

Effect of Lifestyle Modifications on Symptoms of PCOD Obese Girls

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Abstract.

A complex endocrine condition, polycystic ovarian syndrome (PCOS) affects 6% to 10% of women in their reproductive years. For overweight and obese girls with PCOS, dietary, exercise, and behavioral modifications seem to improve the problems related to metabolism and reproduction. The study was carried out on a obese PCOD girls of Guntur district, Andhra Pradesh. For the study A quasi-experimental design was used. Results showed a highly significant improvement in menstruation frequency, menstrual issues, and weight loss following the intervention ($P < .001$), as well as a highly significant difference in knowledge about PCOS. Additionally, there were extremely significant decreases in the waist circumference ($P < .001$), the total score for hirsutism, and the overall score for acne. Significant variation in psychological state following treatments is also present. It showed that the lifestyle modifications positively affect in reducing symptoms of PCOS .

Keywords: Lifestyle changes, Polycystic ovarian syndromes symptoms, Obese Girls.

1. Introduction

Polycystic Ovary Syndrome, commonly known as PCOS (Polycystic Ovarian Syndrome) is a prevalent hormonal disorder that affects people assigned female at birth. It is characterized by a range of symptoms resulting from imbalances in reproductive hormones. PCOS can have significant implications for both reproductive and overall health.

One of the key features of PCOS is the presence of small cysts or follicles on the ovaries, which can interfere with the normal functioning of these organs. These cysts are not harmful but can lead to hormonal imbalances, affecting the menstrual cycle and potentially causing complications such as infertility.

The exact cause of PCOS remains unclear, but factors such as genetics, insulin resistance, and inflammation are believed to contribute. Insulin resistance, in particular, plays a crucial role in the development of PCOS. The body's cells become less responsive to insulin, leading to elevated insulin levels, which can in turn stimulate the ovaries to produce more androgens (male hormones). This hormonal imbalance disrupts the normal ovulation process, leading to irregular menstrual cycles.

PCOS is associated with a range of symptoms, including irregular periods, excessive hair growth (hirsutism), acne, and weight gain. Individuals with PCOS may also experience fertility challenges, as the condition can interfere with ovulation. Additionally, PCOS has been linked to an increased risk of other health issues such as type 2 diabetes, cardiovascular disease, and endometrial cancer.

Managing PCOS involves a multidisciplinary approach, including lifestyle modifications, such as a healthy diet and regular exercise, to manage weight and improve insulin sensitivity. Medications may be prescribed to regulate menstrual cycles, reduce androgen levels, and address specific symptoms. For those trying to conceive, fertility treatments may be recommended.

In conclusion, PCOS is a complex and common hormonal disorder that affects people assigned female at birth, with far-reaching implications for reproductive and overall health. Understanding the underlying factors and adopting a comprehensive approach to management can help individuals with PCOS lead healthier lives. If you suspect you have PCOS or are experiencing symptoms, it is important to consult with a healthcare professional for an accurate diagnosis and appropriate management.

2. Design/Methods/Modelling

All girls in the four grades of the faculty of nursing (543) were included to assess the girls with polycystic ovary syndrome symptoms. All girls with polycystic ovary symptoms

screened by the physician through abdominal ultrasound diagnoses (140). The girls diagnosed with polycystic ovarian syndrome for the intervention study (78).

Tools of data collection: Four tools were used in the current study to collect the necessary data. A self-administered questionnaire: It was developed by the researchers after reviewing the related literature; it consisted of main four parts:

Part I: Socio-demographic and clinical characteristics of the studied sample as (age, level of grade, residence, Height, Weight, BMI, Waist circumference (cm), Hirsutism score and Degree of Acne).

Part II: Menstrual history such as age of menarche, cycle length, duration of menstrual blood flow, and number and rhythm of menstrual cycles through the previous year. All the items of this section were self-reported by the girls, in addition to gynecological history.

For every item, a score of (2) was assigned for an answer that was entirely correct, a score of (1) for an answer that was only partially correct, and a score of (0) for an answer that was incorrect or unknown. The sum of the scores for each of its elements was used to determine the final score. Furthermore, the girls' total knowledge score was translated into a total percent and assigned a grade of poor when the total score was less than three, average when the total score was between three and six, and good when the total score was six or more.

