

Correlation between the Physical Signs, Clinical Parameters, and the Quality of Life in Young Women with Polycystic Ovarian Syndrome: An Explorative Study

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ABSTRACT

Aims and objectives: The study was aimed to investigate the relationship between the physical signs, clinical parameters, and the quality of life in young women with PCOS.

Materials and methods: A prospective cross-sectional survey was conducted among 140 women diagnosed with PCOS. The subjects who attended the outpatient department of obstetrics and gynecology were selected through the *k*th sampling technique. Baseline information was collected by an interview technique. The following parameters were then noted and assessed: BMI, waist/hip ratio, hirsutism, and acne. The standardized tool, WHOQOL-BREF scale, was used to find the quality of life.

Results: The majority of the subjects were between the age-group of 21–25 years (41.4%), and the mean age was 22.0 ± 0.74 . Out of 140 PCOS women, 84 of them adopted the sedentary lifestyle category, 88 of women were residing in the urban area, and 106 subjects did not have a family history of PCOS. The total of 52.9% of the subjects were with amenorrhea, 55.8% of them were obese, 66.43% of subjects were with increased waist/hip ratio, 98.58% of the subjects had complaints of hirsutism, and 42.86% of subjects were with mild and moderate types of acne. The mean and SD of quality of life score in various domains were as follows: physical health, 20.07 ± 2.79 ; psychological health, 16.85 ± 3.06 ; social relationships, 18.17 ± 1.82 ; and environment, 40.00 ± 22.73 . The overall perception of the quality of life is 22.73 ± 4.20 , and the overall perception of satisfaction with health is 2.64 ± 0.89 . There was no relationship between the PCOS symptoms and quality of life.

Conclusion: The research underlined the poor health-related quality of life. Acne is one of the leading factors that affected the health-related quality of life.

Clinical significance: The article is relevant in the present context where our current sedentary lifestyle and stressful living have induced changes among women, causing a sharp rise in the incidence of PCOD.

Keywords: Acne, Body mass index, Lifestyle, Psychological health.

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INTRODUCTION

Polycystic ovarian syndrome (PCOS) is first described by Stein Leventhal in 1959. It is an endocrine disorder found largely during the reproductive life. The significant manifestations of this syndrome are menstrual irregularities, hyperandrogenism, acne, alopecia, obesity, and increased central abdominal fat. Infertility, insulin resistance, cardiovascular disease, and gynecological cancers are long-term consequences of PCOS.¹ Although the exact cause of PCOS remains unknown, certain scientific studies have underlined that family history, faulty diet, sedentary lifestyle, obesity, and an inappropriate sleep pattern are risk factors for one to develop PCOS.

The incidence of PCOS varies from 5 to 26% in reproductive-aged women due to the varying criteria used for diagnosing PCOS.² Roughly 4–6% of women have hyperandrogenic chronic anovulation that occurs in PCOS. One of the studies reported around 5 million young women are affected with PCOS in the United States of America.³ A survey conducted in suburbs of Mumbai revealed 11.97% of women diagnosed as PCOS.⁴ Another study done in Pakistan highlighted 17.5% participants were suspected with PCOS, 3.5% were diagnosed with PCOS on the basis of signs and symptoms, and 5.5% were already diagnosed with PCOS.⁵

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Quality of life is a perception of an individual of their own lives in the context of their cultures and beliefs, and their personal goals and concerns. Several studies have been found that many physical characteristics or clinical features of PCOS can be correlated with a poor quality of life.⁶ On the other hand, few studies have stated that androgen excess causes a majority of these symptoms and affects the mental health of women causing mood swings, negative emotions, and depression in women with PCOS. Hahh et al., in their study, indicated that BMI and hirsutism affect the psychological well-being of women and lead to a poor quality of life.⁷ The incidence of eating disorders is increased, and the sexual life milieu of women is greatly disturbed in PCOS. Unfortunately, these have often been mistaken and generalized as routine mental health disorders.⁸

