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A Prospective Study on the Prevalence of Polycystic Ovary Syndrome at a Tertiary Care Hospital of North Karnataka, India

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Abstract

BACKGROUND: The global incidence of polycystic ovarian syndrome (PCOS) is on the rise, yet the etiological variables influencing PCOS remain unclear. The lack of a standardized diagnostic and treatment protocol adds complexity to managing PCOS. This study aimed to determine the prevalence of PCOS at SDM College of Medical Sciences and Hospital in Dharwad, Karnataka, India, utilizing the Rotterdam criteria over a period of 9 months from January to September 2023.

METHODS: A prospective, observational and cross-sectional study was conducted, enrolling 150 women from the tertiary care hospital. PCOS diagnosis was based on the Rotterdam criteria, considering factors such as age, marital status, education, occupation, nutrition, and biochemical parameters. Data analysis employed GraphPad Prism version 9 and SPSS software version 20.

RESULTS: Of the 150 participants, 72.47% met the Rotterdam criteria for PCOS, with oligomenorrhea, clinical/biochemical hyperandrogenism, and polycystic ovaries on ultrasonography identified. The highest prevalence was in the age group of 27–30 years (31.19%). Significant associations were observed between PCOS and dietary habits, with $P < 0.001$. Demographic profiles indicated a higher prevalence among married individuals (81.65%) and those with primary education (69.72%). Body mass index and waist-to-hip ratio were significantly different between PCOS and control groups ($P = 0.0326$ and < 0.001, respectively). Biochemical parameters such as luteinizing hormone/follicle-stimulating hormone ratio and anti-Müllerian hormone levels showed significant differences ($P < 0.001$).

CONCLUSION: PCOS prevalence was notable among reproductive age women at the tertiary care hospital. The study underscores the importance of considering both clinical and biochemical parameters for PCOS diagnosis using the Rotterdam criteria. Lifestyle management, including dietary changes and physical activity, emerged as the essential components. Further research and awareness initiatives are needed to address the increasing prevalence of PCOS and improve diagnostic and therapeutic strategies.

Keywords:

Hyperandrogenism, lifestyle management, oligomenorrhea, polycystic ovary syndrome, reproductive health, Rotterdam criteria

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Introduction

Polycystic Ovary Syndrome(PCOS) is a widespread endocrine disorder impacting various facts of women's overall health. It is highly prevalent, affecting 4%–10% of women globally within the reproductive age range.[1,2] Recent data indicate a notable increase in PCOS cases, with 1.55 million new occurrences recorded globally, signifying a 4.47% rise over the

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past decade.[3] However, accurately forecasting PCOS prevalence remains challenging due to 50% of affected women being either unaware or experiencing delayed diagnoses.[4] Therefore, a critical revaluation of patient requirements and management strategies for this condition is imperative.

In India, PCOS is particularly prevalent, with one in every five adolescent girls diagnosed with the syndrome.[5] The National Health Portal of India reported a PCOS frequency rate of 22.5% in Maharashtra.[6] Another study from South India found an incidence of 9.13% among adolescents, highlighting regional variations in the diagnosis criteria.[7] PCOS is also known as Hyperandrogenic Anovulation or Stein-Leventhal syndrome, emphasizing its wide range of clinical symptoms and related morbidities.[8] The term "polycystic ovarian syndrome" fails to adequately convey the complexity of this condition, characterized by polycystic ovarian morphology (PCOM), hyperandrogenism, and ovulatory dysfunction.[9]

Excessive androgen production by the ovaries is a major characteristic of PCOS, influenced globally by the factors such as stress, obesity, and hormonal changes.[6] Despite its prevalence, the complete etiology of PCOS remains unknown. Ultrasonography reveals enlarged ovaries with fewer immature follicles, termed polycysts. Elevated androgen levels lead to hyperandrogenism, a primary feature of the condition. PCOS is associated with long-term risks, including preeclampsia, recurrent abortion, endometrial cancer, dyslipidemia, cardiovascular disease, thyroid issues, and hyperplasia.[10] In addition, there is an increased risk of obesity, type 2 diabetes, metabolic syndrome, hypertension, fetal macrosomia, and potentially breast cancer.[11]

Various diagnostic criteria, including hyperandrogenism, malfunctioning ovaries, and the combination of PCOM and other factors, have been proposed to identify PCOS. The National Institutes of Health (NIH) and the Rotterdam Consensus have played pivotal roles in establishing the diagnostic indicators. The Rotterdam consensus outlines four phenotypes for PCOS diagnosis, acknowledging the multifaceted nature of the condition.[9,10]

