Prevalence of Polycystic Ovarian Syndrome among urban adolescent girls and young women in Mumbai

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National Institute for Research in Reproductive Health
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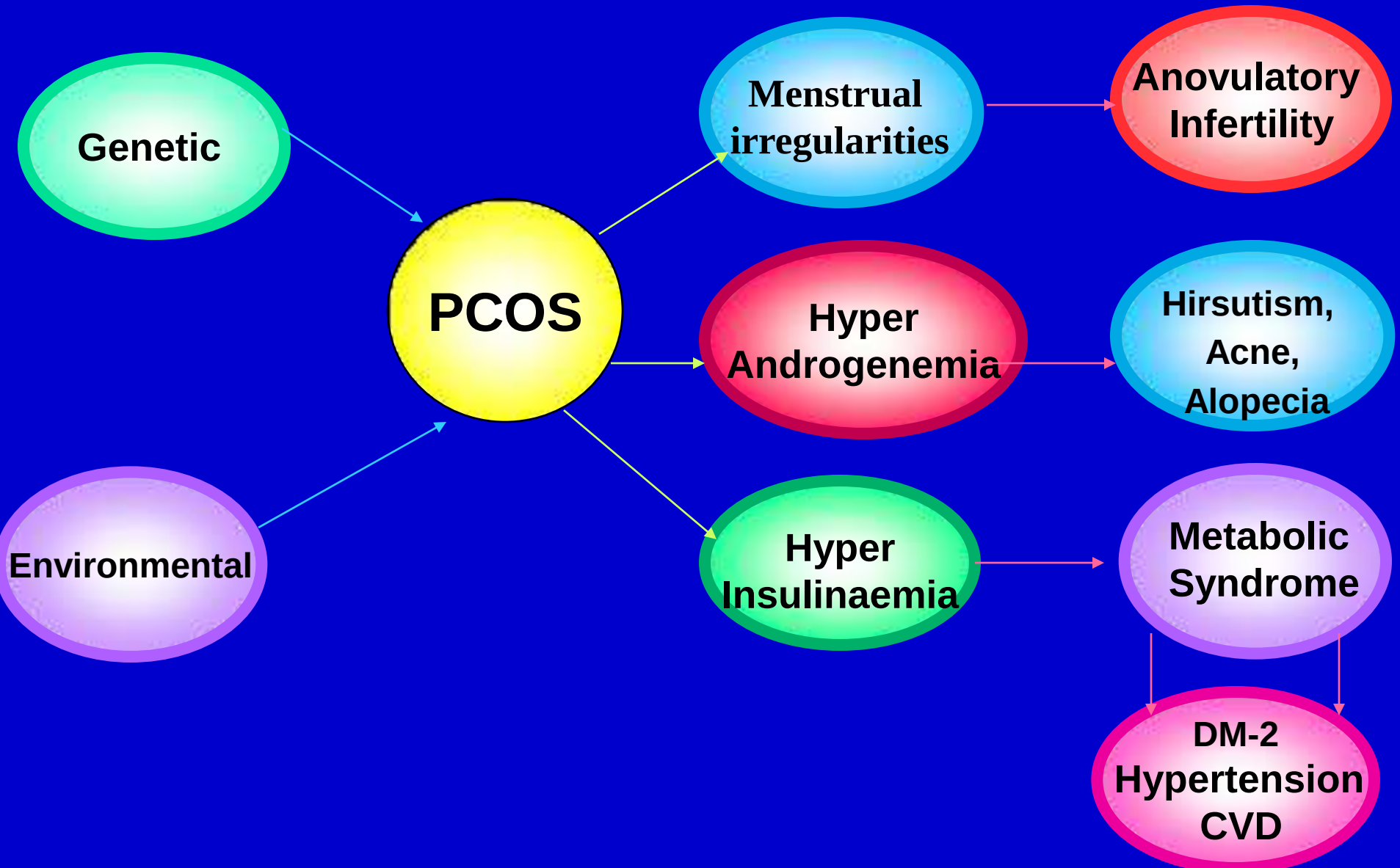
Training Course in Reproductive Health Research
WHO 2008
WHO Scholarship

Polycystic Ovarian Syndrome



Diagnostic Criteria

	A	B	C	D	E	F	G	H	I	J
Hyper androgenemia	+	+	+	+	-	-	+	-	+	-
Hirsuitism	+	+	-	-	+	+	+	+	-	+
Oligo anovulation	+	+	+	+	+	+	-	-	-	+
Polycystic ovaries on USG	+	-	+	-	+	-	+	+	+	-
NIH 1990 Criteria										
Rotterdam 2003 criteria										
AES 2006 criteria										

Ref: AES Position Statement. J Clin Endocrinol Metab. 2006

Public Health Importance

Maternal and infant morbidities	OR	95% CI
Gestational Diabetes	2.94	1.98-6.81
Pre eclampsia	3.47	1.95-6.17
Preterm birth	1.75	1.16-2.62
Perinatal mortality unrelated to multiple births	3.07	1.03-9.21
Admission of neonates to neonatal intensive unit care	2.31	1.25-4.26

Ref: Boomsman CM et al. Human Reproduction Update 2006

PCOS is linked to a host of health problems

- **Subfertility**
- **Infertility**
- **T2DM**
- **Hypertension**
- **Heart disease (7.4 times as likely as healthy women)**
- **Endometrial cancer**
- **Persistent dysfunctional bleeding that affects some women with PCOS can lead to anemia**

