

# The association between obstructive sleep apnea and metabolic abnormalities in women with polycystic ovary syndrome: a systematic review and meta-analysis

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## Abstract

### Study Objectives

In this systematic review and meta-analysis, we aimed to examine the relationship between obstructive sleep apnea (OSA) and metabolic abnormalities in women with polycystic ovary syndrome (PCOS).

### Methods

Electronic databases (Medline, Embase, Cinahl, PsycInfo, Scopus, Web of Science, Opengrey, and CENTRAL), conference abstracts, and reference lists of relevant articles were searched. No restriction was applied for language or publication status.

### Results

Six studies involving 252 participants were included. Women with PCOS and OSA had significantly higher body mass index (mean difference [MD]: 6.01 kg/m<sup>2</sup>, 95% confidence intervals [CI]: 4.69–7.33), waist circumference (MD: 10.93 cm, 95% CI: 8.03–13.83), insulin resistance, systolic and diastolic blood pressure, and worse lipids' profile and impaired glucose regulation compared with women with PCOS without OSA. Most studies did not adjust for weight in their between-groups analysis. Total and free testosterone levels were not significantly different between the two groups. The majority of studies were found to be at high risk of selection bias, did not account for important confounders, were conducted in one country (United States), and used different methodologies to assess testosterone levels (preventing a meta-analysis for this specific outcome).

### Conclusions

OSA is associated with obesity and worse metabolic profiles in women with PCOS. However, whether the effects of OSA are independent of obesity remain unclear. As OSA is a treatable condition, research focused on the independent effects of OSA on key clinical outcomes in women with PCOS, including fertility, psychological health, type 2 diabetes, and cardiovascular risk, is lacking and needed.

PROSPERO registration number: CRD42016048587.

[polycystic ovary syndrome](#), [obstructive sleep apnea](#), [hyperandrogenism](#), [obesity](#), [insulin resistance](#)

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