

The Major Impact of Obesity on the Development of Type 2 Diabetes (T2D) in Women With PCOS: A Systematic Review and Meta-Analysis of Observational Studies

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Background/Aims: Polycystic ovary syndrome (PCOS) is associated with disordered carbohydrate metabolism and an increased risk for T2D. However, there are limited data on the magnitude of this risk. Furthermore, 50-80% of women with PCOS are obese and obesity is known to have a synergistic deleterious effect on glucose tolerance in affected women. We systematically reviewed the literature regarding the association between PCOS, obesity and T2D risk.

Methods: A comprehensive search was conducted in PubMed, CENTRAL and Scopus databases. Data are expressed as relative risk (RR) with 95% confidence intervals (CI). The I² index was employed for heterogeneity. The available data, did not allow us to analyze the impact of weight status as normal, overweight and obese and as a consequence the studied subjects were stratified as obese (BMI>30 kg/m²) and non-obese (BMI<30kg/m²).

Results: Twelve studies fulfilled eligibility criteria, yielding a total of 224,284 participants (45,361 PCOS and 5,717 T2DM cases). Women with PCOS had a higher risk of T2D compared with to unaffected women (RR 3.13, 95% CI, 2.83-3.47, p<0.001; I² 40.1%). When women with PCOS were stratified according to the presence or absence of obesity, the RR for developing T2D in obese compared with non-obese women with PCOS was 4.20 (95% CI 1.97-9.10; p<0.001). Moreover, compared to control women, the RR for developing T2D was significantly increased only in obese PCOS, RR 4.06 (95% CI 2.75-5.98; p<0.001). There was a trend toward significantly increased risk in non-obese PCOS women [RR 2.68 (95% CI 0.97-7.49; p=0.06).

Conclusion: Women with PCOS have a >3-fold increased risk of T2D compared to women without PCOS, but this risk is substantially increased by the presence of obesity. Accordingly, weight reduction should be pursued in these women.