Managing PCOS presents challenges for health-care professionals and patients alike due to its phenotypic variability. Treatment is tailored to individual symptoms, incorporating approaches such as clomiphene for infertility, metformin for type 2 diabetes, and lifestyle modifications.[11] Despite increasing prevalence, studies reveal a lack of awareness among women regarding PCOS symptoms. Many affected females do not seek medical attention when experiencing these signs. This study, conducted at SDM College of Medical Sciences and Hospital, Dharwad, Karnataka, India, aims to determine the prevalence of PCOS in this tertiary hospital, shedding light on the current scenario and emphasizing the need for increased awareness and proactive management.

Methods

Ethical consideration

The proposed research work was approved by the Institutional Ethics Committee, Registration number SDMIEC/2022/349 dated October 7, 2022.

Study design and population

A prospective, observational and cross-sectional study was carried out from the Department of Obstetrics and Gynecology at the Tertiary Care Hospital SDM College of Medical Sciences and Hospital, and SDM Research Institute for Biomedical Sciences, Dharwad, Karnataka, India.

Sampling method

The women satisfying the inclusion criteria were chosen between January 2023 and September 2023 for a period of 9 months.

Types of sampling and reason for selection

Selective sampling: The reason for selection is the fulfillment of inclusion and exclusion criteria.

Patient consent statement

All patients involved in this study provided informed consent. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Before participation, patients were thoroughly informed about the purpose, procedures, risks, and benefits of the study. Written consent was obtained from each patient, ensuring that they understood their involvement was voluntary and that they could withdraw from the study at any time without any impact on their medical care. Confidentiality of patient information was maintained throughout the study.

Inclusion criteria

Patients diagnosed with 2003 Rotterdam criteria and showing the presence of two or more of the following features: clinical or biochemical evidence of hyperandrogenism (hirsutism, acne, and alopecia), oligoanovulation (oligomenorrhea or amenorrhea), and polycystic ovaries (PCO) upon ultrasonography, women with a high level of anti-Müllerian hormone (AMH) >4 ng/mL were included in the study.

Exclusion criteria

Females age <18 years and postmenopausal women, patients with congenital adrenal hyperplasia, Cushing's

syndrome, androgen-secreting tumors or thyroid dysfunction, hyperprolactinemia syndrome, and hyperandrogenism, insulin resistance and acanthosis, pregnant women, women with diabetes, abnormal renal or hepatic function. The use of medications such as hormonal contraceptives, ovulation including agents, glucocorticoids, or anti-androgenic drug treatment within 3 months of analysis, and women with primary premature ovarian failure are excluded from the study.

Control

Healthy women having no history of menstrual cycle problems, PCOS-related endocrine disorders, or hyperandrogenism were considered controls.

Sample size

A total of 150 participants were analyzed in the study.

Clinical examination

Oligomenorrhea is defined as delay in menstruation for >35 days to 6 months. Dysmenorrhea was defined as severe and frequent cramps and pain during periods. Menorrhagia was defined as heavy or prolonged menstrual bleeding. Polymenorrhea is a condition with abnormal bleeding and a short menstrual cycle. A modified Ferriman Gallwey score was used to assess and quantify hirsutism in women considering nine different body areas: the upper lip, chin, chest, upper and lower abdomen, thighs, upper and lower back, and upper arm. This score was used to define clinical hyperandrogenism. Each of the nine locations had a hair growth rating between 0 and 4. An excess of androgen was indicated by a score >8.

Following enrolment, a clinical examination and investigations were conducted on each participant. Measurements were taken of the waist (minimum circumference at the waist level) and hips (maximum circumference below the level of umbilicus) in centimeters. The World Health Organization guidelines were used to calculate and classify body mass index (BMI): underweight (<18 kg/m^2), normal (18–25 kg/m^2), overweight (more than 25 kg/m^2), obese (more than 30-40 kg/m^2), and extremely obese (more than 40 kg/m^2). All women were fasting when their early follicular phase samples, were obtained on day 2 or 3 of menstruation, and were used for the hormone assay. Prolactin, testosterone, follicle stimulating hormone (FSH), luteinizing hormone (LH), and fasting blood sugar measurements were made. It was determined that a normal cutoff ratio of 2:1 for LH/FSH was significant. Hyperandrogenism was defined as AMH >4 ng/mL.

