

A Cross Sectional Study to Determine Polycystic Ovarian Disease (PCOD) among Students of a Tertiary Care Teaching Hospital

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Abstract

Background: The incidence of childhood obesity is rapidly rising, which is the main cause of increased insulin resistance, the metabolic syndrome, dyslipidemia, and polycystic ovarian syndrome. India presently has the greatest number of type 2 diabetes mellitus patients worldwide. The prevalence of PCOD is unknown in the public, though.

Objective: To estimate the prevalence of PCOD among students in Tertiary care teaching hospital.

Materials and Methods: A cross sectional study was conducted among students of aged 16-24 years in a teaching hospital in BMC, Sagar (M.P.). Sample size of 256 students were randomly selected from various batches of medical and paramedical courses. Occurrence of hyper androgenic features and menstrual irregularities were evaluated, and they were physically examined. The diagnosis of PCOS was made based on Rotterdam's criteria. Epi-info 7 was used for analysis.

Results: Seventy-five students (30%) met the criteria to be diagnosed as polycystic ovarian syndrome. Twenty students (10%) had a history of thyroid dysfunction. The other clinical features of hyperandrogenism were like acne (25%), oily skin (13.5%), increased hair growth (7%), male pattern thinning of hair (9.75%).

Conclusion: PCOD can be assumed of as a forerunner syndrome that, if screened for, can help in early identification of risk of highly morbid conditions, in adolescent girls.

Keywords: PCOD, Menstrual Irregularities, Hyper Androgens, Adolescent, Metabolic Syndrome, Acne, Risk Factors.

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Introduction

Polycystic ovarian syndrome (PCOS) is one of the most communal endocrine disorders in women. The prevalence of polycystic ovarian syndrome ranges from 2.2% to 26% among the endocrine disorders. [1-3] There are many

interrelating factors which result in clinical and/or biochemical hyperandrogenism. The symptoms of PCOS appear slowly and these features are equivalent with the changes of normal pubertal development. So, these features may not be recognised in

an early stage and leads for the failure to identify the disorder in young girls. Women with PCOS are at risk of obstructive sleep apnea, infertility, dysfunctional uterine bleeding, metabolic syndrome, type 2 diabetes, cardiovascular disease, depression. [4-7] So diagnosing PCOS at an early stage will help prevent these complications of maternal and child health which appears to cover two of the eight objectives of Millennium Development Goals (MDG). [8] Preventing measures like exercises, healthy diet, practicing meditation, calming exercise that reduce stress levels etc. play an important role in reducing the complications of PCOS. There is a rapid rise in the incidence of obesity in children which results in metabolic syndrome, dyslipidemia, insulin resistance and polycystic ovarian syndrome. The prevalence in Asian countries appears to be lower, with a reported prevalence of 2.4% in China [1] and 6.3% in Sri Lanka [9] (Rotterdam criteria). Prevalence was found to be 6.8% in north Indian women. [10] In view of the above cited causes and the fact that prevalence of this syndrome in our community remains unknown, we attempted to find its prevalence in medical, dental, nursing and paramedical female students, aged between 16-24 years, in a teaching hospital.

Materials and Methods

Study Design: Cross sectional study.

Study Settings: Tertiary care teaching hospital of BMC, Sagar (M.P.).

Study Population: Students of aged 16-24 years were randomly selected from various batches and branches of medical and paramedical courses.

Ethical Consideration: The Institutional Ethics Committee approval was obtained prior to the study.

Sample Size: Based on the expected prevalence of 20% [10] and confidence level 95%, the sample size for this project

was calculated to be 256. Using the formula:

$$4PG/L^2$$

Where, P- prevalence of PCOD

$$Q=1-P$$

L- Absolute error at 95% confidence Interval.

Sampling Technique- Simple random sampling

Inclusion Criteria- Female students doing course in the college and who were willing to go for an ultrasound examination were included in the study.

Exclusion criteria- Students who didn't go for ultrasound and didn't give consent were excluded.

Methodology:

Although they were students of one college of a single area, they represented a larger geographical area because they were from urban, semi-urban and rural areas around the district. The study subjects were then distributed questionnaires which included questions pertaining to the presence of hyper androgenic features and menstrual irregularities (amenorrhoea/ oligomenorrhoea). The diagnosis of PCOS was made based on Rotterdam's criteria. The Rotterdam guidelines (2003) tell that the patient should have two of three criteria: oligo- or chronic anovulation, clinical and/or biochemical signs of hyperandrogenism, polycystic ovaries. Exclusion of other etiologies of androgen excess and anovulatory infertility is necessary. The ultrasound criteria defines the polycystic ovary as containing 12 or more follicles measuring 2–9 mm and/or an increased ovarian volume of > 10 cm³. [11] Menstrual disturbances in PCOS generally present in the form of oligo-amenorrhea (fewer than eight episodes of menstrual bleeding per year or menses that occur at intervals greater than 35 days). [12]

Statistical Analysis: The statistical analysis was performed using SPSS for windows version 25.0 software. The findings were present in number and percentage analyzed by frequency, percent. Chi-square test was used to find the

association among variables. The critical value of *P* indicating the probability of significant difference was taken as <0.05 for comparison.

