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International Journal of Social Sciences Arts and Humanities

(ISSN: 2321-4147) (Scientific Journal Impact Factor: 6.002)



Review Paper

A Review on Polycystic Ovary Syndrome (PCOS)–Nutrition and Life Style Modification

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ARTICLE DETAILS

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Key words:

Polycystic ovary syndrome (PCOS),
Reproduction,
Testosterone,
Androgens, Lifestyle,
Nutrition.

ABSTRACT

Polycystic ovary syndrome is the most common disorder estimated to affect 8-13% of women in reproductive age worldwide. It is condition that affects women's hormone levels. Women with PCOS produce higher than normal amounts of male hormone. PCOS are marked by irregular periods or absence of menstruation and have cysts in their ovaries. Maintaining a healthy diet can help decrease weight and regulate your period and reduce your risk of conditions associated with PCOS, weight loss through low calorie diet helps in treating PCOS. Eating good and right foods and avoiding certain foods may help in regulating hormone and menstrual cycle. Eating processed and preserved foods lead to inflammation and insulin resistance. This review is to evaluate the anthropometric data in PCOS and Non-PCOS female and to study the biochemical test of PCOS and Non PCOS female. This study uses both Primary and Secondary data collection. Results found that females those who are diagnosed with PCOS problem should monitor their health on regular basis to avoid any complications in the future. If left untreated, PCOD problem in future, If left untreated, PCOS, problem in future can lead to type 2 diabetes, obesity and other mental issues due to Hormonal imbalance. It is concluded that Dietary interventions and lifestyle modifications are the first treatment for women's with polycystic ovary syndrome (PCOS) have been evaluated. Proper diet and the maintenance of adequate nutritional status are of great importance in the prevention of this disorder and therapeutics and dietary habits play an important role in the recovery of women's with PCOS.

1. Introduction

World Health Organization (WHO) estimates that PCOS has affected 116 million (3.4%) worldwide in 2012. Globally, prevalence estimates of PCOS are highly variable, ranging from 2.2% to as high as 26%. In India 10% of the women to be affected by PCOS. One in five Indian Women suffers from PCOS. (World Health Organization, 2023). PCOS – Polycystic Ovarian Syndrome PCOS is a metabolic disorder in which the woman affected by hormonal imbalance in their reproductive years (between ages 12 and 51). Due to increase level of male hormones females skip menstrual periods, have irregular ovulation

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Received: 20-January 2024; Sent for Review on: 24-January 2024; Draft sent to Author for corrections: 06 February 2024; Accepted on: 14 February 2024

Online Available from 16 February 2024

DOI: [10.13140/RG.2.2.25451.72488](https://doi.org/10.13140/RG.2.2.25451.72488)

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making it hard to get pregnant, get abnormal hair growth on the body and face. Some women are affected by symptoms including: weight gain, menstrual problems, infertility, acne and facial hair growth, and are at increased risk of heart disease and diabetes. PCOS is a “*syndrome,*” or group of symptoms that affects the ovaries and ovulation. Its three main features are: Cysts in the ovaries, high levels of male hormones, irregular or skipped periods. This leads to raised level of insulin in the blood, and promote symptoms such as carbohydrate craving, fatigue, sleep disturbances and higher levels of testosterone in the body.

- Polycystic ovary syndrome (PCOS) affects an estimated 8-13% of reproductive-aged women.
- Up to 70% of affected women remain undiagnosed worldwide.
- PCOS is the commonest cause of an ovulation and leading cause of infertility.

PCOS is a significant public health problem and is one of the commonest hormonal disturbances affecting women of reproductive age. The condition affects an estimated 8-13% of women of reproductive age, and up to 70% of cases are undiagnosed. The prevalence of PCOS is higher among some ethnicities and these groups often experience more complication, in particular related to metabolic problems. This review is conducted:

- *To evaluate the anthropometric data in PCOS and Non PCOS female.*
- *To evaluate the biochemical test of PCOS and Non PCOS young adult female.*

2. Methodology

Primary and Secondary data collection Methods are used to gather information for this research in primary data collection methods, methods used:

- (a) *Surveys and Questionnaires*
- (b) *Interviews*
- (c) *Observations*

In secondary data collection involves:

- (d) *Published sources*
- (e) *Online databases*
- (f) *Past Research studies*

DIFFERENCE BETWEEN PCOD Vs PCOS

PCOD	PCOS
PCOD is a common disorder, 10% of world women population affected by it.	PCOS is a serious medical condition around 0.2% to 2.5% of world population affected by it.
PCOD is a condition in which ovaries produce many immature or partially mature eggs, this happen due to poor lifestyle, obesity, stress and hormonal imbalance.	PCOS is a metabolic disorder and more severe form of PCOD can lead to an ovulation where ovaries stop releasing eggs.
PCOD doesn't affect fertility in women, in this condition woman still can ovulate and become pregnant with little help, following medication can complete pregnancy.	PCOS seriously affects fertility in women. Due to PCOS Women cannot ovulate regularly, making them hard to get pregnant.
PCOD doesn't have any serious complications.	PCOS have serious complications such as type 2 diabetes, heart disease, high blood pressure and endometrial cancer in later stage.