Lifestyle modification is the first-line treatment for adolescent PCOS. Diet, exercise, and behavioral strategies are recommended in all those with PCOS and especially in overweight and obese girls. Approximately 5–10% weight loss yields a significant clinical improvement and is considered “successful weight reduction” within 6 months. Adherence to these interventions is important to sustain psychological health. There are different types of diets available to manage the symptoms of PCOS. However, they all aim to control weight gain and help to regulate the menstrual cycle. A minimum of 30 minutes of moderate-intensity activity or 20 minutes of vigorous-intensity exercises practiced daily and muscle-strengthening activity involving the major muscle groups on two nonconsecutive days of the week are recommended. Combined oral contraceptive pills could be used to treat adult women with hyperandrogenism and/or irregular menstrual cycles in PCOS.⁹

Healthcare personnel should pay attention to the concerns of PCOS on an individual basis, regardless of the symptom severity or treatment response. The integrated team approach consists of obstetricians, endocrinologists, physiotherapists, dieticians, and other healthcare personnel who play a significant role to manage the condition.⁶ This study was conducted to analyze the various parameters that affect the quality of life in women with PCOS and to develop strategies and interventions to enhance their health-related quality of life (QOL).

AIMS AND OBJECTIVES

To determine the physical signs, clinical parameters, and the quality of life among women with PCOS and to find the correlation between the physical signs, clinical parameters, and the quality of life.

MATERIALS AND METHODS

A prospective cross-sectional, observational study was conducted from October 2019 to December 2020 in a tertiary care hospital in the city of Mangaluru, Karnataka. The 140 young women diagnosed with PCOS between 18 and 30 years were selected by using systematic sampling technique (Kth random sampling technique). Antenatal mothers, postpartum mothers with symptoms of PCOS up to 1 year, and women with severe medical, surgical, and metabolic disorders were excluded from the study. Women who were engaged in lifestyle modification treatment already were excluded from the study.

The ethical clearance (FMIEC/CCM/108/2019) and permission were obtained to conduct the study from the hospital authorities. Informed written consent was taken from the study participants

after explaining the relevant study details as in the participant information sheet. Following this baseline, data were collected through a semistructured interview. Subsequently, information on menstrual irregularities was collected. Weight was measured by using a digital weighing scale to the nearest 0.1 kg, which was calibrated by the biomedical department. Height was measured using a standard stadiometer to the nearest 0.5 cm. Body mass index was classified as per the WHO Asian criteria.¹⁰ Waist/hip ratio was calculated based on WHO criteria.¹¹ Hirsutism was assessed by using the modified Ferriman and Gallwey scale. A score of 8 and more than 8 indicates hyperandrogenism.¹² Acne was assessed by the acne global grading scale.¹³

The quality of life was measured by using WHOQOL-BREF tool. This tool consists of a total of 26 items. Out of it, 24 items are distributed on the four domains such as physical health, psychological health, social relationships, and environment; one question about the overall perceived quality of life; and another one about the overall perceived satisfaction with health.¹⁴

Content validity and reliability of the tool: Content validity of the tools was obtained by the subject experts from the obstetricians, nutritionist, and endocrinologist. Statistical method intraclass co-relation co-efficient was performed to find the reliability and it showed tool is reliable. BMI, Waist-hip ratio, hirsutism and showed the tool was reliable ($r = 0.91$). WHOQOL is a standardized tool. The Cronbach's alpha was used to find the reliability. The tools were found reliable (0.94) and internal consistency was measured by using Cronbach's alpha (0.94).

The collected data were compiled and analyzed with the help of SPSS version 23.0.

RESULTS

Forty one point four percent subjects were between the age-group of 21 and 25 years and the mean age is 22.0 ± 0.74 (Table 1). Approximately 72.1% subjects were qualified above PUC, more than half 60% of subjects belongs to sedentary lifestyle category, and 62.9% of women were residing in the urban area. The 63.6% of subjects attained menarche at the age between 13 and 15 years. The 65% of subjects were unmarried, 55% of them newly diagnosed as PCOS, and 75.7% of subjects did not have a family history of PCOS.

Fifty percent of the women were not on treatment (Table 2).

Fifty two point nine percent of the subjects were with amenorrhea, 55.8% of them were obese, 66.43% of subjects with increased waist/hip ratio, 98.58% of the subjects had complaints of hirsutism, 42.86% of subjects were with mild and moderate type of acne, and 60% of them presented with normal FPG values (Table 3).

