŽMOGAUS RAIDOS PERSPEKTYVOS IR SVEIKATA
BESIKEIČIANČIOJE APLINKOJE**

**EVOLUTIONARY MEDICINE:
PERSPECTIVES ON HUMAN DEVELOPMENT AND HEALTH
CONSEQUENCES IN A CHANGING ENVIRONMENT**

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Vilniaus universiteto Medicinos ir sveikatos mokslų
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METABOLIC PREDICTORS OF MATERNAL AND NEONATAL OUTCOMES IN WOMEN WITH GESTATIONAL DIABETES MELLITUS: A PROSPECTIVE COHORT STUDY

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Background and Aim: Women with gestational diabetes mellitus (GDM) remain at increased risk of adverse maternal and neonatal outcomes. This study evaluated the association between maternal metabolic characteristics and pregnancy outcomes in women with GDM.

Materials and Methods: This prospective cohort study included 226 women with singleton pregnancies diagnosed with GDM according to International Association of Diabetes and Pregnancy Study Groups criteria and delivered at Vilnius University Hospital Santaros Klinikos, Lithuania, between 2019 and 2025. Clinical, anthropometric, and biochemical data were collected at 24–28 weeks of gestation.

Results: The mean maternal age was 31.9 ± 4.0 years and pre-pregnancy BMI was 25.3 ± 6.0 kg/m². Composite maternal and neonatal outcomes occurred in 16.8% and 14.6% of pregnancies, respectively. Pre-pregnancy BMI ≥ 25 kg/m² (OR 2.52, 95% CI 1.45–4.38; $p=0.001$), gestational weight gain (OR 1.08, 95% CI 1.03–1.13; $p=0.001$), fasting glucose at 24–28 weeks (OR 2.56, 95% CI 1.51–4.32; $p<0.001$), The Homeostatic Model Assessment of Insulin Resistance HOMA-IR (OR 0.86, 95% CI 0.74–1.00; $p=0.046$), and high-density lipoprotein cholesterol (HDLCh) (OR 2.27, 95% CI 1.23–4.18; $p=0.008$) were independently associated with neonatal complications. Early GDM was not associated with neonatal outcomes (OR 0.92, 95% CI 0.55–1.52; $p=0.730$). For maternal outcomes, early GDM was associated with lower odds of adverse outcomes (OR 0.43, 95% CI 0.26–0.73; $p=0.002$), whereas insulin therapy increased risk (OR 2.16, 95% CI 1.09–4.29; $p=0.028$).

Conclusions: Early GDM diagnosis was associated with lower odds of maternal complications, supporting the potential benefit of timely detection and management of hyperglycaemia during pregnancy. Maternal overweight, excessive gestational weight gain, and adverse metabolic profiles were associated with poorer pregnancy outcomes. Women requiring insulin therapy may represent a high-risk subgroup requiring closer antenatal surveillance.

Keywords: gestational diabetes mellitus, maternal outcomes, neonatal outcomes, pregnancy outcomes