A TRAVEL TOWARDS THE RAMIFICATIONS OF PCOS ON WOMEN'S LIFE

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ABSTRACT

On a global scale, it is believed that Polycystic Ovary Syndrome (PCOS) impacts a sort of 5% to 20% of women who are in their generative years. Irregular menstrual cycles, often attributed to anovulation, are a distinctive symptom of PCOS and might provide difficulties in attaining pregnancy. Hirsutism and acne, two conditions frequently associated with elevated testosterone levels, can have significant psychological and emotional impacts. The research encompassed a cohort of 100 individuals diagnosed with PCOS and a comparison group of 200 individuals who were deemed to be in good health. The participants successfully completed surveys that had been previously validated. The study has shown that the socio-economic situation of individuals with PCOS was similar to that of individuals without the condition. The factors encompassed in this study comprise a later age of menarche, a past medical history of irregular or delayed menstruation, and nulliparity. Moreover, individuals with PCOS exhibited a fewer number of offspring, a lower frequency of pregnancies, and an increased prevalence of miscarriages in contrast to the healthy group consisting of individuals without the condition. In conclusion, this research emphasises that elevated BMI, irregular menstrual cycles, level of education, and marital status are notable variables that contribute to the modification of QHL in individuals with PCOS. The findings underscore the need to include psychological care and support in the comprehensive healthcare management of patients impacted by PCOS.

KEYWORDS: *Polycystic Ovary Syndrome (PCOS), Socio-Demographic Characteristics, Health-Related Attributes, Menstrual History, Reproductive Health*

INTRODUCTION

"Each individual holds the responsibility for their own well-being and health,

as well as any health-related issues."

- Sri Buddha

Irregular menstrual cycles, often attributed to an ovulation, are a distinctive symptom of PCOS and might provide difficulties in attaining pregnancy. This condition presents a wide range of clinical manifestations, encompassing menstrual irregularities, excessive body hair growth, as well as metabolic alterations such as insulin resistance and corpulence. The method of diagnosis entails a systematic approach to ruling out potential causes, which requires a comprehensive clinical assessment, careful examination of hormone levels, and utilisation of imaging examinations. Although there are currently

defined diagnostic criteria, ongoing research is expected to bring about significant changes in the diagnosis of PCOS, with a focus on personalization to better address the individual experiences of persons affected by this disorder. PCOS is concomitant with infertility, metabolic disturbances, cardiovascular complications, and psychological challenges, in addition to its prevalence. Despite its prevalence and impact, PCOS remains underdiagnosed and poorly understood, highlighting the need for extensive research and increased public awareness among healthcare providers and the general public.
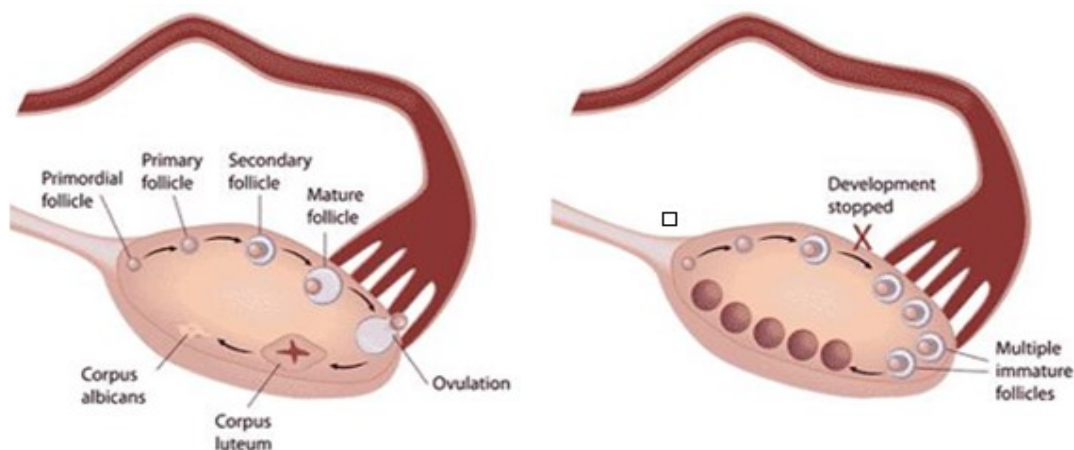

Figure 1: Normal Ovary and Polycystic Ovary.

The Rationale of the Research

The present study is driven by the complexity and multidimensionality of PCOS. It is not merely a reproductive disorder, but a syndrome with far-reaching physical and mental health implications. It is essential to have a holistic understanding of PCOS in order to provide optimal care and support to those afflicted. In addition, the variation in PCOS presentation among various populations, as well as the impact of socioeconomic factors, education, marital status, and age, highlights the need for a comprehensive investigation of these aspects.

OBJECTIVES OF THE STUDY

- To examine differences between PCOS cases and healthy controls in menstrual and reproductive history, including age at menarche, menstrual regularity, number of children, and pregnancy frequency.

- To evaluate the demographic physiognomies of PCOS cases and healthy cases, including age, BMI, educational status, marital status, and employment status.

REVIEW OF THE LITERATURE

Studies Related to Polycystic Ovarian Syndrome

Skiba, M. A., Islam, R. M., Bell, R. J., & Davis, S. R. (2018). The primary objective of this article is to have an understanding of the discrepancies observed in the occurrence estimates of PCOS. The text presumably encompasses the presentation of findings derived from a comprehensive meta-analysis of extant literature pertaining to the occurrence of PCOS. The paper provides significant insights into the factors that contribute to variations in reported prevalence rates of

PCOS. Many elements that could be considered include diagnostic criteria, characteristics of the population being studied, and the methodology employed in the research.

