# ADOLESCENTS AND POLYCYSTIC OVARY SYNDROME

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## INTRODUCTION

Polycystic Ovary Syndrome (PCOS) affects 3.6-15% of women in the reproductive age group. It is the commonest cause of hyperandrogenism and anovulatory infertility in this age group. Community based prevalence studies of PCOS in adolescents are scarce. Menstrual irregularities in the form of oligomenorrhoea or amenorrhoea, clinical hyperandrogenism in the form of hirsutism, acne, androgenic alopecia and anovulatory infertility are the characteristic clinical features of PCOS in women. Rarely, women may present with virilization. The Rotterdam consensus in 2003 broadened the criteria to include the presence of any 2 of the following as diagnostic of PCOS: a) Oligo/amenorrhea: absence of menstruation for 45 days or more and/or ≤8 menses per year. b) Clinical hyperandrogenism: modified Ferriman and Gallway (mFG) score of 6 or higher. c) Polycystic ovaries: presence of >10 cysts, 2-8 mm in diameter, usually combined with increased ovarian volume of >10 cm³, and an echo-dense stroma in pelvic ultrasound scan. According to the Androgen-Excess Society criteria, hyperandrogenism is mandatory with either oligo-anovulation or PCOM to diagnose PCOS. PCOS is a heterogeneous disease, in terms of pathophysiology as well as severity of clinical consequences. Not all patients have all the possible manifestations or are exposed to the same degree of long-term health risks. Our aim is to find the prevalence of polycystic ovarian syndrome in adolescents.

## RESULTS

A total of 487 Greek adolescents with a mean age 16.6±0.9 years (range 16–18 years) were studied. The mean age at menarche was 12.3±0.18 years. Mean time since menarche was 52.6±10.5 months and ranged from 24 to 108 months. More specifically, three (0.6%) had oligo/amenorrhea with clinical hyperandrogenism, 33 (6.7%) had oligomenorrhea with polycystic ovaries, two (0.4%) had polycystic ovaries with clinical hyperandrogenism and 13 (2.6%) had oligomenorrhea with polycystic ovaries in the presence of clinical hyperandrogenism. Thus 51 (10.4%) girls satisfied Rotterdam's criteria for PCOS, which increased to 56 (11.4%) when imputed data were included with girls that did not have an ultrasound. The mean age at menarche, wrist circumference, hirsutism scores were 12.7±1.1 years, 15.1±0.9 cm and 6.1±5.3 cm, respectively. The mean age at menarche was lower in the PCOS adolescents compared with the no PCOS adolescents. The mean wrist circumference and hirsutism scores of the PCOS adolescent were higher than those of the no PCOS adolescents. Irregular menstruation was seen in 24.1% of adolescents. A total of 68% of PCOS adolescents had insulin resistance. Although, the prevalence of insulin resistance was higher in the overweight/obese than the underweight/normal PCOS (80.6% vs. 64.3%), no difference was found. No difference was found in the mean ratios of FSH, LH and LH/FSH; fasting glucose; free testosterone; cholesterol; LDL; and HDL between overweight/obese and underweight/normal group of PCOS. No differences were found in menarche age, hirsutism, acne and family history of hirsutism, infertility problem, irregular menstrual, paternal alopecia and diabetes between overweight PCOS and non-overweight PCOS groups. Risk of family history of obesity in the overweight PCOS adolescents was 2.65-fold higher than in the non-overweight PCOS group.



## CONCLUSIONS

The etiology of PCOS is unclear but evidence suggests a combination of genetic, metabolic and environmental factors. Ovarian androgen production is disordered, leading to increased synthesis of testosterone in proportion to estrogen. Insulin resistance can affect the hormonal profile and contribute to arrest of follicular maturation, which is accentuated in obese adolescents. Diagnosis of PCOS is challenging in adolescents as the immaturity of the hypothalamic-pituitary access and other normal pubertal changes present similarly to an adolescent with PCOS. Optimal treatment utilizes a multi-modal approach, incorporating lifestyle changes and exercise, pharmacologic therapies like, combined hormonal contraceptives (are utilized for menstrual regulation and also benefit the adolescent by decreasing testosterone levels through a rise in sex hormone binding globulin), metformin (which demonstrates weight loss and improved glucose tolerance) and spironolactone (can aid in the treatment of hirsutism and acne). The prevalence of PCOS in our adolescents is 10.2% in the age group of 16-18 years. Girls with oligomenorrhea, clinical hyperandrogenism and polycystic ovaries on ultrasonography, should be referred for further blood and ultrasonography tests to facilitate early identification.