Hirsutism Evaluation::

It was taken from the 1961 Ferriman and Gallwey. to evaluate the hair growth grades throughout nine major anatomical regions (i.e., hands and legs, breasts, abdomen, pubic area, lips, chin, lower and upper back). Each area's level of hirsutism was graded on a 4-point scale, where 0 denotes no hair growth and 4 denotes maximal hair growth. To get the Ferriman-Gallwey Hirsch total score for each respondent, the scores in each of the nine categories were added together. A score of ≥ 8 shows androgen excess out of a maximum possible score of 36 and this served as both an outcome variable and an inclusion criterion. Only the nurse investigator evaluated the hirsutism score so order to preserve the validity of the data that was gathered. This evaluation was conducted in a separate room with strict regard for the girls' privacy.

Acne Evaluation:

Using the Global Acne Grading Scale (GAGS), a clinical evaluation of the face and back's acne lesions was conducted [23]. Six areas on the face and chest/upper back are taken into account by the GAGS, and each place is assigned a factor depending on the surface area, distribution, and density of PSUs. The jaw line, ears, and hairline define the limits of the face. Good lighting is considered and neither skin stretching nor the use of magnifying glasses are permitted. Since they are essential for determining the severity of the acne, the chest and upper back have been included. Every one of the six sites is assigned a unique score ranging from 0 to 4, with the local score being determined by the location's most severe lesion. The factors of each region (forehead $\times 2$, right cheek $\times 2$, left cheek $\times 2$, nose $\times 1$, chin $\times 1$, chest, and upper back $\times 3$) are then multiplied by these grading scores. The total of all the local scores, or grades \times factors, is the global score. The overall scores are broken down into the following categories: severe active lesions (score = 31–38), moderate active lesions (score = 19–30), mild active lesions (score = 1–18), no active lesions (score = 0), and extremely severe lesions (score > 39).

The Lifestyle change Program

A change in lifestyle involved limiting daily calorie consumption to 1200–2000 calories, according on the weight of the participants, and dividing it up into small, frequent meals. At least 15% of the calories in a meal came from protein, less than 30% from fat, and the remaining calories came from carbs.[25]]. In addition to the energy-restricted diet, the participants were advised to follow a healthy, balanced diet that included four to five portions of fresh fruits and vegetables, whole grains, and foods high in fiber. It is advised to take a multivitamin to supplement food deficiencies and to drink 6 to 8 glasses of water or other clear liquids to support optimal organ function. On the other hand, they were told to restrict their intake of items high in saturated fat, like meats, cheeses, and fried meals; they were also told to increase their intake of fiber and polyunsaturated fat and to keep their daily fat intake at $\leq 30\%$. and as part of the healthy diet plan, caffeine and fast food were discouraged. Participants also received instructions on how to modify their eating habits, such as refraining from eating right before bedtime or during television viewing, and drinking before meals instead than during or right after them. Additionally, during a year, at least five days a week

of exercise were completed, starting at 10 minutes a day and working up to 30 to 35 minutes a day.

Data were checked before being entered into the computer. For that, the Statistical Package for Social Sciences (SPSS version 20.0) was utilized, and then data tabulation and analysis. The use of descriptive statistics, such as mean, standard deviation, frequency, and percentages, was implemented. The study hypothesis was tested and the mean score before and after the intervention was compared using the independent t test and the chi-square test of significance. At p-value $p \leq 0.05$, a difference was deemed statistically significant, and at p-value $p \leq 0.001$, a very significant difference was taken into consideration.

3. Results and Discussion

The majority of the participants in Table (1) were predominantly young adults, with 64.1% falling within the age range of 20 to 25 years, and the average age being 20.54 ± 1.87 years. Educational attainment varied, with 34.6% having completed the 3rd grade and a minority of 15.4% having attained a 1st-grade level of education. Urban living was prevalent among more than half of the participants, accounting for 52.6% of the studied sample. Physical characteristics, such as the mean height (160.23 ± 2.33 cm) and mean body weight (81.56 ± 2.95 kg), were also documented. The participants, on average, presented with a mean BMI of 31.99 ± 0.79 kg/m², a mean waist circumference of 100.46 ± 1.76 cm, a hirsutism score of 17.44 ± 5.18 , and a degree of acne with a mean value of 20.41 ± 6.36 .