Results

Table 1: Demographic details of the study participants

Parameters	With PCOD	Without PCOD
Number of Students	75 (30%)	171 (70%)
Age	19.91± 1.70	19.32 ± 1.04
BMI	22.79 ± 4.89	22.08 ± 2.12
Average age of onset of menstruation	12.51± 0.90	13.03± 0.38
Data are expressed as Mean± SD		

As per table 1 The demographic profile and the average age of onset of menstruation among the students are depicted Seventy-five students (30%) met the criteria to be diagnosed as polycystic ovarian syndrome. The average BMI of those with PCOS is slightly higher (2.67) than those without it.

Table 2: Participants meeting the rotterdam criteria

Clinical Features	Proportion of students
Irregular periods	26.86%
Cyst or increased stroma in ovaries	32.14%
Hirsutism	24.89%
Both menstrual irregularity and cyst in ovaries	22.47%
Both cyst in ovaries and hirsutism	13.14%
Both menstrual irregularity and hirsutism	9.85%
Menstrual irregularity, cyst in ovaries and hirsutism	7.5%

According to table 2, 10.16% of students have previously received a PCOS diagnosis. A student with monthly irregularity is more likely to have a cyst and vice versa, as evidenced by the percentage of students with only menstrual irregularity and cyst (22.47%), which is higher than that of students with only the other two combinations. Ten percent of the pupils, or twenty, had thyroid issues in the past. Clinical signs of hyperandrogenism

Discussion

PCOS is one of the most shared endocrine disorders among women but the diagnosis, management and the complications have not been consistent. Hyperandrogenism and menstrual irregularity are the most predominant symptoms of PCOS patients,

included oily skin (13.5%), acne (25%), increased hair growth (7%), and male pattern baldness (9.75%) in PCOS patients. As there is no standardized technique that employs these qualities to meet the Rotterdam criteria of clinical hyperandrogenism, the other hyperandrogenic symptoms were not taken into account in the diagnosis of PCOS. None of the students gave a self or family history of late onset congenital adrenal hyperplasia or galactorrhoe.

but these symptoms are not absolute necessary for diagnosis of PCOS. Similarly, the ultrasonography indication of polycystic ovaries as a diagnostic marker doesn't validate much. In the present study the demographic profile and the average age of onset of menstruation among the students are depicted Seventy-five students

(30%) met the criteria to be diagnosed as polycystic ovarian syndrome. The average BMI of those with PCOS is slightly higher (2.67) than those without it. The percent prevalence of PCOS was 30% which is comparable to some other studies done. [2,12,13] The increased prevalence of PCOS among young, aged females may be due to unhealthy dietary habit like junk foods, lack of exercises, sedentary lifestyles. The childhood obesity can lead to insulin resistance and metabolic syndrome in later part of the life. Stress is one of the major factors for all types' diseases now a day. [14] The changed lifestyle disorder can cause increased stress among the adolescents. So, the students should be stimulated to follow stress relieving techniques like yoga, meditations and to adapt the lifestyles. In the present study total number of students previously diagnosed with PCOS was 10.16%. The percent of students having only menstrual irregularity with cyst (22.47%) which is higher than those having only the other two combinations showing that a student with menstrual irregularity is more likely to have a cyst and vice versa. Twenty students (10 %) had a history of thyroid dysfunction. The clinical features of hyperandrogenism among those who had PCOS were like oily skin (13.5%), acne (25%), increased hair growth (7%), male pattern thinning of hair (9.75%). The other hyperandrogenic features were not considered in the diagnosis of PCOS as there is no standardized method that uses these features to satisfy the Rotterdam criteria of clinical hyperandrogenism. None of the students gave a self or family history of late onset congenital adrenal hyperplasia or galactorrhoea. This was comparable with studies done on familial PCOS recommended that subjects with classic features of PCOS, anovulation and hyperandrogenism, may have an affected sister who is equally hyperandrogenaemia, but has regular cycles [15]

Conclusion

Because the prevalence in this study was 30%, which is greater than average, the disease has to be given more attention through early detection and diagnosis. Following this, counselling regarding lifestyle changes should be provided. Alarming little is known about PCOS among the general public, thus it's critical to inform them of the issues it might cause and the importance of prevention.

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