Early detection can prevent future morbidities

Adolescents a vulnerable group

- Stress
- Depression
- Food habits-overweight,obesity
- Lack of exercise
- Premature puberty

Early diagnostic signs are mistakenly dismissed as normal changes of adolescence

Adolescent PCOS

- Cases first screened and diagnosed in infertility clinics
- Dermatological effects of PCOS can have deleterious effect on an adolescent's self-image and peer interaction
- Weight gain and menstrual uncertainties affect body image and lead to further stress including the family members
- Widespread screening for the disorder appears to be a cost effective strategy? *The total cost of diagnosis is only 2% of the total cost of evaluating and providing care to PCOS women in US ($ 4.36 billion)*

  (Azziz R et al. 2005 J Clin Endocrinol Metab)

Literature Review - Global prevalence

Country	Prevalence	Reference
United States	4-10%	*Knochenhaeur et al 1998* *Franks et al 1995*
United Kingdom	22%	*Clayton et al 1992*
United Kingdom	23%	Polson et al 1988
United Kingdom	34%	Michelmore et al 1999
New Zealand	21%	Farquhar et al 1994
South Asian emigrants settled in England	52%	*Rodin et al 1998*

Objectives

Overall objective:

To determine prevalence of PCOS among urban adolescents and young girls in Mumbai, India

Specific objectives:

- **To assess the phenotypes and biochemical parameters among obese and lean adolescent population with PCOS**
- **To estimate the metabolic syndrome among cases diagnosed with PCOS**
- **To understand their awareness and health seeking behaviour on this disease**

Methodology

Study Design: Cross Sectional (Diagnostic)

Duration: 1 year (3 Phases i.e. preparatory, screening and diagnosis and data analysis, report writing and analysis)

Prevalence will be detected at three levels

- **based on self reported symptoms suggestive of PCOS**
- **based on clinical examination**
- **based on investigation such as biochemical tests and or ovarian ultrasonography**

Sampling

Option1:

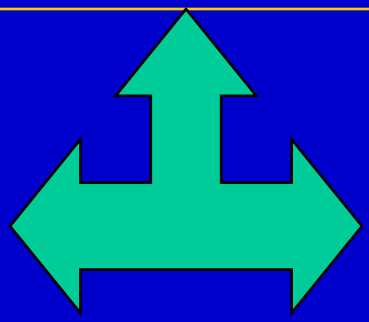
Assuming a low prevalence of 5%, a sample of 1875 (approx 1900) eligible adolescent girls is required so that the prevalence may be estimated to within 1% point (3%-5%) of the true value with 95% confidence.
Sample size = n = (1.96x1.96) x 0.04x0.96/0.0001= 1875 ~1900

Option 2:√

Assuming a low prevalence of 5%, a sample of 292 (approx 300) eligible adolescent girls is required so that the prevalence may be estimated to within 0.025% point of the true value with 95% confidence.
Sample size = n = (1.96x1.96) x 0.05x0.95/0.025 X 0.025 = 292 i.e. ~300

Sampling

A 300 college going adolescents – Check list
100 each from low, middle and high SEC



B -Normal

C- Eligible

Controls -100

D- Confirm by Clinical evaluation

E-Rule out other DD

F-Confirm PCOS by biochemical tests

Inclusion criteria for screening

Checklist: Any of the following symptoms:

- **Premature puberty**
- **Oligomenorrhea/amenorrhea** (two years after menarche)
- **Signs of hyperandrogenism**: Hirsutism, severe acne, male pattern alopecia
- **Signs of hyperinsulinemia** : Obesity, acanthosis nigricans
- History of PCOS in mother/siblings

Clinical evaluation

History

- Age
- Age at menarche
- Cycle History – Oligomenorrhea or amenorrhea
- Sexual history
- Family history: History in mother/sibling
- Diabetic history
- History of drug intake (hormone treatment)

Clinical evaluation

The physical examination

- anthropometry - BMI, central obesity i.e. waist to hip ratio
- blood pressure
- Secondary sexual characters
- assessment of androgen status (hirsutism, temporal recession of hair, acne, muscle bulk, clitoromegaly)
- evidence of insulin resistance (acanthosis nigricans)
- Moon facies/striae
-),

Laboratory diagnostic criteria for the PCOS

First rule out

- Pregnancy – History, UPT
- Hypothyroidism (elevated TSH and reduced T4)
- Hyperprolactinemia
- Adrenal hyperandrogenemia (basal morning 17-OHP)
- Cushing's disease - Referral

PCOS Diagnosis	Metabolic syndrome
•SHBG •Total Testosterone •LH / FSH ratio •DHEAS	•Fasting glucose •Serum insulin •Glucose insulin ratio •Triglycerides • HDL-cholesterol

Interventions
At Adolescent Friendly Centers

The diagnosed cases will be subjected to the following interventions at the already established Adolescent Friendly Centers.

1. **Counselling -** Diet modification, lifestyle changes
2. **Treatment of m**enstrual problems and hyperandrogenism, hyperinsulinemia
3. **Referrals**

Implications

- Community data base
- Assess the need for larger study
- Assess the need for including in the management protocol on job aids being developed on adolescent problems by WHO India Office
- Prevention of long term sequelae
- Disease pattern among lean and obese PCOS
- Interventions would create more awareness about the problem

Budget

- Personnel
- Diagnostics
- Survey tools and IEC material
- Miscellaneous
- Overheads

Total: 30,000 US Dollars

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THANK YOU