

# Polycystic ovary syndrome in a lifetime perspective

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentlig försvaras i Arvid Carlsson, Medicinaregatan 3, 413 90 Göteborg, den 15 januari 2021, klockan 9.00

av Maria Forslund, leg. läkare

Fakultetsopponent: Bart CJM Fauser, Professor of Reproductive Medicine  
University of Utrecht; Netherlands

## Avhandlingen baseras på följande delarbeten

- I. Forslund M, Landin-Wilhelmsen K, Schmidt J, Brannstrom M, Trimpou P, Dahlgren E. **Higher menopausal age but no differences in parity in women with polycystic ovary syndrome compared with controls.** *Acta Obstet Gynecol Scand.* 2019;98(3):320-6.
- II. Forslund M, Landin-Wilhelmsen K, Trimpou P, Schmidt J, Brannstrom M, Dahlgren E. **Type 2 diabetes mellitus in women with polycystic ovary syndrome during a 24-year period: importance of obesity and abdominal fat distribution.** *Hum Reprod Open.* 2020;2020(1):hoz042
- III. Forslund M, Landin-Wilhelmsen K, Krantz E, Trimpou P, Schmidt J, Brannstrom M, Trimpou P, Dahlgren E. **Health-Related Quality of Life in Perimenopausal Women with PCOS.** *Manuscript.*
- IV. Forslund M, Schmidt J, Brannstrom M, Landin-Wilhelmsen K, Dahlgren E. **Reproductive hormones and anthropometry: A follow-up of PCOS and their age-matched controls from perimenopause to a mean age above 80 years.** *J Clin Endocrinol Metab.* 2020.10.1210/clinem/dgaa840.
- V. Forslund M, Schmidt J, Brannstrom M, Landin-Wilhelmsen K, Dahlgren E. **No evidence of increased morbidity and mortality in PCOS: A prospective follow-up up to mean age above 80 years.** *Manuscript.*

**SAHLGRENKA AKADEMIN  
INSTITUTIONEN FÖR KLINISKA VETENSKAPER**



# Polycystic ovary syndrome in a lifetime perspective

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## Abstract

**Background:** Polycystic ovary syndrome (PCOS) is common, affecting 9-18% of women. PCOS is associated with symptoms due to hyperandrogenism and ovarian dysfunction, but is also associated with the metabolic syndrome including obesity, insulin resistance and elevated blood lipids. The post-menopausal consequences are uncertain, due to the lack of long-term studies.

**Aim:** To increase the knowledge about ageing women with PCOS.

**Material and method:** Two cohorts of women with PCOS and their age-matched controls have been followed prospectively: cohort 1 (PCOS n = 33 and controls n = 94) on two occasions, and cohort 2 (PCOS n = 37 and controls n = 120) on three occasions. The women with PCOS from the two cohorts together cover an age range from 20 to 91 years.

**Results:** Women with PCOS reached the menopause four years later than controls. Parity and nulliparity did not differ. 19% of the women with PCOS had developed type 2 diabetes mellitus (T2DM) at perimenopause, vs. 1% of controls, but all women who developed T2DM were obese and had a high waist hip ratio already at mean age 30 years. Health-related quality of life did not differ at mean age 52 years. Women with PCOS had persistently lower FSH up to a mean age of 81 years, where hirsutism was more frequent (33 vs 4%), but biochemical hyperandrogenism did not differ. Cardiovascular disease (CVD) events, CVD-related or all-cause mortality did not differ at this age.

**Conclusion:** Women with PCOS did not suffer from increased mortality or increased CVD events, despite increased risk factors. This might be caused by possible protective factors such as a delayed menopause, and hormonal factors that differed from those of the controls at senescence.

**Keywords:** cardiovascular disease, FSH, hyperandrogenism, insulin resistance, menopause, metabolic syndrome, PCOS, postmenopausal, type 2 diabetes mellitus, quality of life

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