Hart, R., (2017). They discuss the dynamic analytical measures for PCOS, encompassing the significance of evaluating clinical manifestations, hormonal markers, and imaging results. Moreover, this study aims to comprehensively examine the several management techniques and therapy modalities that are potentially applicable to patients diagnosed with PCOS. Due to its publication in a recognisedendocrinology journal, this article can be regarded as a significant resource for comprehending the most recent research and guidelines pertaining to the analysis and therapy of PCOS.

Zhao, H. (2016). The primary subject of this article pertains to genetic investigations concerning PCOS. The text presumably addresses the genetic foundations of PCOS, encompassing various genetic indicators linked to the disorder. Gaining a comprehensive understanding of the genetic components associated with PCOS is imperative in order to elucidate its aetiology and facilitate the development of tailored therapeutic interventions. This paper holds significant value for academics and clinicians with an interest in exploring the genetic factors that contribute to PCOS.

RESEARCH GAP

The aforementioned reasons encompass the necessity for establishing uniform diagnostic criteria, enhancing healthcare providers' knowledge and awareness, and deepening comprehension of the genetic and environmental elements that contribute to PCOS. In addition, further investigation is warranted to examine the enduring implications of PCOS and to devise efficacious therapies that encompass the physiological and psychological dimensions of this condition.

FACTORS INFLUENCING PCOS AND QHL

The impact of genetics is evident in the expansion of PCOS since individuals with a familial background of the condition are at a heightened risk. Various lifestyle factors, including dietary choices and engagement in physical exercise, have the potential to influence the intensity of symptoms experienced. Moreover, the presence of hormonal imbalances, specifically involving insulin and androgens, plays a significant role in the pathophysiological mechanisms behind PCOS and has a notable influence on the overall well-being of those affected.
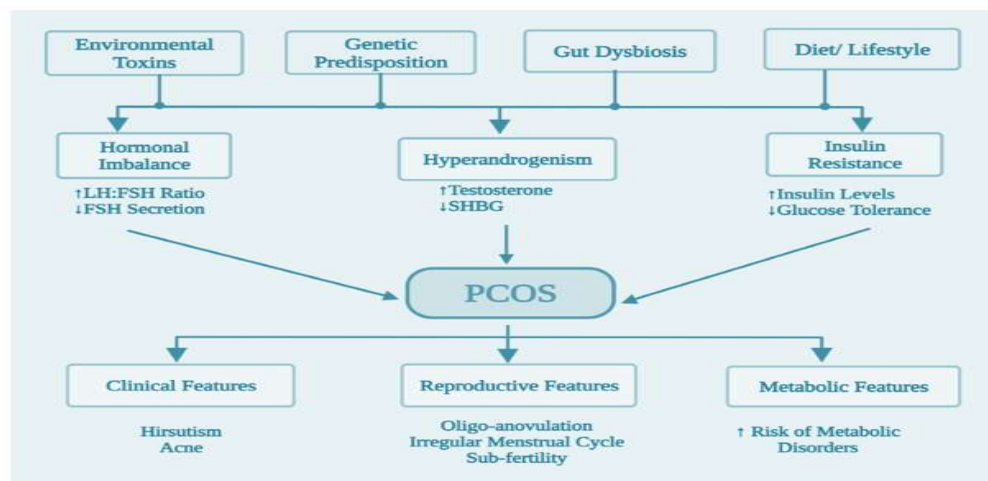

Figure 2: Features of PCOS.

SES AND PCOS PREVALENCE

Women from lower socioeconomic backgrounds may face a higher likelihood of developing PCOS, potentially due to factors such as limited access to healthcare, inadequate nutrition, and increased stress levels. These disparities can contribute to hormonal imbalances and metabolic disturbances associated with PCOS. As a result, PCOS may disproportionately affect women from disadvantaged socioeconomic backgrounds, further exacerbating existing health inequalities.
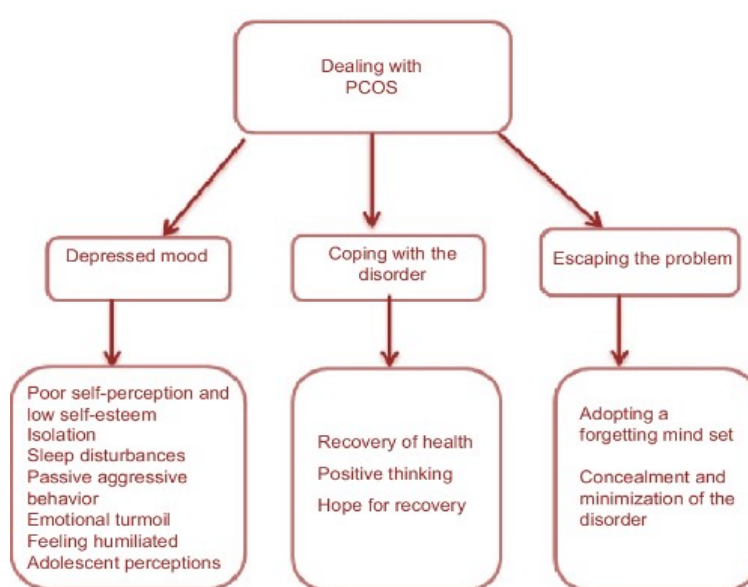

Figure 3: Causes of PCOS.

SES FACTORS - AGE, BMI

Body Mass Index (BMI) and age are key components of SES that warrant special attention when examining their impact on PCOS:

AGES AND PCOS

Adolescents and Young Adults (10-24 years)

Adolescents and young adults with PCOS often encounter unique challenges related to body image, self-esteem, and identity formation. The onset of PCOS symptoms during puberty, such as irregular menstruation and hirsutism, can be emotionally distressing and affect self-confidence. Fertility concerns may also be particularly salient for this age group. As a result, their QHL may be impacted by social and psychological factors, including peer relationships and societal expectations.

