**Title: Polycystic ovary syndrome and impaired glucose tolerance are associated with adverse pregnancy outcomes: Findings from the born in Bradford cohort**

**Background:**
Polycystic Ovary Syndrome (PCOS) and impaired glucose tolerance (IGT) are common endocrine conditions in reproductive-age women, yet their combined impact on pregnancy outcomes such as preeclampsia and birthweight remains underexplored.

**Methods:**
We analysed data from the *Born in Bradford* prospective birth cohort, incorporating maternal clinical records, OGTT results, and pregnancy outcomes. IGT was defined as a 2-hour post-load plasma glucose of 7.8–11.0 mmol/L following a 75 g OGTT. Women were stratified into four groups: normoglycemic, IGT only, PCOS with normoglycemia, and PCOS with IGT. Outcomes assessed were birthweight and incidence of preeclampsia, adjusting for maternal BMI and age.

**Results:**
Among 9,454 pregnancies, 8,922 were normoglycemic, 186 had IGT, 226 had PCOS with normoglycemia, and 22 had PCOS with IGT. IGT prevalence was higher among women with PCOS. Mean birthweight differed significantly across groups (p < 0.001), with the lowest in the PCOS+IGT group (3,083.6 g) and highest in normoglycemic pregnancies (3,236.7 g). Compared to the normoglycemic group, birthweight was significantly reduced in IGT only (β = -208.6 g, p < 0.001), PCOS only (β = -117.1 g, p = 0.010), and PCOS+IGT (β = -369.5 g, p = 0.009). Preeclampsia rates were highest in women with PCOS+IGT, followed by PCOS-only, relative to normoglycemic women.

**Conclusion:**
Both PCOS and IGT, individually and synergistically, are associated with increased risk of preeclampsia and lower birthweight. These findings highlight the need for tailored antenatal care strategies in women with PCOS, particularly those with impaired glucose regulation.