The quality of life more or less affected equally to all the domains (Table 4). The physical domain is affected more, and the least affected domain is environment.

Perceived quality of life is poor (Table 5).

Table 6 indicates a negative correlation between BMI and psychological health ($r = -0.234^*$, $p < 0.005$), acne and physical health ($r = -0.27889^*$, $p < 0.001$), psychological health ($r = -0.289$, $p < 0.003$), social relationship ($r = -0.254$, $p < 0.002$), environment ($r = -0.267$, $p < 0.001$), perception of QOL ($r = -0.178$, $p < 0.036$), satisfaction with the health ($r = -0.170$, $p < 0.044$), suggesting that as the BMI increases, psychological health decreases, and similarly, increased acne reduces the physical health, psychological health, social relationship, environment, perception of quality of life, and satisfaction with health. Thus, research hypothesis is accepted.

Table 1: Distribution of baseline characteristics of the subjects (N = 140)

Sl. No.	Variables	f	%
1	Age in years		22.0 ± 0.74
	• 18–20	27	19.3
	• 21–25	58	41.4
	• 26–30	55	39.3
2	Qualification		
	• 1–7—primary	5	3.6
	• 8–10	13	9.3
	• PUC	21	15.0
	• Above PUC	101	72.1
3	Lifestyle		
	• Sedentary	84	60.0
	• Moderate	46	32.9
	• Heavy	10	7.1
4	Residence		
	• Urban	88	62.9
	• Rural	52	37.1
5	Menarche at (years)		
	• 10–12	51	36.4
	• 13–15	89	63.6
6	Marital status		
	• Married	49	35.0
	• Unmarried	91	65.0
7	Duration of diagnosis		
	• Newly diagnosed	78	55.7
	• Within a year	18	12.9
	• 1–3 years	26	18.6
	• >3 years	18	12.9
8	Family history of PCOS		
	• Yes	34	24.3
	• No	106	75.7

Table 2: Distribution of course of treatment of subjects (N = 140)

Type of drugs	f	%
• Nil	56	40
• OCP	20	14.3
• Vitamins	48	34.3
• Insulin sensitizer	7	5.0
• Hormone	3	2.1
• Homeopathy	3	2.1
• OCP and insulin sensitizer	3	1.5

DISCUSSION

In the present study, the mean age was 22.0 ± 0.74 years. The mean age of the PCOS women was 23.38 ± 4. More than half that is 60% of the subjects involved demonstrated a sedentary lifestyle, 62.9% of women were residing in the urban area. The article by Pathak¹⁵ reinforced our findings and highlights that the syndrome is highly prevalent in urban Indian women. Additionally, several scientific investigations have identified that sedentary lifestyle patterns

Table 3: Assessment of symptoms of PCOS (N = 140)

Sl. No.	Symptoms	f	%
1	Menstrual cycles		
	• Regular	19	13.6
	• Amenorrhea	74	52.9
	• Polymenorrhea	29	20.7
	• Oligomenorrhea	18	12.9
2	BMI		25.01 ± 4.1
	• (<18.5) Underweight	9	8.6
	• (18.6–22.9) Normal	24	7.1
	• (23–24.9) Overweight	35	28.5
	• (≥25) Obese	72	55.8
3	WHR		
	• 0.85 (normal)	47	33.57
	• >0.85 (AO)	93	66.43
4	Hirsutism		
	• <8 (normal)	2	1.42
	• Hyperandrogenism	138	98.58
5	Acne		
	• Mild	30	42.86
	• Moderate	30	42.86
	• Severe	8	11.42
	• Very severe	2	2.86
6	FBS		
	• Normal (FPG <100 mg/dL)	84	60
	• Prediabetes (100–125 mg/dL)	56	40

Table 4: Domainwise mean, median, and SD of quality of life scores

Domain	N = 140		Mean ± SD	Mean %
	Minimum score	Maximum score		
Physical	13	29	20.07 ± 2.79	69.20
Psychological	9	28	16.85 ± 3.06	60.17
Social	5	13	8.17 ± 1.82	62.8
Environment	14	40	22.73 ± 4.20	56.82

