Prevalence and Risk factors of polycystic ovarian syndrome PCOS; cross-sectional study

Abstract

Background: The most prevalent endocrine illness in women of reproductive age is polycystic ovarian disease. In this study, girls between the ages of 18 and 30 who were vesiting the maternity hospital refer in King Saud, Saudi Arabia, will be assessed for poly cystic ovaries prevalence and risk factors.

Method: There were 1080 participants in this study, representing all outpatient visits over the chosen period (Jul 2022 to Jan 2023). They were required to answer questions about their menstrual cycle and the symptoms of hyperandrogenism on a questionnaire. Weight, height, waist, and hip circumferences were measured anthropometrically. Blood pressure was measured. A girl who exhibits either hirsutism or irregular menstruation, or both, was considered a probable case. All of the likely instances were required to undergo thorough examinations, hormone estimations, and ovarian ultrasounds.

Results: Among the 1080 girls, 191 (17.6%) had irregular menstrual cycles, and 75 (6.9%) had hirsutism. According to Rotterdam's criteria, the prevalence of polycystic ovaries was found to be 18.9% after hormonal testing and ultrasound. The non-vegetarian diet, socioeconomic level I and II, snacking, obesity, insufficient physical activity, prehypertension, hypertension, central obesity, and self-reported emotional health issues in girls, and poly cystic ovaries in the family, were found to be substantially linked with polycystic ovaries.

Conclusion: To lessen poly cystic ovaries and associated problems in females, early lifestyle change and health education were necessary.

Introduction

Menstrual irregularities and hyperandrogenism are two symptoms of poly cystic ovaries, which is thought to be the most prevalent endocrine condition affecting women of reproductive age (1). An increased risk of reproductive issues, such as infertility or subfertility, endometrial cancer, and gestational problems exists in women with poly cystic ovaries. Young females are increasingly developing poly cystic ovaries, which is a serious public health concern because it is both a frustrating condition for women and a difficult complex syndrome for medical professionals to treat (2).

Depending on how poly cystic ovaries is defined, prevalence estimates for this age group globally range from 2.2% to as high as 26% (3). The varying diagnostic standards, the heterogeneous clinical presentation, the logistical challenges of doing blood tests and ultrasounds, and the varying age groups of various studies all contribute to the diversity in prevalence (4). The majority of young girls do not go to medical institutions until they have severe late effects from this sickness (5).

A wide range of presenting characteristics, such as anovulation, obesity, and abnormal face and skin hair development, are linked to poly cystic ovaries (6,7). According to data, women with poly cystic ovaries are more likely to develop type 2 diabetes, dyslipidemia, hypertension, and heart disease due to the link between poly cystic ovaries and insulin resistance (8). Obesity, insufficient exercise, and a family history of poly cystic ovaries-like symptoms in a person going through the pubertal transition are risk factors for poly cystic ovaries (9). Large-scale, community-based epidemiological investigations are scarce. Early poly cystic ovaries detection and therapy can manage the symptoms as well as prevent later consequences (10).

The purpose of this study was to determine the prevalence of poly cystic ovaries and its risk factors in saudi arabia king saud medical city maternity hospital between the ages of 18 and 30.

Method

A descriptive cross-sectional study was conducted in the king saud medical city gynecological referral from jul 2022 to jan of 2023. The 1080 sample visits that were included were those of all patients who met the inclusion criteria. Exclusion criteria includes; females with a history of cushing's disease, those who refused to participate in the trial, those who were pregnant, and those who used oral contraceptives as a form of birth control were all disqualified from the study.