Reproductive Age (25-35 years)

Women in their reproductive years with PCOS often face a complex interplay of fertility concerns and metabolic challenges. Balancing desires for family planning with managing symptoms like obesity and insulin resistance can be emotionally taxing. The QHL may be influenced by the pursuit of fertility treatments, the emotional toll of unsuccessful attempts, and the long-term consequences of PCOS on metabolic health.

Peri-menopause and Menopause (36-49 years)

As women with PCOS approach menopause, they may experience shifts in their hormonal profiles and symptom presentation. Menopause can bring relief from certain PCOS-related symptoms like irregular menstruation but may introduce new challenges related to metabolic health, such as augmented risk of diabetes and cardiac disease. QOL is shaped by the need for ongoing symptom management and health maintenance.

CHANGES QHL WITH AGE

The QOL of women with PCOS can evolve as they age due to a combination of factors

- **Psychosocial Development:** As individuals progress through life stages, their psychosocial development and coping strategies may change. Adolescents may focus more on body image and peer relationships, while older women may prioritize family planning or long-term health.

- **Symptom Management:** The management of PCOS-related symptoms may shift with age. For example, adolescents may rely on parental support and guidance, while older women may have a better understanding of self-care strategies and healthcare resources.

- **Health Consequences:** PCOS is related to continuing health concerns, such as amplified risk of metabolic disorders. As women age, they may become more conscious of these health risks, influencing their QOL and health-related decision-making.

Age-Related Challenges in PCOS Management

- **Delayed Diagnosis in Adolescents:** Adolescents may experience delayed diagnosis due to the attribution of irregular menstruation to puberty. Delayed diagnosis can prolong emotional distress and hinder early intervention.

- **Fertility and Family Planning:** Reproductive-age women often grapple with fertility concerns and may undergo various fertility treatments. These treatments can have financial, emotional, and physical implications for QOL.

- **Metabolic Health Concerns:** Older PCOS women may face augmented threats of metabolic disorders. Effective management and lifestyle modifications become crucial to mitigate these risks and maintain QOL.

- **Psychological Impact:** Throughout all age groups, the psychological impact of PCOS should not be underestimated. Anxiety, depression, and body image concerns can persist or evolve with age, affecting overall QOL.

BASAL METABOLIC INDEX (BMI) AND QUALITY OF HEALTHY LIFE

SES can play a role in an individual's access to healthy food options and opportunities for physical activity. As such, women with lower SES may have a higher likelihood of obesity, which is most often associated with PCOS. Elevated BMI can exacerbate PCOS symptoms and increase the risk of related complications. BMI is a measure that relates to a person's weight and height.

BMI CATEGORIES AND PCOS SYMPTOMS

Underweight (BMI < 18.5)

Women with PCOS who fall into this category may experience irregular menstruation, hormonal imbalances, and a higher likelihood of hypothalamic amenorrhea. Underweight individuals may have less body fat, which can affect hormonal regulation.

Normal Weight (BMI 18.5 - 24.9)

Women in this BMI category may still have PCOS but might experience milder symptoms compared to those in higher BMI categories. Their symptoms could include irregular menstruation, hirsutism (excessive hair growth), and acne.

Overweight (BMI 25.0 - 29.9)

Overweight women with PCOS often experience more severe symptoms, such as insulin resistance, elevated androgen levels, irregular menstruation, and fertility challenges. Weight management becomes crucial in managing their condition.

Obese (BMI ≥ 30.0)

Obesity is closely linked to PCOS, and women in this category are more likely to have severe PCOS symptoms. These can include not only irregular menstruation and infertility but also increased risks of metabolic issues like type 2 diabetes and cardiovascular problems. Understanding the correlation between BMI and PCOS symptoms is essential for tailoring effective treatments and improving the QHL of individuals living with PCOS.

IMPACT OF BMI ON PHYSICAL AND EMOTIONAL WELL-BEING

Physical Well-being

Higher BMI levels are often associated with increased severity of PCOS-related symptoms. For instance, women with elevated BMI may experience more pronounced insulin resistance, which can lead to greater metabolic challenges. This can manifest as higher levels of abdominal obesity, elevated blood pressure, and unfavorable lipid profiles. Lower BMI levels, particularly in the underweight category, can lead to their unique physical challenges. These may include irregular menstruation, hormonal imbalances, and potential complications related to inadequate nutrition.

Emotional Well-being

Higher BMI levels are often associated with a greater likelihood of experiencing body image concerns, which, in turn, can lead to lowered self-esteem and higher levels of psychological distress. The societal stigma surrounding weight can exacerbate these emotional challenges, contributing to a negative feedback loop of emotional distress. Conversely, women with lower BMI levels may face different emotional struggles. Additionally, the emotional impact of irregular menstruation and potential fertility concerns can be significant in this population, further affecting their emotional well-being. Understanding the emotional challenges associated with different BMI categories in PCOS is vital for providing comprehensive care and support that addresses both physical and emotional needs.

STRATEGIES FOR MANAGING PCOS-RELATED SYMPTOMS BASED ON BMI

1. Lifestyle Modifications

For individuals with elevated BMI, lifestyle modifications play a crucial role in managing PCOS-related symptoms. This includes adopting a balanced diet, Yoga practices, engaging in regular physical activity, and implementing stress-reducing techniques. These interventions can help improve insulin sensitivity, regulate menstrual cycles, and promote overall metabolic health. Weight management becomes a key focus in reducing the severity of PCOS symptoms.

2. Weight Management

Weight management is a cornerstone of PCOS management, especially for those with higher BMI levels. Achieving and maintaining a healthy weight through sustainable methods can lead to significant improvements in PCOS symptoms. This may involve working with healthcare providers and registered dietitians to develop personalized weight management plans. It's essential to approach weight management with a focus on overall health rather than solely on achieving a specific BMI.