In Table (2), the menstrual and gynecological history of the studied sample at baseline is detailed. The average age of menarche among the participants was recorded as (13.1 ± 1.03) years. The mean duration of the menstrual rhythm was (53.58 ± 5.66) days, and the average duration of menstruation was (5.0 ± 0.57) days. Over the last year, the participants experienced an average of (5.46 ± 0.84) menstrual cycles. Notably, a substantial majority, constituting 85.9% of the sample, exhibited oligomenorrhea.

Additionally, less than one-third of the participants (23.1%) reported a family history of diabetes, while more than one-third (37.2%) had cases of polycystic ovary syndrome (PCOS) within their families. This comprehensive overview sheds light on the menstrual and gynecological characteristics of the studied sample, providing valuable insights into their reproductive health.

The findings in Table (3) underscore the effectiveness of the intervention, revealing statistically significant improvements in the studied girls' knowledge concerning the definition, causes, and signs and symptoms of PCOS after the intervention ($p < 0.05$). Moreover, a particularly noteworthy outcome is the highly statistically significant enhancement in their understanding of the complications associated with PCOS post-intervention when compared to the pre-intervention phase ($p < 0.000$). This suggests that the intervention had a substantial impact on the participants' awareness and comprehension of various aspects related to PCOS, indicating a successful educational initiative.

In Table (4), a compelling pattern emerges, highlighting a highly statistically significant improvement in PCOS indicators post-intervention compared to the pre-intervention phase. This improvement is evident as the mean scores for each item decreased post-intervention compared to the pre-intervention scores. Additionally, noteworthy physical changes were observed, with a significant decrease in weight, BMI, and waist circumference post-intervention as compared to pre-intervention ($p < 0.001$).

Furthermore, the sustained impact of the intervention is demonstrated by the significant reduction in hirsutism total score after one year of lifestyle changes ($p < 0.001$). A parallel decrease is observed in the total acne grade, with a significant reduction noted ($t = 8.35$, $p < 0.001$). These comprehensive results underscore the effectiveness of the intervention not only in enhancing participants' understanding of PCOS but also in bringing about positive changes in relevant clinical indicators and physical parameters over the course of the study.

In Table (5), a striking transformation is evident, as over half of the studied sample (56.4%) achieved regular menstruation after one year of lifestyle changes, compared to none at the baseline. Notably, the prevalence of amenorrhea decreased from 14.1% at baseline to 2.5% after one year, representing an approximately 82% reduction, and the incidence of oligomenorrhea also substantially decreased from 85.9% to 37.2% during the same period. These changes were statistically significant, with a p -value of less than 0.04 for amenorrhea and $p < 0.001$ for oligomenorrhea, underscoring the positive impact of the one-year lifestyle intervention on menstrual regularity among the participants.

The data depicted in Figure (1) unequivocally indicates a significant enhancement in the psychological health-related quality of life among the studied sample post-intervention when compared to the pre-intervention phase. This positive change underscores the beneficial

impact of the intervention on the psychological well-being of the participants, emphasizing the importance of the implemented measures in contributing to an improved quality of life in the context of mental health.

Table (1) Distribution of the studied sample according to their socio-demographic and clinical characteristics (N=78)

Variable	No (%) or M ± SD	
Age/years		
< 20 years	28	35.9
20 - 25 years	50	64.1
M ± SD	20.54 ± 1.87	
Grade		
1 st grade	12	15.4
2 nd grade	24	30.8
3 rd grade	27	34.6
4 th grade	15	19.2
Residence		
Urban	41	52.6
Rural	37	47.4
Height(cm)	160.23 ± 2.33	
Body Weight (Kg)	81.56 ± 2.95	
BMI (kg/m²)	31.99 ± 0.79	
Waist circumference (cm)	99.51 ± 2.14	
Hirsutism score	17.44 ± 5.18	
Degree of Acne		
• Mild	14	17.9
• Moderate	61	78.2
• Severe	3	3.8
Mean ± SD	20.41 ± 6.36	

Table (2): Distribution of the studied sample according to their menstrual & gynecological historbaseline (No =78)

Variable	No & % or M ± SD	
Menarche Mean age ± SD	13.1 ± 1.03	
Menstrual duration Mean days ± SD	5.0 ± 0.57	
Menstrual rhythm Mean days ± SD	53.58 ± 5.66	
Menstrual rhythm in last year *Number of menstrual cycles	5.46 ± 0.84	
*Amenorrhea	11	14.1
*Oligomenorrhea	67	85.9
Family history of diabetes	18	23.1
Family history of PCOS	29	37.2