The female participants in this study who provided written informed consent were required to complete a semi-structured questionnaire about their socio-demographic characteristics, menstrual history, family history, and characteristics of hyperandrogenism, such as hirsutism and dietary habits, hair loss/alopecia, duration, frequency, and intensity of physical activity, as well as their self-perceived stress levels or emotional health problems. To determine the relationship between poly cystic ovaries and obesity, hypertension, including prehypertension, blood pressure was measured and their anthropometric measurements were obtained. A skilled research assistant validated the respondents' information. It was considered that a girl with poly cystic ovaries would have either self-reported hirsutism or irregular menstrual cycles. Clinically abnormal cycles in the previous six months, such as the presence of persistent amenorrhea or oligomenorrhea, were considered to be menstrual irregularity. Self-reporting was used to assess hirsutism. The modified ferriman galleway score defines it as the presence of coarse/dark colored resemble male hair growth on more than or equal to 9 body parts, or on the entire body (11–13). For a thorough clinical examination, hormone estimation, and ovarian ultrasonography to confirm poly cystic ovaries based on rotterdam's criteria, which is having two of the three features of irregular menstruation, hirsutism, and polycystic ovaries, all females who were suspected cases of the condition due to symptoms were called (14–16). Poly cystic ovaries defined as more than or equal to 12 follicles measuring 2 to 9 mm in diameter, with or without an ovarian volume greater than 10 milliliters/10 cm3 . Microsoft excel 2016 was used to enter the data, while spss v24 was used for additional data analysis. The chi square test was applied, and a significance level of p 0.05 was indicated for the findings.

Results

The study involved 1080 female participants in total. The average age of the participants in the study was 22.53 ± 3.39 years, and 44.3% of them were between the ages of 18 and 20.

In our study, the average age at menarche was 13.7 ± 1.51 years. 191 (17.6%) of the girls had irregular periods (table 1). Menstrual cycles have been irregular in these females since menarche in 26.1% of cases, and they have been intermittent in 73.9% of cases. 6.2% of the participants in the study had poly cystic ovaries diagnoses in the past. When the chi square test was used to analyze the data, it was discovered that 6.9% and 17.5% of study participants, respectively, had clinical hyperandrogenism's hirsutism and alopecia (p value 0.001). In our research, we identified 3 distinct poly cystic ovaries phenotypes, as shown in table 2. Rotterdam's criteria were used to determine the prevalence of poly cystic ovaries, which was found to be 18.9%. The participants in our study had a mean bmi of 26.06 ± 4.62 kg/m2. 72.56% of the poly cystic ovaries cases were overweight or obese. Of the girls with poly cystic ovaries, 47.3% had central obesity. Menstrual irregularities were the most prevalent endocrinological anomaly in poly cystic ovaries subjects, followed by hair loss.

Maximum association of poly cystic ovaries was found with the girls who were overweight and obese on calculation of odds' ratio. The association of poly cystic ovaries with irregular cycles, central obesity, alopecia, eating unhealthy snacks, non-vegetarian diet, family history of poly cystic ovaries, inadequate physical activity, hypertension and prehypertension, family history of non-communicable diseases, self-perceived stress/depression, was found to be significant statistically on chi square test with p value less than 0.05 (table 3). Just 19% of the females knew what poly cystic ovaries was. The socioeconomic groups with the highest levels of education and awareness were those.

Table 1: Relation of POLY CYSTIC OVARIES with signs and symptoms

Endocrinological abnormalities	N (%)	Normal (%)	Chi squire P value
Irregular menstrual cycle	191 (17.6)	889 (82.7)	
hirsutism	75 (6.9)	1005 (93.05)	0.001
hair loss or alopecia	190 (17.5)	890 (82.4)	

Table 2: Prevalence of POLY CYSTIC OVARIES according to Rotterdam criteria

Variable	POLY CYSTIC OVARIES percentage N= 1080 (%)
irrigular menstrual cycle + hirsutism	67 (6.2)
ovarian morphology and irrigular menstrual cycle	113 (10.4)
ovarian morphology and hirsutism	25 (2.3)