3. Nutritional Guidance

Tailored nutritional guidance is essential for individuals with both elevated and lower BMI levels. For those with higher BMI, the focus may be on calorie moderation, macronutrient balance, and glycemic control. Nutritionists and dietitians can provide guidance on dietary choices that promote metabolic health. For those with lower BMI, ensuring adequate nutrient intake is crucial to support hormonal balance and overall health.

4. Psychological Support

Providing psychological support is paramount for addressing the emotional well-being of women with PCOS across all BMI categories. This may involve counseling, support groups, and body-positive interventions. Creating a safe space for individuals to discuss their concerns and challenges related to health can significantly enhance their overall well-being.

INFLUENCE OF SES ON QHL

Lower SES is associated with a range of challenges that can exacerbate the physical and emotional burdens of PCOS. These challenges include:

Limited Access to Healthcare

Women from lower SES backgrounds may encounter barriers to accessing healthcare services, including routine check-ups and specialized PCOS care. This can result in delayed diagnosis and suboptimal management of PCOS symptoms.

Financial Strain

The financial burden of managing PCOS can be substantial, particularly for treatments such as fertility interventions and medications. Lower-income individuals may struggle to afford these expenses, leading to stress and potential gaps in care.

Psychological Stress

The psychosocial impact of PCOS, including anxiety, and depression, health concerns, can be exacerbated by socioeconomic factors. Financial stress and social isolation can contribute to the emotional toll of PCOS.

Limited Lifestyle Resources

SES can influence an individual's access to resources that support a healthy lifestyle, such as nutritious food options and opportunities for physical activity. Lower SES may contribute to unhealthy dietary patterns and sedentary behaviors, which can worsen PCOS-related metabolic issues.

CURRENT TREATMENT APPROACHES FOR PCOS

The available treatment modalities encompass lifestyle modifications, such as dietary adjustments and physical activity, as well as hormonal interventions (e.g., oral contraceptives, and anti-androgens) and drugs like metformin. Doing yoga can help reduce weight and improve the overall metabolism and fertility in women suffering from infertility issues. The selection of treatment is contingent upon an individual's distinct symptoms and objectives, such as the regulation of menstruation, enhancement of fertility, or management of metabolic factors.

RESEARCH DESIGN

This research employs a cross-sectional observational design to explore the correlation between PCOS and a variety of demographic as well as socioeconomic variables concerned with PCOS. This particular design facilitates the gathering of data at a certain moment, hence permitting the evaluation of correlations and relationships among variables. The investigation was conducted in a well-reputed hospital. The study population comprises females within the reproductive age range of 10 to 49 years who seek medical care at the hospital's Gynaecology and Obstetrics Outpatient Department. The study includes two distinct cohorts: a cohort of women who have PCOS, and a control cohort consisting of women who do not have PCOS and are in good health.

DATA SOURCES AND DATA COLLECTION

In this particular research, data is obtained through conducting face-to-face interviews with individuals who satisfy the predetermined criteria for inclusion in the study. The process of data collection has three distinct components: The research entails the utilisation of semi-structured questionnaires that have been pre-validated to collect data pertaining to socio-demographic factors, economic circumstances, and reproductive history.

Sample Size

The approximation of the population size is conducted considering a power of 80%, an alpha-error of 0.05, and a percentage of controls experiencing poor QHL (20%). As a result, the study includes a cohort of 100 individuals diagnosed with Polycystic Ovary Syndrome (PCOS) and 200 individuals who are considered healthy controls.

Measurement Tools

The questionnaire encompasses a total of eight variables, including physical functioning, general health, role limitations resulting from emotional difficulties, physical health, social functioning, bodily pain, emotional well-being and weariness and energy levels.

Ethical Deliberations

The process of obtaining informed permission is conducted with participants or their legal guardians, specifically in the case of individuals who are minors and below the age of 18.

Data Analysis Plan

The data analysis plan involves conducting statistical analysis on the data using Laavan. Descriptive statistics serve the purpose of summarizing continuous data, whereas categorical variables are typically represented in the form of frequencies and percentages. The analysis incorporates statistical methods such as Pearson's Correlation Matrix and chi-square Test, to evaluate relationships and correlations between variables. Additionally, the SEM analysis proves that the model is fit.

Table 1. Comparison between socio-demographic status of PCOS and HC cases.

Age in years	PCOS n (%)	HC n (%)	Pr	Odd ratio 95% CI
19	33(33.0)	57 (27.0)	0.020	1
20–30	58(58.0)	101 (50.5)		0.912(0.533–1.561)
>30	9(9.0)	45 (22.5)		0.330(0.143–0.76)
BMI	**PCOS n (%)**	**HC n (%)**	**Pr**	**Odd ratio 95% CI**
<18.5	9(9.0)	2 (1.0)	0.000	1
18.5-<25	48(48.0)	137 (68.5)		0.069(0.014–0.328)
25-<30	26(26.0)	56 (28.0)		0.092(0.018–0.454)
30	17(17.0)	5 (2.5)		0.800(0.123–5.20)
Education	**PCOS n (%)**	**HC n (%)**	**Pr**	**Odd ratio 95% CI**
Illiterate	5(5.0)	15 (7.5)	0.0001	1
Up to Primary	7(7.0)	10 (5.0)		2.45(0.56–10.6)
Up to Middle	7(7.0)	25 (12.50)		0.98(0.24–3.94)
Up to High School	13(13.0)	58 (29.0)		0.78(0.22–2.77)
Intermediate	15(15.0)	63 (31.50)		0.83(0.23–2.89)
Graduation/Above	53(53.0)	29 (14.5)		6.3(1.90–20.86)
Marital Status	**PCOS n (%)**	**HC n (%)**	**Pr**	**Odd ratio 95% CI**
Married	43(43.0)	106 (53.0)	0.060	1
Unmarried	57(57.0)	94 (47.0)		1.59 (0.97–2.58)
Employment Status	**PCOS n (%)**	**HC n (%)**	**Pr**	**Odd ratio 95% CI**
Students	59(59.0)	78 (39.0)	0.000	1
House maker	35(35.0)	98 (49)		0.470(0.281–0.78)
Unemployed	2(2.0)	0 (0.0)		0.171(0.049–0.59)
Employed/Professionals	4(4.0)	24 (12.0)		0.759(0.54–1.06)

PCOS: Polycystic ovary syndrome; HC: Healthy control; BMI: Body mass index; Pr: Predictive value; CI: Confidence interval; n: Number of patients; %: Percentage.