The size of the uterus and endometrium, as well as the number of ovarian follicles, was measured using a transabdominal pelvic ultrasonography probe for all women. The existence of 12 or more follicles with a diameter of 2–9 mm, with or without an ovarian volume >10 mL, are classified as PCO. PCO with more than 10 cysts ranging in diameter from 2 to 8 mm, and an increased ovarian volume of more than 10 cm^3 are included as PCOS women for the study.

Statistical analysis

The findings were represented as mean ± standard deviation For continuous variables, differences between groups were assessed using a Student's unpaired *t*-test; for discrete variables, variations in frequency were assessed using the Chi-square test (χ^2 test). We treated all the data as discrete variables for the Chi-square test, defining three possible values for hirsutism (absent, Fi <8, Fi >8) and hormone levels (below, normal, and above normal), as well as two possible values for PCO (present/absent), oligomenorrhea (present/absent), the LH/FSH ratio (<1 or >1), and BMI (<25 or >25). When using SPSS version software - IBM, NY, USA and GraphPad Prism Version 9 - GraphPad, CA, USA for unpaired Student's *t*-test analysis computation and graph plotting, $P < 0.05$ and $P < 0.001$ ware considered statistically significant.

Results

In our current study, a total of 150 patients were recruited among them 41 were control, and 109 were PCOS in a period of 9 months from January 2023 to September 2023. The prevalence of PCOS according to Rotterdam criteria 79 (72.47%) was identified with oligomenorrhea, clinical and or biochemical hyperandrogenism, and PCO. The criteria with oligomenorrhea, clinical/biochemical hyperandrogenism only with 16 (14.67%) [Table 1]. With clinical and/or biochemical hyperandrogenism and PCO and in the case of oligomenorrhea with PCO has 5 (4.587%) and 9 (8.25%) [Figure 1].

The prevalence analysis of with different age groups indicate the peak age group of PCOS was 27–30 years with 34 (31.19%) and the lowest age was ≤18 years with 4 (3.66%) [Table 2 and Figure 2].

Table 1: Prevalence of polycystic ovarian syndrome according to Rotterdam criteria

Rotterdam criteria	Total PCOS patients (%) (*n*=109)
Oligomenorrhea + clinical and/or biochemical hyperandrogenism + PCO	79 (72.47)
Oligomenorrhea + clinical/biochemical hyperandrogenism only	16 (14.67)
Clinical and/or biochemical hyperandrogenism + PCO	5 (4.587)
Oligomenorrhea + PCO	9 (8.25)

PCOS: Polycystic ovarian syndrome, PCO: Polycystic ovaries

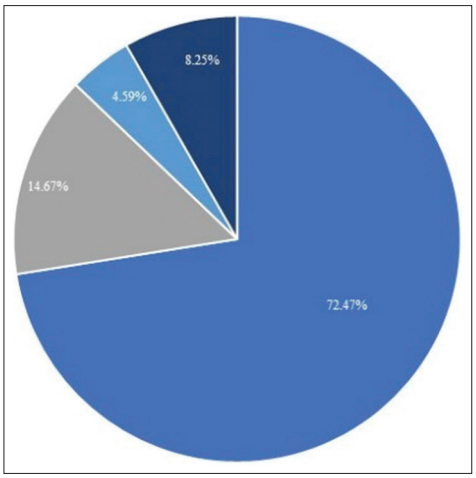

Figure 1: Prevalence percentage of PCOS according to Rotterdam criteria

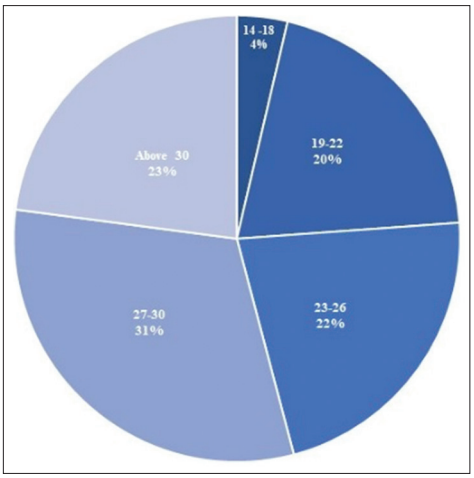

Figure 2: Percentage age distribution of PCOS

Table 2: Prevalence of polycystic ovarian syndrome in different age groups

Age (years)	Frequency (%)
≤18	4 (3.66)
19–22	22 (20.18)
23–26	24 (22.018)
27–30	34 (31.19)
Above 30	25 (22.9)
Total	109