Table (3): Distribution of the studied sample according to their knowledge regarding PCOS pre and post intervention. (No =78)

Items	Pre intervention						Post intervention						X ²	P value
	Poor		Average		Good		Poor		Average		Good			
	No	%	No	%	No	%	No	%	No	%	No	%		
Definition of PCOS	59	75.6	19	24.4	0	0.0	0	0.0	5	6.4	73	93.6	20.64	0.002*
Causes of PCOS	70	89.7	8	10.3	0	0.0	0	0.0	3	3.8	75	96.2	14.55	0.016*
Signs & symptoms of PCOS	71	91.0	7	9.0	0	0.0	0	0.0	6	7.7	72	92.3	11.00	0.027*
Complications of PCOS	67	85.9	11	14.1	0	0.0	0	0.0	2	2.6	76	97.4	23.02	0.000**

A statistical significant difference ($P \leq 0.05$)

A highly statistical significant difference ($P \leq 0.001$)

Table (4) Distribution of the studied sample according to their Body Weight, BMI, Waist Circumference, Hirsutism Score and acne degree at baseline and after one year intervention (No =78)

Variable	At baseline	After one year	T test	P value
Body weight (kg)	81.56±2.95	72.96±2.65	19.15	<.001
BMI (kg/m ²)	31.99±0.79	28.62±1.00	23.31	<.001
Waist circumference (cm)	99.51±2.14	94.78±1.23	16.89	<.001
Hirsutism score	17.44±5.18	11.87±1.46	9.14	<.001
Degree of Acne	20.41±6.36	12.79±4.93	8.35	<.001

Table (5) Distribution of the studied sample according to the rhythm of menstrual cycles at baseline and after one year intervention (No =78)

Variable	At baseline		After one year		T test or X ²	P value
Menstrual rhythm: Number of menstrual cycles	5.46 ± 0.84		8.11 ± 1.26		56.87	0.03
Amenorrhea	11	14.1	2	2.5	3.61	0.04
Oligomenorrhea	67	85.9	29	37.2	39.10	<.001
Regular	0	0.0	44	56.4	61.28	<.001

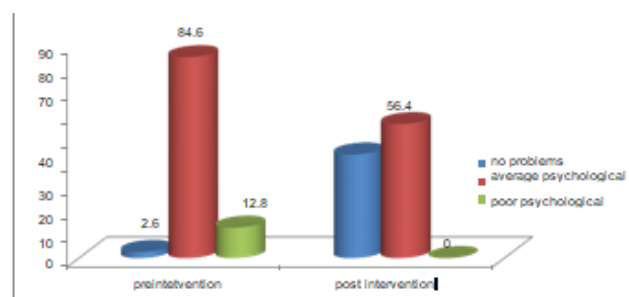


Figure (1) Distribution of the studied sample according to their psychological health related QOL pre and post intervention.

Young women with PCOS continue to worry about changing their lifestyles. The first-line of treatment continues to be lifestyle changes intended to prevent long-term damage. The metabolic and reproductive problems of overweight and obese PCOS individuals seem to

improve with lifestyle modifications, including diet, exercise, and behavioral modification. Hence, for all overweight and obese PCOS patients, lifestyle modifications seem to be the primary line of treatment. Losing weight can significantly reduce the symptoms of many of the medical disorders linked to PCOS, including diabetes and high blood pressure.

Many symptoms can go away or become less severe when hormone levels are returned to normal by weight loss alone. Exercise and a healthy diet are two excellent ways to fight weight gain. Speaking with other women and teens that have PCOS is a terrific method to receive support and exchange treatment knowledge. The purpose of this study was to assess how lifestyle modifications affected the symptoms of polycystic ovarian syndrome in overweight girls. This goal was substantially met by the current study's findings in the context of the previously stated research hypothesis, which stated that girls with polycystic ovarian syndrome who embrace lifestyle changes will have fewer symptoms than those who do not.

4. Conclusions

The comprehensive analysis of the study's outcomes unequivocally supports its hypothesis, affirming that lifestyle changes have a positive impact on reducing the symptoms of polycystic ovarian syndrome (PCOS). These findings not only validate the initial research hypothesis but also emphasize the significance of lifestyle modifications in mitigating the manifestations of PCOS among the studied population.

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