

ORIGINAL RESEARCH

Assessment Of Relation Of Socioeconomic Status With Polycystic Ovary Syndrome

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Received: 13 September, 2022

Accepted: 20 October, 2022

ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is the most common endocrinopathy in women and is increasingly understood to present with numerous comorbidities. The present study was conducted to assess relation of socioeconomic status with polycystic ovary syndrome.

Materials & Methods: 48 patients of polycystic ovary syndrome were selected and serum progesterone was measured on days 21 to 24 of a spontaneous or induced menstrual cycle. Serum progesterone, SHBG, and insulin were measured by commercial radioimmunoassay methods. Insulin resistance was calculated by the Quantitative Insulin-Sensitivity Check Index (QUICKI).

Results: Age group 18-28 years had 12, 28-38 years had 20 and >38 years had 16 patients. The difference was non-significant ($P > 0.05$). Low family income was seen in 8, medium family income in 14 and high family income in 26 patients. Anovulation was seen in 90%, 78% and 55%, BMI was 30.5, 29.4 and 26.8, mean waist was 96.5 cm, 93.2 cm and 87.5 cm, mean insulin was 15.9 $\mu\text{U/mL}$, 15.3 $\mu\text{U/mL}$ and 13.5 $\mu\text{U/mL}$ in high, middle and low income subjects respectively. The mean QUICKI was 0.32, 0.35 and 0.33 in high family income, medium family income and low family income patients respectively.

Conclusion: It was found that patients with high socio-economic status had higher chances of Polycystic ovary syndrome.

Key words: Polycystic ovary syndrome, Insulin, Socio-economic

INTRODUCTION

Polycystic ovary syndrome (PCOS) is the most common endocrinopathy in women and is increasingly understood to present with numerous comorbidities.¹ Indeed, PCOS is not solely a reproductive disorder. The PCOS-related health risks and comorbidities include obesity and a wide range of metabolic, psychological, and musculoskeletal disorders.² Since such disorders affect daily functioning and are known risk factors for poor work ability and early retirement, studies focusing on the effects of PCOS on working life are urgently needed.³

The association of PCOS and its components with socioeconomic status (SES) might shed light on the role of the environment in the development of this condition. Social differences inside the same ethnic group also may be important in determining body weight.⁴ In fact, in

body weight is higher in people with higher socioeconomic status whereas as low body weight is seen in low socioeconomic classes.⁵ Studies have also shown that smoking and obesity can exacerbate insulin resistance, which is a condition highly correlated with and part of the pathogenesis of PCOS⁶. Moreover, there is clear evidence of an association between high SES and cardiovascular disease (CVD), as well as the metabolic syndrome and its various components.⁷

Globally, the estimates of PCOS prevalence are highly variable, ranging from 2.2 to 26%. PCOS has a prevalence of 5–10% in women of childbearing age with variance among races, ethnicities and geographical areas. The highest reported incidence 52% has been among the South Asian immigrants in Britain. Mangalath et al observed that the prevalence of PCOS was high in patients from a middle socio-economic class, residing in urban areas and obese patients.⁸

The present study was conducted to assess relation of socioeconomic status with polycystic ovary syndrome.

MATERIALS & METHODS

The present study comprised of 48 patients of polycystic ovary syndrome. The presence of polycystic ovaries was determined by intravaginal sonography, in which increased ovarian size and/or of at least 14 follicular cysts measuring 2 to 9 mm were considered indicative. All gave their written consent for the participation in the study.

Data such as name, age etc. was recorded. In all patients, body mass index (BMI) and waist circumference were determined. During the follicular phase (days 5 to 8) of a spontaneous or progestin-induced cycle, levels of serum testosterone (T), sex hormone-binding-globulin (SHBG), insulin, and blood glucose were measured. Serum progesterone was measured on days 21 to 24 of a spontaneous or induced menstrual cycle. Serum progesterone, SHBG, and insulin were measured by commercial radioimmunoassay methods. Insulin resistance was calculated by the Quantitative Insulin-Sensitivity Check Index (QUICKI). Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I: Distribution of patients based on age

Age group (years)	Number	P value
18-28	12	0.11
28-38	20	
>38	16	

Table I, graph I shows that age group 18-28 years had 12, 28-38 years had 20 and >38 years had 16 patients. The difference was non-significant ($P > 0.05$).