The demographic profile compared between the control and PCOS groups showed significance $P = 0.002$ with a mean age difference of 28.76 ± 6.90 and 26.68 ± 5.93. Marital status with married represented a high incidence of PCOS was 89 (81.65%) and 39 (95.12%) control and unmarried status were 20 (18.35%) and 2 (4.88%), with $P = 0.040$, respectively. The high level of incidence among education demographic profiles was primary education with 76 (69.72%) PCOS as compared with control 21 (51.21%) [Table 3]. The occupation demographic reveals more homemakers with 71 (65.13%) and 31 (75.60%) with PCOS and control, respectively.

The BMI of PCOS has a direct correlation with the control and PCOS with a mean difference of 23.604 ± 3.83 and 25.14 ± 3.90 with a significance $P = 0.0326$ [Table 2]. Similarly, waist circumference/hip circumference showed a high significant $P < 0.0001$ compared with control and PCOS [Figure 3].

The dietary habits among the PCOS and control, the high predominance was in vegetarians with 63 (57.8%) in PCOS and 28 (68.31%) in control and nonvegetarians 46 (42.2%) and 13 (31.7%) in PCOS and control, respectively, with $P < 0.001$. Low physical activity was reported in PCOS of 56 (51.37%), moderate at 50 (45.87%), high with only 3 (2.75%), and for the case of control moderate physical activity percentage observed was 20 (48.78%), and low in high activity with 2 (4.87%). There is no direct correlation between physical activity as compared with PCOS and the control group with $P = 0.189$. There is no family history among the PCOS conditions [Table 3].

Biochemical parameters for hemoglobin A1C (HbA1c) have a similar percentage between PCOS and control with 10.55 ± 2.95 and 10.8 ± 2.05, respectively. The high significance of $P < 0.001$ was determined in the LH/FSH hormone between the PCOS and control group, as represented in Table 4. Similarly, AMH level showed a high significance of $P < 0.0001$ as compared with PCOS and control group. There is nonsignificance of 17 hydroxy progesterone levels between PCOS and control [Figure 3].

The difference between the random glucose level and glycated HbA1c has shown nonsignificance. Total cholesterol has shown significance changes with $P < 0.001$ between the PCOS and control group as mentioned in. Nonsignificance was observed in triglyceride levels. High significance was observed in the levels of high-density lipoprotein (HDL) and low-density lipoprotein (LDL) with $P < 0.001$ [Table 4 and Figure 3].

Different treatment approaches for PCOS have been carried out based on the condition of the disease. In case of irregular menstruation, generally combined oral contraceptive pills are used. For insulin resistance and diabetes, the drugs used are metformin, pioglitazone, and myoinositol [Table 5]. Therapy for fertility carried by the letrozole, gonadotropin-mediated hyperstimulation (GMH), and recombinant FSH, intrauterine insemination (IUI), *in vitro* fertilization (IVF). The phenotypic appearance of acne, hirsutism, hair loss, and antiandrogen the treatment line will be with Proscar, crimson 35, and Yasmin drugs. Obesity is managed using orlistat drug and depression with sertraline. Lifestyle management for PCOS will be managing the diet with