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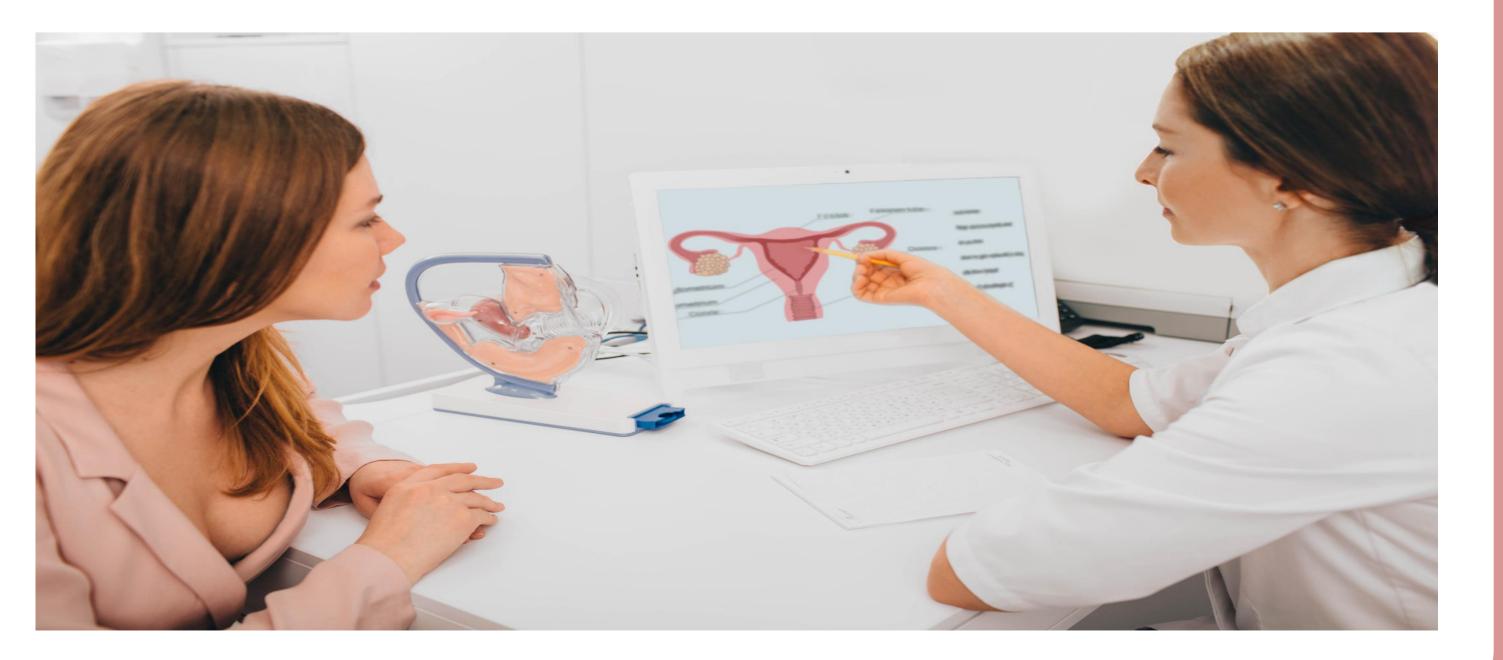2. Rosenfield RL. "The Diagnosis of Polycystic Ovary Syndrome in Adolescents." Pediatrics. 2015;136(6):1154-65.
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