Inclusion and Exclusion Criteria

The inclusion criteria for this research pertain to women with PCOS and are between the ages of 10 and 49. The exclusion criteria encompass individuals who possess cognitive or developmental disabilities, debilitating illnesses that have a severe impact on QHL, proven malignancies, physical deformities, and women who are breastfeeding.

INTERPRETATION

Age

Among 19-year-olds, 33 percent of PCOS patients and 27 percent of healthy controls were observed. Between the ages of 20 and 30, 58% of PCOS patients and 50.5% of healthy controls were identified. The odds ratio of 0.912, with a 95% confidence interval (CI) ranging from 0.533 to 1.561, indicates that there is no significant difference between these ages. PCOS is less prevalent among adults over 30 (9%) compared to healthy controls (22.5%). The odds ratio of 0.330 with a 95% confidence interval ranging from 0.143 to 0.76 indicates a statistically significant difference in favor of healthy controls.

Body Mass Index (BMI)

Among those with a BMI of less than 18.5, 9% of PCOS patients had a lower BMI than 1% of healthy controls. The likelihood ratio of 1 indicates a lack of statistical significance. Within the BMI range of 18.5 to less than 25, 48 percent of PCOS patients and 68.5 percent of healthy controls fell into this category. The odds ratio of 0.069 with a 95% confidence

interval ranging from 0.014 to 0.328 suggests a statistically significant difference, with healthy controls being more likely to have a BMI in this range. For the BMI range of 25 to less than 30, 26% of PCOS individuals and 28% of healthy controls were observed. The odds ratio of 0.092 with a 95% confidence interval ranging from 0.018 to 0.454 indicates a statistically significant difference, with healthy controls marginally more likely to have BMIs in this range. 17% of PCOS patients had a BMI of 30 or higher, compared to 2.5% of healthy controls. The odds ratio of 0.800, with a 95% confidence interval ranging from 0.123 to 5.20, does not indicate a statistically significant difference.

Education

Individuals who are illiterate account for 5% of PCOS cases and 7.5% of healthy controls. The 0.0001 p-value indicates a statistically significant difference. Up to primary education is observed in 7% of PCOS individuals and 5% of healthy controls. 7% of PCOS individuals and 12.5% of healthy controls have completed middle school, with no significant difference. 13% of PCOS individuals and 29% of healthy controls have completed high school, with no significant difference. The percentage of PCOS cases with a bachelor's degree or higher is greater than that of healthy controls (14.5%).

Marital Status

43% of PCOS patients are married, compared to 53% who are unmarried. 53% of the healthy control group are married, while 47% are single.

Employment Status

Students comprise the largest proportion of both categories, comprising 59% of PCOS patients and 39% of healthy controls. The 0.000 p-value indicates a statistically significant difference. 35% of PCOS patients are housewives, compared to 49% of healthy controls. The odds ratio of 0.470 with a 95% confidence interval ranging from 0.281 to 0.78 indicates a statistically significant difference, with healthy controls being more likely to be homemakers. Individuals with PCOS are significantly more likely to be unemployed (2% vs. 0%) compared to healthy controls (0%). 4% of individuals with PCOS are employed/professionals, compared to 12% of healthy counterparts. The odds ratio of 0.759 with a 95% confidence interval ranging from 0.54 to 1.06 indicates no significant difference.

Table 2. Comparison of menstrual and reproductive history of women with PCOS and HC cases.

Menstrual and reproductive history					
Variables	Groups	PCOS n (%)	HC n (%)	Pr	Odd ratio 95% CI
Age at menarche	11–14	66(66.0)	200(100.0)	0.000	1
	>14	34(34.0)	0(00.0)		
Menstrual history	Regular	1(1.0)	191(95.5)	0.000	1
	Irregular	44(44.0)	9(4.5)		1079.99 (131.71–8855.21)
	Delayed/Late	55(55.0)	0(0.0)		
Children	Yes	15(35.7)	95(90.5)	0.000	1
	No	27(64.3)	10(9.5)		17.1 (6.90–42.36)
Number of children	2	13(86.67)	66(69.47)	0.169	1
	>2	2(13.33)	29(30.53)		0.350 (0.074–1.65)
How many times pregnant	2	17(77.27)	58(61.05)	0.153	1
	>2	5(22.73)	37(38.95)		0.461(0.156–1.35)
	No	88(88.0)	185(92.5)		

PCOS: Polycystic ovary syndrome; HC: Healthy control case; Pr: Predictive value; CI: Confidence interval; n: Number of patients; %: Percentage.

Interpretation

Age at Menarche

Sixty-six percent of women with PCOS reached menarche between the ages of 11 and 14, whereas all women in the healthy control group reached menarche within this age range. The 0.000 p-value indicates a statistically significant difference. Thirty-four percent of women in the PCOS group reached menarche after the age of 14.