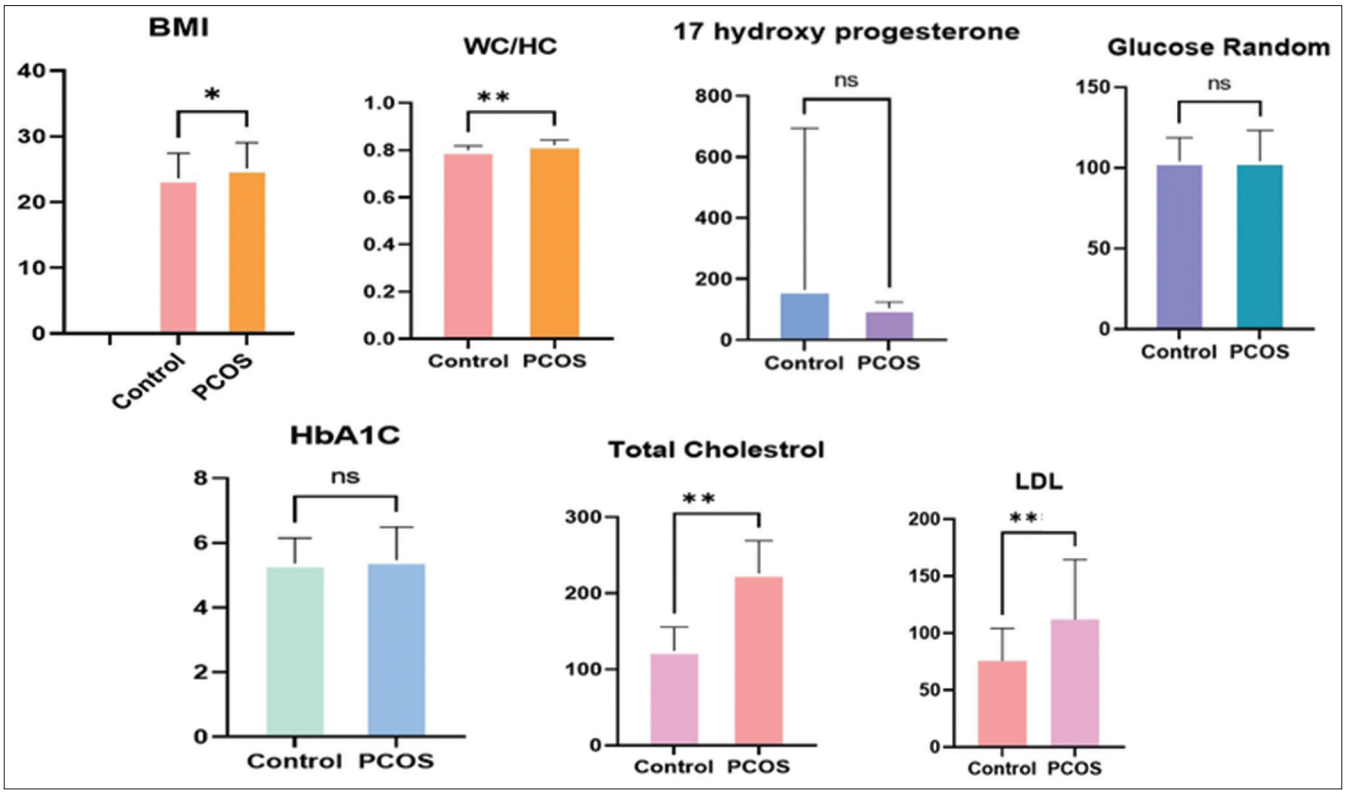

Figure 3: Biochemical and body mass index significance between PCOS and control group. BMI: Body mass index, WC/HC: Waist circumference/hip circumference, HbA1c: Hemoglobin A1c, LDL: Low-density lipoprotein, PCOS: Polycystic Ovary Syndrome. [ns]Nonsignificant. ns – Indicates non significance P-value ($P > 0.05$), *- Indicates - P-value ($P \leq 0.05$), ** - Indicates – P-value ($P \leq 0.01$), *** - Indicates – p-value ($P \leq 0.001$)

low glycemic index foods, less oily, and avoiding junk foods and followed by physical activity with daily walking, running, aerobics, and yoga. The overall summarization of the PCOS [Figure 4].

Discussion

Polycystic ovary syndrome (PCOS) is an endocrine disease characterized by anovulatory infertility and hyperandrogenism. It is also associated with obesity, hyperinsulinemia, and an increased risk of cardiovascular diseases.[12] In the past 3 years, the worldwide prevalence of PCOS is estimated to range from 2.2% to 48%, encompassing countries such as India, Australia, the USA, and China.[13,14] The rise in PCOS cases among young women and adolescents remains unexplained due to the unclear etiological factors.

A survey conducted in India reported the prevalence rate of PCOS ranging from 6% to 46.8% according to the Rotterdam criteria.[15] In our study, 79 (72.42%) participants were identified with oligomenorrhea, clinical or biochemical hyperandrogenism, and PCO over a period of 9 months at SDM College of Medical Sciences and Hospital, Dharwad, Karnataka, India. Another study reported a prevalence of 22.5% in Maharashtra and 9.13% in South India. According to the NIH consensus, these states have a prevalence of 9%–18% according to the Rotterdam criteria.[16]

The mean age of PCOS prevalence is reported to be 15–45 years in a study from Telangana with a sample size of 624,[17] whereas another report from Kashmir state indicated an age range of 15–40 years with a sample size of 964.[2] In our study, out of a total of 109 samples, the peak age was 27–30 years with 34 (31.19%) participants, and the lowest prevalence was in the age group of 14–18 years with 4 (3.66%) participants. In a study with 250 participants, 78% had a normal BMI, 17.6% were underweight (BMI <18), and 4.4% were overweight (BMI >25). In our study, the BMI profiles in the control and PCOS groups had mean differences of 23.604 ± 3.83 and 25.14 ± 3.90, respectively. Rao *et al*.[18] showed that 93% of the participants were university educated, 44% had a completed with postgraduate degree, workforce with 54%, unmarried with 40%, and 58% with married status.