Table 3: Risk factors of POLY CYSTIC OVARIES

Variable	Response	Number	POLY CYSTIC OVARIES	Non-POLY CYSTIC OVARIES	ODD Ratio	P value
AGE MORE THAN OR EQUAL TO 20 YEARS	Yes	601	151	450	1.4	0.15
	No	479	54	425		
IRREGULAR MENSTRUAL CYCLE	Yes	889	107	782	5.76	0.001
	No	191	98	93		
DYSMENORRHEA	Yes	320	58	262	1.18	0.54
	No	760	147	613		
HAIR LOSS	Yes	190	42	148	1.5	0.029
	No	890	163	727		
NONVEGETARIANS	Yes	365	81	284	1.85	0.003
	No	715	124	591		
SNACKING	Yes	962	188	774	3.25	0.001
	No	118	17	101		
OBESITY	Yes	390	145	245	6.44	0.001
	No	690	60	630		
CENTRAL OBESITY	Yes	341	97	244	2.61	0.001
	No	739	108	631		
HYPERTENSION OR HTN	Yes	356	78	278	1.69	0.003
	No	724	127	597		
HIRSUTISM	Yes	75	36	39	1.48	0.07
	No	1005	169	836		
LACK OF PHYSICAL ACTIVITY	Yes	737	147	590	1.48	0.008
	No	343	58	285		
POLY CYSTIC OVARIES FAMILY HISTORY	Yes	69	35	34	4.62	0.001
	No	1011	170	841		
NCD FAMILY HISTORY	Yes	244	59	185	1.48	0.034
	No	836	146	690		
THE FEELING OF NEGATIVE EMOTIONAL HEALTH	Yes	641	129	512	1.45	0.005
	No	439	76	363		

Discussion

According to the rotterdam criteria, the community prevalence of poly cystic ovaries in girls between the ages of 18 and 30 in our study was 18.9%, which is higher than the prevalence of 16% found in alsosary et alstudy .'s conducted in saudi arabia. (17) However, it is lower than research conducted in madinah 2017 by alradadi et al (32%) (2). Menstrual irregularities, which were present in 52.1% of the girls with poly cystic ovaries in our study and in 40.00% of the poly cystic ovaries patients in choudhary et al's study, were the most prevalent endocrinological abnormality among those girls (18). 29% of the study participants with poly cystic ovaries were not obese, 28% had overweight cases, 43% had obesity, and 47.3% had central obesity. Significantly greater waist-to-hip ratio and bmi were seen in poly cystic ovaries subjects (p-value less than 0.001). In the study conducted by joseph et al., bmi was considerably higher in individuals with poly cystic ovaries verified, i.e., 26% of the poly cystic ovaries cases were either overweight or obese. (19) joshi et alstudy .'s in mumbai found that among poly cystic ovaries patients, 71% were non-obesity, 7% were overweight, and 20% were obese. This is because joshi et al. Utilized who bmi categorization criteria, but in our study we used asian indian criteria. (5) so, we may say that poly cystic ovaries and obesity are mutually exclusive. It most likely originates from the interaction of a sedentary lifestyle, poor diet, and hereditary predisposition, which exacerbates already-present metabolic disturbances.

Thus, it follows that factors like a non-vegetarian diet, eating unhealthy snacks in between meals, and insufficient physical activity, which are generally linked to obesity and central obesity, are also strongly linked to poly cystic ovaries. In the study conducted by desai et al. And singh et al., it was present in 34.45% and 14% of the girls having poly cystic ovaries respectively, which is significantly lower than our study, and in the latter study only mood swings and depression were reported along with other disturbances. In our study, out of the girls having poly cystic ovaries, the self-perceived feeling of disturbed emotional health was reported by 59.3% of participants and this association was significantly higher than those girls not having poly cystic ovaries (20,21). Our study found that 17% of poly cystic ovaries patients had family history of poly cystic ovaries in comparison to singh et al., who found that 43% of participants had a family history of poly cystic ovaries, 22% of participants in a subsequent study by chatterjee et al. Had a family history of poly cystic ovaries. This difference may be related to the fact that chatterjee et

al. Used a very small sample size (18-20 years) and a very narrow age range (18-20 years) for data collection (20,22). 19% of the girls had knowledge of poly cystic ovaries, which is comparable to the awareness rates reported in studies by singh et al. And gupta et al. (13.40% and 21.60%, respectively) and other researchers (3,23).

Conclusion

It is alarming that poly cystic ovaries, a disorder that is often quiet, is not properly diagnosed. It is crucial to identify and treat Poly cystic ovaries-related morbidities in adolescent girls as soon as possible. Women with poly cystic ovaries are more likely to be overweight or obese. Obesity, particularly central obesity, increases the risk of poly cystic ovaries. Prehypertension, stress, and depression are all markedly increased in patients with poly cystic ovaries.

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