Menstrual History

Only 1% of women in the PCOS group reported having regular menstrual cycles, whereas 95.5% of women in the healthy control group had regular cycles. The 0.000 p-value indicates an extremely significant difference. 44% of women with PCOS reported irregular menstrual cycles, while only 4.5% of healthy controls reported irregular cycles. The odds ratio of 1079.99 with a 95% confidence interval ranging from 131.71 to 8855.21 indicates a statistically significant difference. Delayed or late menstrual cycles were observed in 55% of PCOS cases, but none were reported in the healthy control group, resulting in a statistically significant difference.

Children

35.7% of women with PCOS reported having children, while 90.5% of healthy controls reported having children. The 0.000 p-value indicates an extremely significant difference. 64.3% of PCOS patients reported not having children, compared to 9.5% of healthy controls. The 17.1 odds ratio with a 95% confidence interval from 6.90 to 42.36 suggests a significant difference.

Number of Children

Among women with PCOS who had children, 86.67 percent had two children and 13.33 percent had more than two. In the group of healthy controls, 69.47% had two offspring, while 30.53 % had more than two. The p-value of 0.169 indicates that there is no discernible difference between the two categories.

Number of Times Pregnant

Among women with PCOS who became pregnant, 77.27 percent were pregnant twice and 22.73 percent were pregnant more than twice. In the group of healthy controls, 61.05 percent became impregnated twice, and 38.95 percent became pregnant more than twice. The p-value of 0.153 indicates that the two categories do not differ significantly. Notably, 88% of women with PCOS reported that they were not expectant, compared to 92.5% of healthy women.

Table 3: Evaluation of Variables between HC and PCOS Cases

Variables	PCOS mean± SD	p50(min-max)	HC mean± SD	P-value
Age	22.81±5.33	22(14–36)	24.67±6.04	0.009
BMI	24.35±5.49	24.29(11.32–38.1)	23.61±2.79	0.125
Age at marriage	19.31±3.97	20(13–30)	22.29±2.36	0.000
Age at menarche	13.86±1.44	14(11–18)	12.64±1.09	0.000
No of child	1.46±0.91	1(1–4)	2.26±1.04	0.000
How many times pregnant	1.77±1.02	1(1–4)	2.49±1.36	0.006

Data are presented as mean± SD; P value less than 0.05 is considered as significant differences between the group; PCOS: Polycystic ovary syndrome; HC: Healthy control; BMI: Body mass index; P50: Probability 50 value; SD: Standard deviation

Interpretation

The median BMI value in the 50th percentile is 24.29, with a range of values spanning from 11.32 to 38.1. In the healthy control group, the average body mass index (BMI) is 23.61, with a standard deviation (SD) of 2.79. The observed disparity in average BMI between the two groups does not exhibit statistical significance (p-value = 0.125), indicating a lack of substantial distinction in BMI between the two groups. The median age at which individuals enter into marriage denoted as the 50th percentile (p50), is reported to be 20 years. The observed age range for marriage spans from 13 to 30 years. On the contrary, the healthy control group has a comparatively higher average age at marriage of 22.29 years, accompanied by a standard deviation of 2.36. The healthy control group exhibits a comparatively lower average age of menarche, measuring 12.64 years, with a standard deviation of 1.09. The median number of children, represented by the 50th percentile (p50), ranges from 1 to 4, with a central tendency of 1. The average number of pregnancies among women with PCOS is 1.77, with a standard deviation of 1.02. The median, also known as the 50th percentile (p50), has a value of 1, with a range from 1 to 4. The healthy control group exhibits a greater mean number of pregnancies, specifically 2.49, with a standard deviation of 1.36. The statistical analysis reveals a significant disparity in the average number of pregnancies between the two cohorts (p-value = 0.006).

QUALITATIVE ANALYSIS

Reliability Statistics

	Cronbach's α
Scale	0.766

Interpretation

The Cronbach's α coefficient greater than 0.7 is typically regarded as satisfactory, as it suggests that the items comprising the scale are assessing a shared underlying construct with a reasonable level of consistency.

Component Loadings

Table 4

Component Loadings			
	Component		
	1	**2**	**Uniqueness**
General Health			0.935
Physical function		0.811	0.313
Physical health		0.840	0.274
Emotional Problem	0.559	0.378	0.544
Pain	0.818		0.263
Social function	0.900		0.189
Energy/Fatigue	0.893		0.203
Emotional well-being	0.380	0.621	0.469
Note. 'varimax' rotation was used			

Interpretation

Component loadings indicate the degree of association between each individual item and the factors that have been extracted. Factor 1 (General Health and Physical Function), encompasses various aspects related to an individual's overall health and physical capabilities. The construct of General Health exhibits a substantial loading of 0.935 on Factor 1, signifying a robust association with this particular component.

The construct of physical function demonstrates a significant factor loading of 0.811 on Factor 1. The role limitations resulting from physical health exhibit a substantial loading of 0.840 on Factor 1, signifying a robust correlation with overall health and physical functioning.

Factor 2, which pertains to emotional well-being, exhibits a substantial correlation with role limitations caused by emotional problems, as evidenced by its maximum loading of 0.621. The variable of pain exhibits a notable loading of 0.818 on Factor 2, indicating a strong association with emotional well-being. The social function variable exhibits a substantial loading of 0.900 on Factor 2, suggesting a robust correlation with emotional well-being. The variable of energy/fatigue exhibits a significant loading of 0.893 on Factor 2, indicating a strong association between energy/fatigue and emotional well-being. The construct of emotional well-being demonstrates a substantial loading of 0.621 on Factor 2, suggesting a robust association with this particular component. The concept of uniqueness refers to the extent to which the extracted components fail to account for the variance in each variable. Greater values of uniqueness indicate that a variable is less comprehensively accounted for by the underlying causes.