A similar demographic profile in our study reveals that 81.65% of the participants were married, while 18.35% were single or unmarried. In addition, 69.72% had a primary education and 65.13% were homemakers.

A case–control study among Indian women included 250 participants: 10% of the total samples were PCOS patients

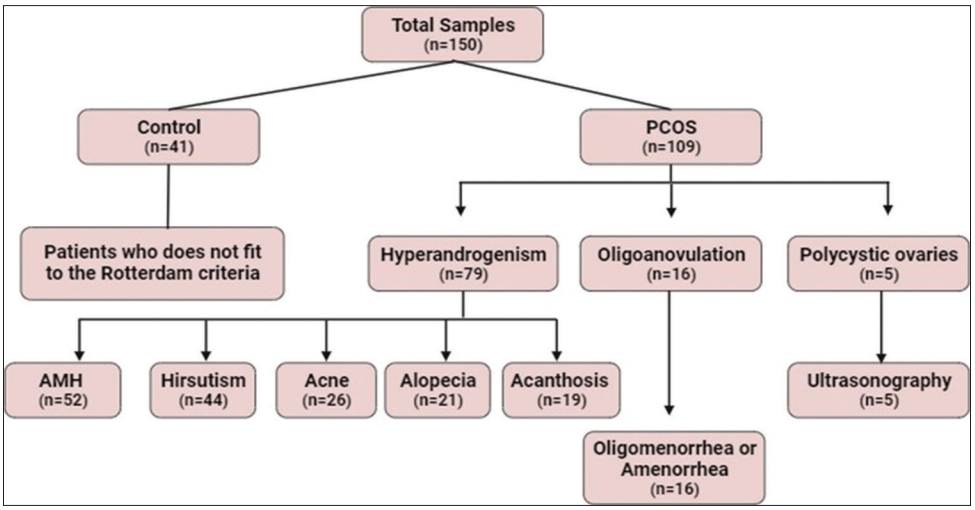

Figure 4: Summarization of prevalence of PCOS according to the symptoms of women. AMH: Anti-Müllerian hormone, PCOS: Polycystic Ovary Syndrome

Table 3: Demographic profile of polycystic ovarian syndrome patients

Variable	PCOS	Control	*P*
Age (years)	26.68±5.93	28.76±6.90	0.022*
Marital status, *n* (%)			
Married	89 (81.65)	39 (95.12)	0.040*
Unmarried	20 (18.35)	2 (4.88)	
Education, *n* (%)			
Primary	76 (69.72)	21 (51.21)	0.0074*
Degree	12 (11.09)	2 (4.87)	
Postgraduate	2 (1.83)	0	
Illiterate	19 (17.43)	18 (43.90)	
Occupation, *n* (%)			
Student	19 (17.43)	1 (2.43)	0.066
Private/government	19 (17.43)	9 (21.95)	
Housemaker	71 (65.13)	31 (75.60)	
BMI (kg/m^2)	25.14±3.90	23.604±3.83	0.0326*
Age of menarche (years)	13.26±1.55	13.68±1.69	0.1196
WC (cm)	31.926±2.35	31.41±1.48	0.197
WC/HC (cm)	0.82±0.23	0.79±0.022	<0.001**
Dietary habits, *n* (%)			
Vegetarian	63 (57.8)	28 (68.3)	<0.001**
Nonvegetarian	46 (42.2)	13 (31.7)	
Physical activity, *n* (%)			
Low	56 (51.37)	19 (46.34)	0.189
Moderate	50 (45.87)	20 (48.78)	
High	3 (2.75)	2 (4.87)	
Family history, *n* (%)			
Absent	109 (100)	41 (100)	NA
Present	Nil	Nil	

*P<0.05, **P<0.001. WC: Waist circumference, BMI: Body mass index, NA: Not available, HC: Hip circumference, PCOS: Polycystic ovarian syndrome

and 90% were controls. Among the 100 PCOS patients, 11% were vegetarian and 89% were nonvegetarian. In the control group of 150, 9.3% were vegetarian and 91% were nonvegetarian. Physical activity was assessed, with 47% of the PCOS group being active compared to 8.7% in the control group. Conversely, 53% of the PCOS group and 91% of the control group were inactive. A family history of PCOS was present in 17% of the PCOS group and absent in 83%.[19]