Overall maximum score = 120

Table 5: Mean, SD, and mean % of perceived quality of life and satisfaction with health (N = 140)

Variable	Minimum score	Maximum score	Mean ± SD	Mean %
Perceived quality of life	1.00	5.00	3.07 ± 0.87	32.57
Perception on satisfaction with health	1	5	2.64 ± 3.07	52.8

Overall maximum score = 20

are one of the risk factors to have PCOS in women. These findings coincided with the present study.^{3,5}

One of the studies conducted among female science students aged between 18 and 26 years claimed that 83.8% of them did not

Table 6: Correlation between the symptoms and quality of life in the intervention and control group before the intervention ($N = 140$)

Clinical parameters	QOL	"r"	p value
BMI	Psychological health	-0.234	0.005
Acne	Physical health	-0.278	0.001
	Psychological health	-0.289	0.001
	Social relationship	-0.254	0.002
	Environment	-0.267	0.001
	Perception of QOL	-0.178	0.036
	Satisfaction with the health	-0.170	0.044

have a family history of PCOS. These findings support the present study outcomes where 75.7% of subjects did not have a family history of PCOS.

In the current study, the apparent symptoms of PCOS were menstrual irregularities (87.6%), such as amenorrhea (52.9%), polymenorrhea (20.7%), and oligomenorrhea (12.9%); physical parameters that were present were obesity (55.8%), increased waist/hip ratio (66.43%), and clinical parameters such as hirsutism (98.58%) and acne (42.86%). These findings are consistent with the original description by Stein and Leventhal in 1935. He mentioned that the above symptoms are primarily present in PCOS women.¹ Balaji et al.,¹⁶ Hahn et al.,⁷ and Khan strongly supported these findings.

The investigator chose the WHOQOL-BREF tool, because the domains of the tool assessed all the facets of individual health. The mean and SD for physical health is 20.07 ± 2.79 , psychological health is 16.85 ± 3.06 , social relationships is 18.17 ± 1.82 , and the environment is 40.00 ± 22.73 . The overall perception on satisfaction with health was 2.64 ± 0.89 . The mean percentage in all the domains was below 60% which shows the poor quality of life in women with PCOS. The perceived quality of life score was very less (32.57%), and the mean was 22.73 ± 4.20 . Several studies have reported that women with PCOS suffer from anxiety and depression and have a lower QOL. Systematic reviews have strongly pointed out that the physical signs and the clinical symptoms of PCOS are associated with poor quality of life.^{3,17}

Several studies have argued that obese women with PCOS are dissatisfied with their physical appearance and psychological health.^{3,18} Our results are following the previous research: Increased BMI has negatively influenced the psychological health of women with PCOS ($r = -0.234^*$, $p < 0.005$). Similarly, a negative correlation was noticed between acne and physical health ($r = -0.27889^*$, $p < 0.001$), psychological health ($r = -0.289$, $p < 0.003$), social relationship ($r = -0.254$, $p < 0.002$), the environment ($r = -0.267$, $p < 0.001$), perception of QOL ($r = -0.178$, $p < 0.036$), and satisfaction with the health ($r = -0.170$, $p < 0.044$). Acne is one of the major factors that affect the overall quality of life. But, a contradictory result noted by Hahn.⁷ The previous studies have been highlighted that the BMI is one of the factors affected the quality of life. Astoundingly, the current study results showed acne is a unique feature, which significantly affects quality of life of women with PCOS. However, this study is limited to small sample and limited to a single tertiary care centre.

CONCLUSION

Polycystic ovarian is a lifestyle disorder that disrupts the physical as well as the psychological health of women extending over all age-groups. The present study has identified that the women have

poor quality of life, and these are correlated with the symptoms of PCOS. Surprisingly, acne is one of the symptoms highly affected in all the domains of quality of life.

Clinical Significance

The article is relevant in the present context where current sedentary lifestyle and stressful living have induced changes among women, causing a sharp rise in the incidence of PCOS. The current study findings assist the stakeholders to formulate new guidelines to handle the fast growing problem of PCOS specially in emerging countries.

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