Graph I: Distribution of patients based on age

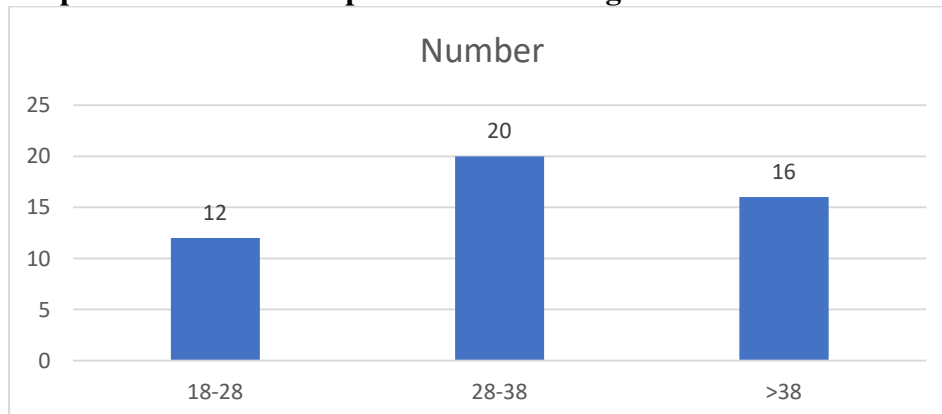


Table II: Assessment of parameters

SES	No.	Anovulation	BMI	Mean waist (cm)	Mean insulin ($\mu\text{U}/\text{mL}$)	Mean QUICKI
High family income	26	90%	30.5	96.5	15.9	0.32
Medium family income	14	78%	29.4	93.2	15.3	0.35
Low family income	8	55%	26.8	87.5	13.5	0.33

Table II shows that high family income was seen in 26, medium family income in 14 and low family income in 8 patients. Anovulation was seen in 90%, 78% and 55%, BMI was 30.5, 29.4 and 26.8, mean waist was 96.5 cm, 93.2 cm and 87.5 cm, mean insulin was 15.9 $\mu\text{U}/\text{mL}$, 15.3 $\mu\text{U}/\text{mL}$ and 13.5 $\mu\text{U}/\text{mL}$ in high, middle and low income subjects respectively. The mean QUICKI was 0.32, 0.35 and 0.33 in high family income, medium family income and low family income patients respectively.

DISCUSSION

The definition of PCOS was based on the National Institutes of Health (NIH) criteria suggested at an expert conference in 1990, considering the presence of ovulatory dysfunction plus clinical or biochemical signs of hyperandrogenism after exclusion of related disorders.⁹ Polycystic ovary syndrome (PCOS) is a heterogeneous disorder that may present with very different clinical patterns.¹⁰ Many of these differences are probably related to differences in genetic expression of androgen excess and/or insulin resistance, but some may depend on environmental influences on body weight and fat distribution.¹¹ The present study was conducted to assess relation of socioeconomic status with polycystic ovary syndrome.

We found that age group 18-28 years had 12, 28-38 years had 20 and >38 years had 16 patients. Fedet al¹² correlated social and cultural status with the phenotypic expression (body weight and ovulation) and with androgen and insulin levels of PCOS. In the low to medium income group, 21% of patients had ovulatory PCOS, but the prevalence of the same PCOS phenotype was 43% in patients with high income. In patients with low education, only 12% presented with ovulatory PCOS compared with 47% of the patients with high education status. These results are in accordance to our present study.

Mean family income negatively correlated with body mass index, waist circumference, insulin, and insulin resistance. Serum progesterone correlated negatively with insulin and insulin resistance

We found that low family income was seen in 8, medium family income in 14 and high family income in 26 patients.

Anovulation was seen in 90%, 78% and 55%, BMI was 30.5, 29.4 and 26.8, mean waist was 96.5 cm, 93.2 cm and 87.5 cm, mean insulin was 15.9 $\mu\text{U}/\text{mL}$, 15.3 $\mu\text{U}/\text{mL}$ and 13.5 $\mu\text{U}/\text{mL}$ in high, middle and low income subjects respectively. The mean QUICKI was 0.32, 0.35 and 0.33 in high family income, medium family income and low family income patients respectively.

Merkinet al¹³ examined the association of PCOS and its components with socioeconomic status (SES) over the life course to explore the role of the environment on the development of PCOS. Participants included 1163 women, aged 34–39, from the Coronary Artery Risk Development in Young Adults (CARDIA) Women's Study, examined at year 16 of the CARDIA study (2001). Logistic regression models, adjusted for age, body mass index (BMI), waist circumference, and oral contraceptive (OC) use, demonstrated a statistically significant association between those women with low parental education high personal education and PCOS.

In contrary to our study Kujanpaa et al¹⁴ evaluated work ability, participation in working life, and disability retirement in middle-aged women with and without PCOS. Women with PCOS

(n = 280) and women without PCOS symptoms or diagnosis (n = 1573) were identified and were evaluated for self-rated work ability and potential confounders at age 46. The women with PCOS reported poorer ability to work at age 46, especially due to poorer health. During the 2-year follow-up period, the affected women gained on average an additional month of disability and unemployment days, corresponding to an approximately 25% higher risk for both disability (IRR (95% CI): 1.25 (1.22–1.27)) and unemployment days (IRR (95% CI): 1.26 (1.23–1.28)) in models adjusted for health and socioeconomic factors. They found a two-fold higher cumulative risk for disability retirement by age 52 compared to non-PCOS women (HR (95% CI): 1.98 (1.40–2.80)), which remained after adjusting for confounding factors. This might also explain the protective effect for those with high parental education=low personal education, that is, a combination of better childhood socioeconomic conditions and perhaps less likelihood of recalling these health measures.

The limitation the study is small sample size.

CONCLUSION

Authors found that patients with low socio-economic status had higher chances of Polycystic ovary syndrome. Further investigations are needed to establish the role of social determinants of health on PCOS and its outcomes.

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