In our prospective study, dietary habits among the PCOS and control groups showed that vegetarians comprised 57.8% of the PCOS group and 68.31% of the control group, whereas nonvegetarians comprised 42.2% of the PCOS group and 31.7% of the control group. Low physical activity was reported in 51.37% of the PCOS group, moderate activity in 45.87%, and high activity in only 2.75%. In the control group, moderate physical activity was observed in 48.78% and high activity was observed in 4.87%. There was no significant family history of PCOS in either the control or PCOS groups.

The HbA1c levels between the PCOS and control groups were 10.55 ± 2.95 and 10.8 ± 2.05, respectively. The LH/FSH hormone levels showed a significant difference with $P < 0.001$ between the PCOS and control groups. A study reported that serum LH levels were higher in rural areas, with a normal range of 11.32 ± 1.92, compared to urban areas at 11.51 ± 1.92.[20] AMH levels also showed a high significance with $P < 0.001$ when comparing PCOS and control groups. There was no significant difference in 17-hydroxyprogesterone levels. The random glucose levels and HbA1c showed nonsignificant differences, but total cholesterol showed significant changes with $P < 0.001$ between the PCOS and control groups. No significant differences were observed in triglyceride levels. However, significant differences were observed in HDL and LDL levels with $P < 0.001$. The increased level of serum insulin among women with PCOS can be considered an integral part of the syndrome.

The higher proportion was observed in urban areas as compared with to rural areas 19.03 ± 5.88 and 18.10 ± 7.08, respectively.[20]

Table 4: Biochemical characteristics of the polycystic ovarian syndrome patients

Variable	PCOS	Control	*P*
Hb (g/dL)	10.55±2.95	10.8±2.05	0.598
LH/FSH (IU/L)	1.56±0.85	0.83±0.49	<0.001**
Testosterone (ng/dL)	102.7±24.080	213±1044.63	0.2670
AMH (ng/mL)	4.899±2.74	2.091±1.26	<0.001**
Fasting insulin (µU/mL)	20.58±7.042	19.57±14.48	0.5696
17 hydroxy progesterone (ng/mL)	103.96±20.52	164±530.81	0.237
TSH (µU/mL)	2.42±0.87	2.31±0.78	0.4975
Prolactin (ng/mL)	13.82±5.46	13.23±2.83	0.5138
Glucose random (mg/mL)	104.06±19.18	103±14.79	0.9553
HbA1c (%)	5.46±1.02	5.35±0.79	0.5305
Total cholesterol (mg/dL)	226.18±42.92	124.30±31.23	<0.001**
Triglycerides (mg/dL)	115.12±39.52	108.24±23.65	0.2974
HDL (mg/dL)	56.37±8.48	77.65±11.45	<0.001**
LDL (mg/dL)	111.9±7.62	75.65±8.67	<0.001**

*P<0.05, **P<0.001. AMH: Anti-Müllerian hormone, TSH: Thyroid-stimulating hormone, Hb: Haemoglobin, HbA1c: Glycosylated Hb, HDL: High-density lipoprotein, LDL: Low-density lipoprotein, LH/FSH: Luteinizing hormone/follicle stimulating hormone, PCOS: Polycystic ovarian syndrome

Table 5: Different treatment approaches for polycystic ovarian syndrome

Category - medical therapy	Drug (commercial/scientific name)
Irregular menstruation	
Oral contraceptive pill	Combined oral contraceptive pills
Combined oral contraceptives	Tablet ovral L
Progestins and progesterone	Cyclical progestins - Tablet meprate
Insulin resistance and diabetes	
Insulin-sensitizing drugs	Tablet metformin
Insulin secretion drugs	Pioglitazone
Insulin resistance	Myoinositol
Fertility	
Ovulation induction	Letrozole
Gonadotrophins	GMH
Assisted reproductive technology	Recombinant FSH, IUI, IVF
Acne, hirsutism, hair loss, and antiandrogen	Proscar
	Tablet krimson 35
	Tablet yasmin
Obesity	Orlistat (lipase inhibitors)
Depression	Sertraline
Lifestyle management	
Diet	Low glycaemic index foods, less oily and junk foods
Physical activity	Walking, running, aerobics, yoga

