**Dysglycaemia in Polycystic Ovary Syndrome Across the Lifespan: An Updated Systematic Review and Meta-Analysis**

**Aim**

Polycystic ovarian syndrome (PCOS) is the most common endocrinopathy affecting women of reproductive age. It is associated with high insulin resistance and type 2 diabetes (T2D), however the literature is inconsistent with regard to the risk across age and BMI. Prior studies have been limited by small numbers of lean PCOS populations and self-reported diagnoses. We aimed to assess the risk of T2D, impaired glucose tolerance (IGT), and impaired fasting glucose (IFG) amongst women with PCOS, and to assess the risk across age and BMI.

**Methods**

We performed a systematic search through Medline Ovid, CINAHL Plus, EMBASE, EBM Review and Cochrane Databases from June 2016-December 2024. Results were integrated with those from a previous systematic review from 1995-June 2016. We included observational studies reporting T2D in women with PCOS diagnosed according to Rotterdam, NIH, or Androgen Excess and PCOS society criteria, compared to women without PCOS. Studies were appraised using Newcastle-Ottawa Scale (NOS). We conducted random-effects meta-analyses to generate pooled effect estimates expressed as odds ratios (OR) with 95% confidence intervals (CIs).

**Results**

53 studies were included. Women with PCOS had an increased risk of T2D compared to controls (OR 2.63; 95% CI: 1.32-5.23). This was consistent across BMI-matched (OR 2.00; 95% CI: 1.05-3.8) and age-matched studies (OR 3.19; 95% CI: 2.26-4.49). In adolescents, the risk of T2D and IFG was not different to controls, however they demonstrated a 4-fold increased risk of IGT. The risk of T2DM, IFG, and IGT was consistently increased in pre-menopausal adults.

**Conclusions**

Women with PCOS have higher rates of dysglycaemia from a young age, and this is independent of BMI. Our findings, in line with PCOS international guidelines, suggest screening for dysglycaemia at the time of diagnosis in all woman regardless of age or BMI, to enable early intervention and prevention progression.