

Polycystic Ovarian Syndrome (PCOS) in the Southern United States: A Socio-Ecological Model Intervention



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*Dear friend, I pray that you may enjoy good health and all may go well
with you, even as your soul is getting along well.*

3 John 2 (NIV)

Polycystic ovary

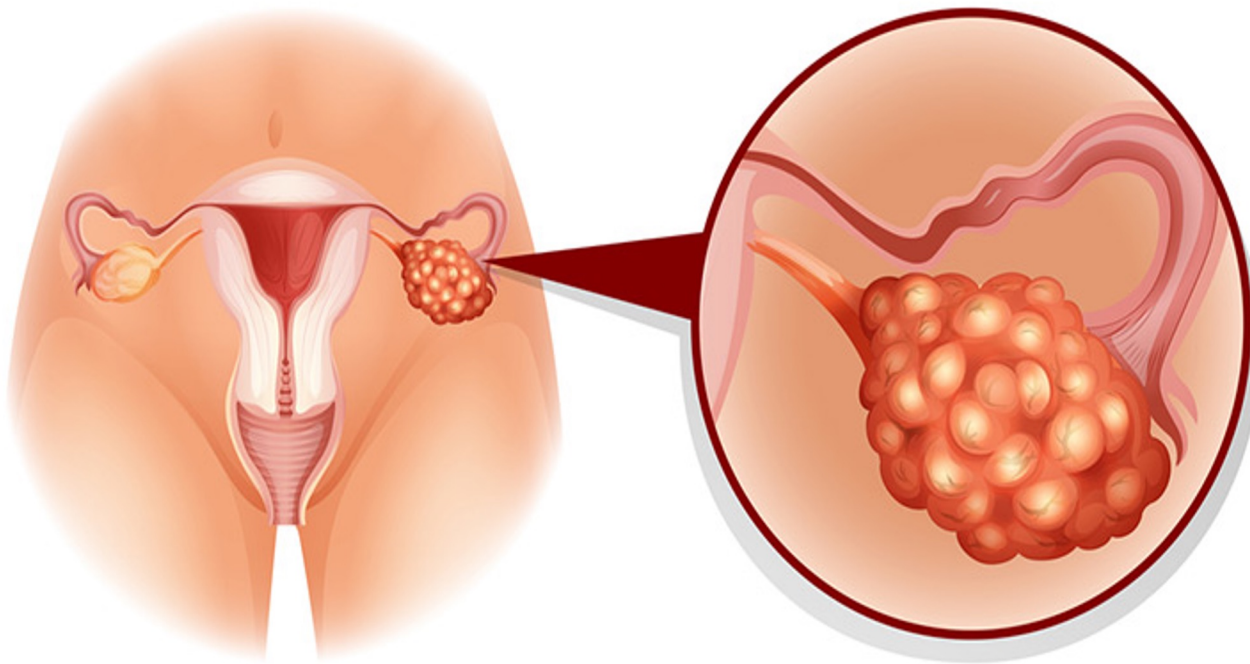


Figure 1. Normal ovary, left and Polycystic Ovary, right
Rose Park: Dr Darren Roberts; [cited 2023]. Available from <https://drdarrenroberts.com.au/gynaecology-and-women-health/polycystic-ovarian-syndrome/>

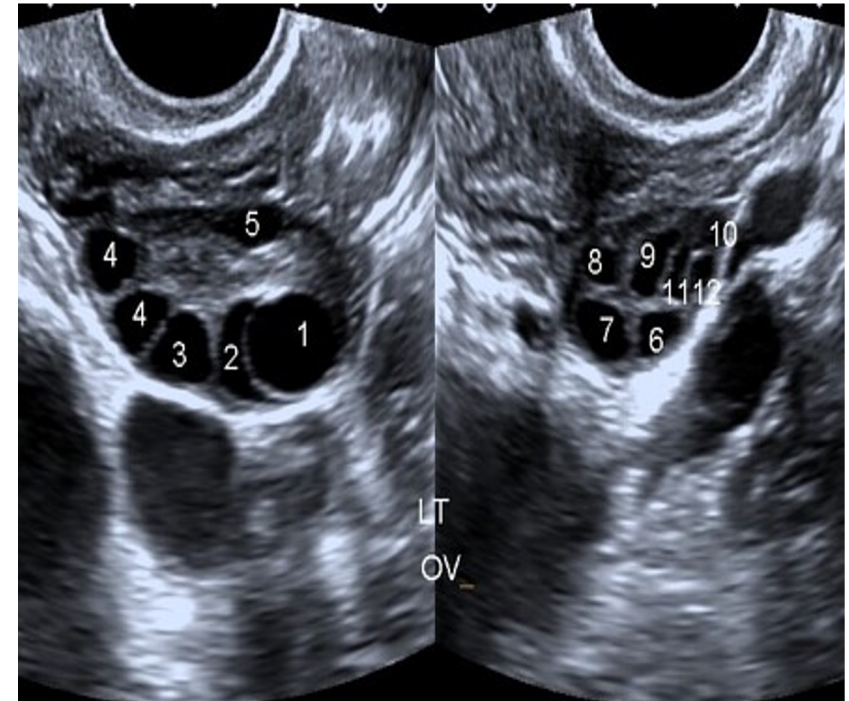


Figure 2. Ultrasound pictures of a polycystic Ovary
Available from [Polycystic ovarian syndrome | Radiology Case | Radiopaedia.org](https://radiopaedia.org/cases/polycystic-ovarian-syndrome). Radiopaedia. July, 2024