KMO Measure of Sampling Adequacy

Table 5

	MSA
Overall	0.699
General Health	0.272
Physical function	0.661
Role limitations due to physical health	0.648
Role limitations due to emotional problem	0.692
Pain	0.784
Social function	0.693
Energy/Fatigue	0.627
Emotional well-being	0.891

Interpretation

The KMO value of 0.699 indicates that the dataset possesses a moderate level of suitability for factor analysis, while there is potential for enhancement. • Nonetheless, certain scales, including "General Health" (0.272) and "Physical function" (0.661), have rather low KMO values. The observed low values may suggest a limited presence of shared variance in these specific scales, which can be accounted for by underlying causes. It is advisable to deliberate upon the potential inclusion of these scales within the factor analysis.
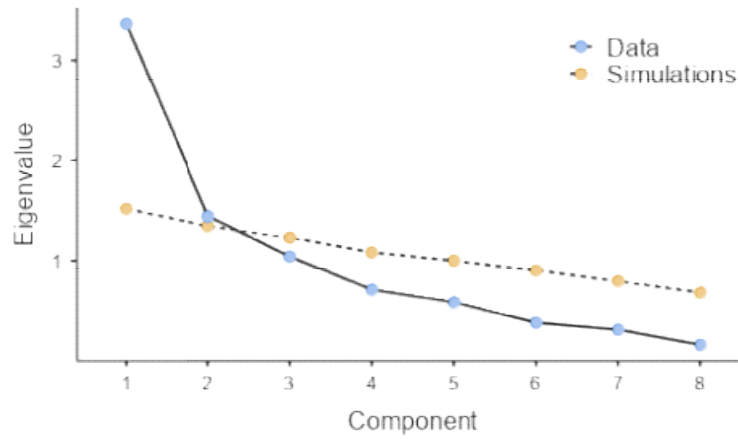
Scree Plot

Figure 4

Correlation Matrix

Table 6

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
General Health	—								
Physical function	0.080	—							
Role limitations due to physical health	-0.104	0.620	—						
Role limitations due to emotional problem	-0.091	0.348	0.234	—					
Pain	0.007	0.328	0.328	0.535	—				
Social function	0.074	0.168	0.129	0.445	0.590	—			
Energy/Fatigue	0.060	0.160	0.243	0.302	0.689	0.769	—		
Energy/Fatigue	-0.083	0.401	0.443	0.389	0.395	0.308	0.321	—	
Emotional well-being	0.063	0.366	0.347	0.447	0.338	0.397	0.351	0.409	—

Interpretation

The correlation matrix offers valuable insights into the interrelationships among several health-related scales. Certain scales have modest positive or negative correlations, indicating a potential but not substantial association between them.

Factor Loadings

Table 7

Factor	Indicator	Estimate	SE	Z	p
Factor 1	Pain	0.417	0.0895	4.66	< .001
	Social function	0.806	0.0928	8.69	< .001
	Energy/Fatigue	0.895	0.0916	9.77	< .001
	Energy/Fatigue	0.939	0.0892	10.52	< .001
Factor 2	Physical function	0.480	0.0642	7.48	< .001
	Role limitations due to physical health	0.639	0.0803	7.95	< .001
	Emotional well-being	0.380	0.0704	5.39	< .001

Interpretation

The factor loadings in a factor analysis depict the associations between latent components, specifically Factor 1 and Factor 2, and observable variables such as Pain, Social function, Energy/Fatigue, Physical function, Role constraints owing to physical health, and Emotional well-being. Factor 1 exhibits a positive association with pain, as indicated by its factor loading of 0.417. In essence, Pain has a constructive impact on Factor 1. The social function exhibits a robust positive factor loading of 0.806, signifying a significant positive correlation with Factor 1. The social function plays a significant role in the contribution to Factor 1. The variable "Energy/Fatigue" exhibits a high positive factor loading of 0.895, indicating a significant positive correlation with Factor 1. The factor labelled Factor 1 is significantly influenced by energy levels and fatigue. Another indicator, referred to as "Energy/Fatigue," exhibits a greater factor loading of 0.939, indicating a larger positive correlation with Factor 1. This observation suggests a high correlation between the aforementioned indicator and Factor 1, with the former exerting a significant influence on the latter.

Factor 2 exhibits a factor loading of 0.480, signifying a favourable correlation with physical function. Physical function has a beneficial impact on Factor 2. The factor loading of 0.639 indicates a robust positive correlation between role restrictions caused by physical health and Factor 2. The presence of physical health constraints significantly relates to the restrictions experienced in fulfilling one's role, thereby playing a substantial role in Factor 2. The factor loading for emotional well-being is 0.380, demonstrating a positive correlation with Factor 2. The presence of emotional well-being has a beneficial impact on Factor 2.

Tucker-Lewis Index (TLI)

	Model	
Tucker-Lewis Index (TLI)	0.773	

Interpretation

The Tucker-Lewis Index (TLI) is a statistic that, like the Comparative Fit Index (CFI), assesses the degree of improvement in fit compared to a null model. The TLI score of 0.773 suggests that the model's fit is acceptable.
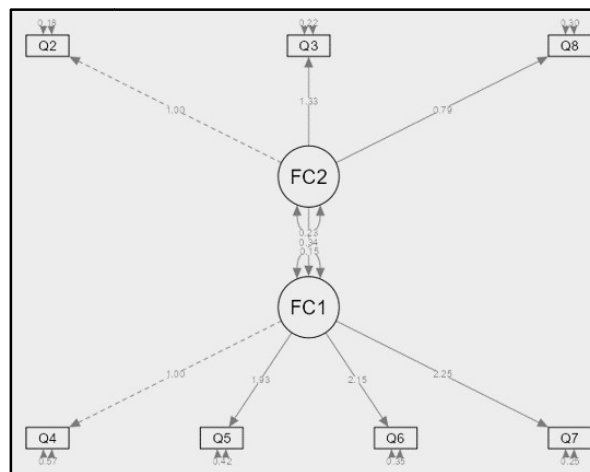
SEM Diagram