GMH: Gonadotropin-mediated hyperstimulation, FSH: Follicle stimulating hormone, IUI: Intrauterine insemination, IVF: *In vitro* fertilization

Treatment of infertile PCOS patients is carried by clomiphene citrate as ovulation inducers.[21] Clomid citrate and letrozole drugs are used for ovulation inductions in PCOS, especially in adolescents.[22] In the event of type 2 diabetes, metformin high LDL-cholesterol (LDL-C), triglycerides, and low HDL-cholesterol (HDL-C) are the hallmarks of PCOS and dyslipidemia in women with PCOS who are taking statins such as atorvastatin, fluvastatin, pravastatin, rosuvastatin, and simvastatin.[23] It is generally advised for PCOS patients to lose weight safely, improve insulin sensitivity, and enhance their quality of life by eating a healthy, balanced diet, and exercising frequently.[24] Metformin, pioglitazone, and myoinositol are the medications utilized in our treatment regimen for diabetes and insulin resistance.

In the case of fertility conditions, the drugs are used are letrozole, GMH, and recombinant FSH, IUI, and IVF. The phenotypic appearance of acne, hirsutism, hair loss, and anti-androgen the treatment line will be with Proscar, crimson 35, and Yasmin drugs. Obesity is managed using orlistat drug and depression with sertraline. Lifestyle management for PCOS will be managing the diet with low glycemic index foods, less oily, and avoiding junk foods followed by physical activity with daily walking, running, aerobics, and yoga.

Conclusion

The study revealed a high prevalence rate of PCOS among women at our tertiary care hospital in North Karnataka, India, based on the Rotterdam criteria. The highest prevalence was observed among women aged 27–30 years, with a mean age of 26.4 years, BMI over 25 kg/m², and a waist-to-hip ratio >0.8. The primary clinical characteristics of infertile PCOS women included oligomenorrhea, weight gain, hirsutism, and acne. In addition, women with PCOS exhibited elevated AMH levels and unfavorable lipid profiles, with significant levels of HDL-C and LDL-C.

This study highlights the importance of addressing obesity, dietary factors, and low physical activity as part of the management and prevention of PCOS, particularly tailored to the local population. Early diagnosis and treatment of PCOS are crucial to mitigating related health issues and overcoming comorbidities such as infertility. Further research and increased awareness are essential to improve diagnostic and therapeutic strategies for PCOS.

Outcome of the study

The study found that 72.47% of the 150 participants enrolled met the Rotterdam criteria for PCOS diagnosis. This high prevalence highlights the significant burden of PCOS in the study population at the tertiary care hospital. The highest prevalence of PCOS was observed in the age group of 27–30 years (31.19%). The study found significant associations between PCOS and factors like marital status, education level, and dietary habits. There was a significant association between PCOS and dietary habits, with $P < 0.001$. Biochemical parameters such as LH/FSH ratio and AMH levels showed significant differences between PCOS and control groups.

The study noted that treatment approaches varied based on the different PCOS phenotypes observed.

Rationale of the study

The document mentions that the global incidence of PCOS is on the rise, indicating the need to assess the current scenario in different regions. The manuscript highlights that the lack of a standardized diagnostic and treatment protocol adds complexity to managing PCOS, necessitating studies to inform better clinical practices.

Regional data gap

The study was conducted in a tertiary care hospital in North Karnataka, a specific region of India. This provides region-specific data, as the document mentions that PCOS prevalence can vary across different regions. The study used the Rotterdam criteria for PCOS diagnosis, which considers a broader range of factors, including hyperandrogenism, ovulatory dysfunction, and PCOM. This comprehensive approach can provide more reliable insights compared to studies using fewer diagnostic parameters. In summary, the rationale for this study stems from the high global incidence of PCOS, the lack of standardized protocols, the need for region-specific data, the importance of comprehensive diagnostic approaches, and the desire to understand the demographic and lifestyle factors associated with PCOS to inform better management strategies.

Limitation of the study

The frequency rates of PCOS reported in the present day, may not accurately represent the prevalence of North Karnataka as the study population include only a small part of the North Karnataka and a limited sample size. Adolescents and young girls were the age group of participants that were chosen for enrollment; women of other ages and those who had attained menopause were not included in the study. Furthermore, study participants PCOS diagnoses were not made using accepted diagnostic standards. Limitations in the subpopulations and subgroups included from a certain geographic area may have introduced bias into the study's findings.

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Conflicts of interest

There are no conflicts of interest.

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