Background and Rationale^{1,2,3,4}

- Endocrine disorder causing abnormal amounts of androgens/cysts produced
- Affects women of reproductive age (16 to 49 years)
- Approximately 1 in 10 women face PCOS before menopause with complications
- 70% of PCOS cases are undiagnosed worldwide
- In the United State (US):
 - 6% to 20% of 326.7 million women have PCOS
 - Over 3 million diagnosed yearly
 - Costs 8 billion dollars for the US as of 2020
 - Higher prevalence in Southern US (47.5%) compared to North Central, West, and Northeast with 23.0%, 18.7%, and 10.3% respectively

Pathophysiology

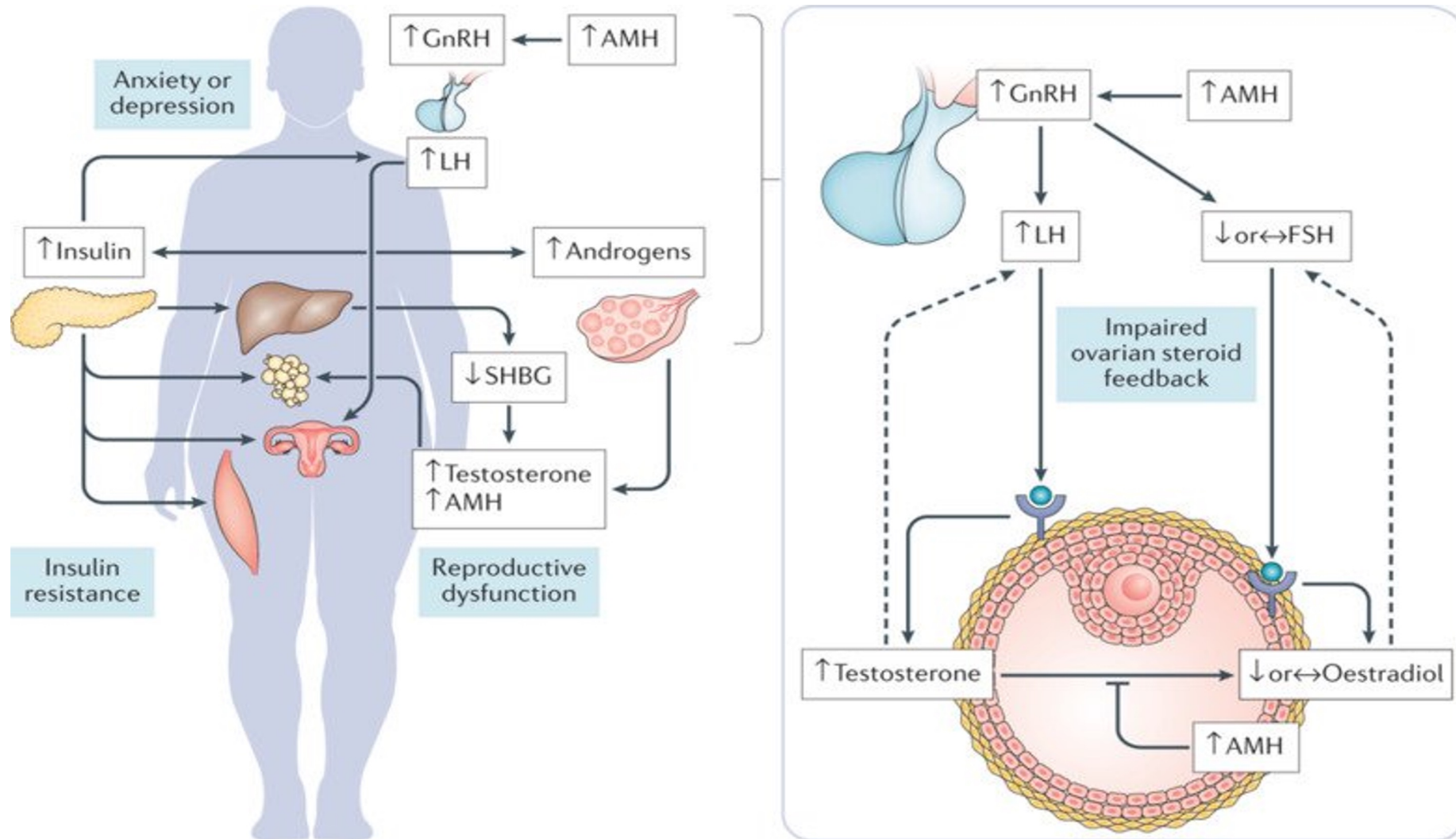


Figure 3. PCOS Pathophysiology

<https://news.ki.se/we-need-to-prevent-the-development-of-polycystic-ovary-syndrome>