Figure 5

FINDINGS

Table 1 - A Comparison of Socio-Demographic Status

In age, there exists a statistically significant disparity in age between individuals affected by PCOS and healthy control cases (HC). A significant proportion of PCOS cases, specifically 58%, occur among those aged 20-30. In contrast, HC cases have a greater prevalence among individuals aged 30 and above. It has been observed that individuals with PCOS generally exhibit slightly elevated BMI readings. In education, there is a notable disparity in educational attainment between those with PCOS and those without the condition, with a higher percentage of PCOS patients having achieved graduation or higher education levels in comparison to individuals without PCOS (referred to as HC cases). In marital status, there exists a disparity in married status between the two cohorts, the observed difference does not attain statistical significance. PCOS patients exhibit a greater proportion of individuals classified as students and house-makers in comparison to cases without PCOS (HC) in employment status.

Table 2 - Data on Menstrual and Reproductive History

PCOS cases exhibit a greater prevalence in persons with an age at menarche ranging from 11 to 14 years, whereas all healthy control (HC) cases fall within this age at menarche range. Individuals diagnosed with PCOS exhibit a higher propensity for experiencing irregular menstrual cycles in comparison to those without the condition, referred to as HC instances. Individuals with hyperandrogenism (HC) are more prone to having offspring in comparison to individuals with PCOS. The prevalence of higher parity and gravidity is observed among individuals diagnosed with hirsutism and acne (HC) in comparison to those diagnosed with PCOS.

Table 3 - An Assessment of Variables

The age of those diagnosed with PCOS tends to be younger compared to those diagnosed with HC, and this disparity is statistically significant. The age at which individuals with PCOS enter into marriage is often younger in comparison to individuals without PCOS (HC instances), and this disparity demonstrates statistical significance. The age at menarche in individuals with PCOS is slightly greater compared to those without the condition, and this disparity is statistically significant. The number of children and pregnancies is shown to be higher in cases of HC as opposed to cases of PCOS, and these disparities demonstrate statistical significance.

QUALITATIVE ANALYSIS

The observed loadings indicate a robust association between the items and their corresponding components, thus demonstrating satisfactory construct validity. The KMO ratings for individual items exhibit a consistent trend of surpassing the threshold of 0.6, signifying that each item makes a meaningful contribution towards the overall adequacy. The correlation matrix provides an overview of the associations among various variables. For instance, there exists a positive correlation between items pertaining to physical health, such as physical function. Conversely, there may be a negative correlation between these items and those associated with mental well-being.

CONCLUSIONS

This study provides a thorough analysis of the socio-demographic and health-related characteristics of persons impacted by PCOS in contrast to a control group consisting of individuals without the condition. The analysis provides insights into many significant variances between the two cohorts, indicating that individuals with PCOS generally exhibit a younger age

profile, an earlier onset of menarche, and a higher likelihood of experiencing irregular menstrual periods. Moreover, individuals diagnosed with PCOS typically exhibit a lower frequency of childbirth and pregnancies, suggesting possible concerns for reproductive health. The research presents a scale that has commendable reliability, hence offering significant potential for evaluating the health and well-being of patients diagnosed with PCOS. On its whole, this study enhances the comprehension of PCOS and its multifaceted consequences, providing a basis for subsequent inquiries and potential advancements in the identification and treatment of this prevalent endocrine illness.

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QUESTIONNAIRE A TRAVEL TOWARD THE RAMIFICATIONS OF POLYCYSTIC OVARIAN SYNDROME ON WOMEM'S QUALITY OF LIFE

Thank you for participating in our survey. Your feedback is valuable in helping us understand perceptions and experiences related to PCOS. This survey is anonymous, and your responses will remain confidential.

SECTION 1: DEMOGRAPHIC PROFILE

1. **Age in years**
   - ☐ 19
   - ☐ 20–30
   - ☐ >30

2. **BMI**
   - ☐ <18.5
   - ☐ 18.5-<25
   - ☐ 25-<30
   - ☐ 30

3. **Education Status**
   - ☐ Illiterate
   - ☐ Up to Primary
   - ☐ Up to Middle
   - ☐ Up to High School
   - ☐ Intermediate
   - ☐ Graduation/Above

4. **Marital Status**
   - ☐ Married
   - ☐ Unmarried

5. **Employment Status**
   - ☐ Students
   - ☐ House maker
   - ☐ Unemployed
   - ☐ Employed / Professionals

6. **Age at Puberty**
   - ☐ 11–14
   - ☐ >14

7. **Menstrual history**
   - ☐ Regular
   - ☐ Irregular
   - ☐ Delayed/Late

8. **Children**

   ☐ Yes

   ☐ No

9. **Number of children**

   ☐ 2

   ☐ >2

10. **How many times have you gotten pregnant?**

    ☐ 2

    ☐ >2

    ☐ No

SECTION 2: QUALITY OF HEALTHY LIFE

S.N.	Questionnaire Items	SD	D	N	SA	A
1.	PCOS significantly affects my perception of my health and well-being.					
2.	I experience difficulties in performing physical activities due to PCOS.					
3.	I find it challenging to complete physical tasks because of my PCOS symptoms.					
4.	I often feel overwhelmed by emotional issues related to my PCOS diagnosis.					
5.	PCOS-related pain significantly disrupts my daily life.					
6.	PCOS affects my ability to participate in social activities and maintain relationships.					
7.	PCOS-related symptoms, such as fatigue or pain, limit my ability to engage in physical activities.					
8.	My emotional well-being is negatively influenced by my PCOS diagnosis.					

Please mark your degree of agreement with each statement based on your personal experiences with PCOS. Your input is essential for our study. Thank you.