Associated Complications^{1,3,4}

- Leading cause of infertility
- Insulin resistance
- Endometrial/ Uterine cancer
- Gestational and type 2 diabetes
- Sleep apnea
- Miscarriage, or premature birth
- Hypertension
- Stroke
- Heart disease
- High cholesterol
- Mental disorders

Indications, Diagnosis and Cause^{1,2,3,4,6,7}

- **Indications**

- Anovulation
- Heavy, long, intermittent, unpredictable, or no menstruation
- Infertility
- Baldness, hair thinning, alopecia,
- Excessive hair on face/body
- Acne/oily skin
- Bloating and weight gain around the belly

- **Diagnosed via**

- Clinical symptoms
- Ultrasound
- Hormone profile
- Other blood tests

- **Cause**

- Unknown

Methods

- Literature on PCOS in the Southern United States was reviewed for this study
- Resources published during the last 10 years
 - Mostly peer-reviewed articles
- A systematic review
- Databases searched:
 - PubMed, Google Scholar, and Government websites

Results

- Various factors contribute to the development and progression of PCOS across multiple levels
- Associated metabolic disorders: insulin resistance, cardiovascular diseases, and psychological comorbidities e.g. depression, anxiety, eating disorders, decreased self-esteem, and low quality of life
- 30 to 75% of women with PCOS are obese
- 5 to 10% of weight loss resulted in resumption of menses and lower androgen levels

Discussion

- PCOS is complex thus, the socioecological model for health intervention
- Many women remain undiagnosed until trouble with conception
- Some were diagnosed early but unable to keep up with management
- Women suffer psychological implications, stigmatization, and body shaming

PCOS Intervention: Intrapersonal level

Problem

- Lifestyle:
 - unhealthy eating,
 - physical inactivity
 - physical and emotional stress

Intervention

- Weight loss for those who are overweight
- Dietary changes to target insulin resistance and excess fat/weight
- Physical activity e.g. aerobics, dance
- Good sleep (7 hour)
- Continued follow-up visits with healthcare providers
- Adherence to therapy prescribed by healthcare providers

PCOS Intervention: Interpersonal level

Problem

- Epigenetics; alteration in genome and gene expressions.
- Stigmatization inhibits help-seeking
- Lack of support and labeling exacerbates the condition,^{9,10}

Intervention

- Create awareness among family and friends
- Encourage family members to go for early screening
- Encourage support from family and friends

PCOS Intervention: Community level

Problem

- Stigmatization and Societal Misconceptions
- Lack of resources
- Lack of awareness
- Health disparities in access to healthcare

Intervention

- Health education, community sensitization, and accessing information.¹¹
- Community LED initiatives like PCOS support groups
- Community online platforms for sharing experiences

PCOS Intervention: Institutional/ Organizational level

Problem

- Environmental factors: chemicals with phenols/ halogens e.g. chlorine, bromine
Bisphenol in polycarbonate plastics, epoxy resins, dental fillings, food & drink packages, baby bottles, body creams, make-up kits, polyvinyl chloride

Intervention

- Multidisciplinary care teams for comprehensive treatment
- Personalized patient-centered approach in addressing diverse needs.¹¹
- Regular checks for hypertension, glucose tolerance, cholesterol, triglyceride
- Periodic screening for depression anxiety, and obstructive sleep apnea

PCOS Intervention: Policy level

Problem

- Inadequate understanding/recognition of the multifaceted nature of PCOS
- Limited access to comprehensive care.
- Lack of standardized diagnostic criteria and treatment
- Insufficient funds for research hinder advancements in understanding & management
- Limited insurance coverage

Intervention

- Integrate management into primary care
- Advocate for greater recognition of PCOS, research, and education.¹³
- Policies to support screening and early intervention like lifestyle modification
- Regulations on use of chemicals leading to PCOS
- Comprehensive insurance coverage particularly for females

Limitations

- Much of the literature reviewed had similar information, impacting on quality of work
- Diversified preventive strategies since a unified therapy is yet to be determined
- Information available targets management and not cure thus the strategies are recommendations

Conclusion

- Improve awareness and understanding of PCOS
- Enhance access to care, reduce stigmatization, and mitigate associated health complications
- Adopting a holistic perspective and implementing evidence-based interventions
- Improved quality of life for individuals affected by PCOS
- The multifaceted nature of PCOS demands a multilevel approach such as the socioecological model
- Utilize the socio-ecological model to tailor interventions at various levels

Future Work

- Use scientific approaches to find the cause of PCOS so treatment can be developed
- Ascertain a unified and improved diagnostic criteria and treatment for PCOS
- Investigate the role of environmental factors, such as endocrine-disrupting chemicals and pollutants, in the development and progression of PCOS
- Identify existing policies requiring reviews and develop policies to support care for PCOS patients

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