Sources: [Www.Pacehospital.Com](http://www.Pacehospital.Com)

Causes:

High levels of male hormone prevent the ovaries from producing hormones and making eggs normally. Some common causes are:

- **Excess insulin production:** Excess insulin levels in the body might increase androgen production (a male hormone which is very less in female) that causes difficulty with ovulation.
- **Excess androgen production:** The ovaries produce abnormally excess androgen hormones that can lead to acne and Hirsutism (hair growth on the face and body).
- **Heredity:** Women with PCOS show certain correlation.

Symptoms of PCOS:

Some women start noticing their symptoms around the time of their first period. Others only discover they have PCOS after they have gained a lot of weight or they have had trouble getting pregnant.

Most common symptoms are:

- **Irregular Menstruation:** Oligomenorrhea
- **Skipped or absence of menstruation:** Amenorrhea
- **Heavy menstrual bleeding:** Menorrhagia
- **Excessive Hair growth:** Face, body- including on back, belly, and chest)
- **Acne:** Male hormones can make the skin oilier than usual and cause breakouts on areas like the face, chest, and upper.
- **Weight gain:** 80 percent of women with PCOS are overweight or have obesity.
- **Male pattern baldness:** Hair on the scalp gets thinner and may fall out.
- **Darkening of skin:** Dark patches of skin can form in body creases like those on the neck, in the groin and under the breasts.

Diagnosis of PCOS:

PCOS in women who have at least two of three symptoms

- High androgen levels
- Irregular menstrual cycle
- Cysts in the ovaries

To diagnose PCOS gynecologist may recommended:

- **Pelvic examination:** Physically checking the reproductive organs for masses, abnormalities, or any growth.
- **Blood tests:** Blood test will help to understand the hormone levels.
- **Imaging test:** Ultrasound imaging test to check the size of ovaries, the lining of uterus and cysts in ovaries.

Nutritional and Lifestyle Modification of PCOS:

PCOS is usually treated with lifestyle changes like weight loss, diet and exercise. Losing body weight can help regulate menstrual cycle and improve PCOS symptoms.

Weight loss can also:

- Improve cholesterol levels
- Lower insulin
- Reduce heart disease and diabetes risks

PCOS have low carbohydrate diets are effective for both weight loss and lowering insulin levels. A low glycemic (low GI) diet that gets most carbohydrates from fruits, vegetables, and whole grains helps regulate the menstrual cycle better than a regular

weight loss diet. 30 minute moderate intensity exercise at least 3 days a week can help women with PCOS lose weight, losing weight with exercise also improves ovulation and insulin levels.

Exercise is even more beneficial when combined with healthy diet. Diet plus exercise helps lose more weight than either intervention alone, and it lowers your risks for diabetes and heart disease. A common feature in PCOS is insulin resistance: This leads to raised levels of insulin in the blood, and promotes symptoms such as carbohydrate craving, fatigue, sleep disturbances and higher levels of testosterone in the body.

To improve insulin resistance:

- **Carbohydrate portion Size:** To improve blood glucose control, it is important to not only consider the type but also the amount of carbohydrate chooses. The amount of carbohydrate ingested by body predicts the amount of glucose entering blood and therefore the amount of insulin released in response.
- **Limiting carbohydrate's consumption:** PCOS affected women should follow a low-carbs diet or complex carbohydrate diet that help in maintaining insulin levels. Fish, meat, eggs, vegetables that grow above ground and natural fats (like sunflower seeds, pumpkin seeds, sesame seeds and butter) and avoid sugar and starchy foods (like potatoes, bread, rice, pasta, and beans).

Carbohydrate containing foods:

- **Cereal starch-** breads, pastas, cereals, rice, noodles, chapattis
- **Vegetables starch-** potatoes, beans, lentils, peas
- **Fruits (fructose)-** fruit, jam, honey
- **Dairy (Lactose)-** milk, yoghurt, custard, ice cream
- **Table sugar (sucrose/glucose)-** cakes, sweets, chocolate, desserts, fizzy or sweetened drinks.

Dietary Pattern and PCOS: It is recommended to reduce the calorie intake and induce weight loss among PCOS women with obesity, most of the current proposed recommendations regarding dietary modifications in PCOS are based on studies in obese women without PCOS.

- The link between insulin resistance and PCOS are well studied. Making dietary changes can improve the body sensitivity to insulin and improve symptoms of PCOS.
- A low-carbohydrate diet or very low carbohydrate (ketogenic) diet are effective in improving insulin resistance, and the symptoms of PCOS.
- Hormone changes in seen in PCOS can lead to weight gain, particularly around the middle. Weight loss of 5% body weight also improves insulin resistance, and PCOS symptoms. Reducing carbohydrate intake may be better choice for weight loss than other diets including a low-fat diet.
- It is important to include enough fat in good fat in diet, which are high in Omega 3 to support the right balance of female hormones.
- Fasting (intermittent fasting) are alternative approaches to weight loss which are also shown to improve insulin resistance.

Foods to Add:

Complex carbs: Complex carbs which provide starches and dietary fibre improve hormonal imbalances and inflammation in women's with PCOS.

Complex carbs such as:

- **Whole grains :** oatmeal, brown rice, quinoa, barley, sorghum, popcorn
- **Legumes :** Black beans, pinto beans, lentils, black-eyed peas, chickpeas
- **Non-starchy vegetables :** pumpkin, tomato, cabbage, taro leaf
- **Root tubers :** Sweet potato, yam
- **Nuts :** Walnuts, cashews, pistachios, almonds

- **Seeds** : chia seeds, flaxseeds, sunflower seeds, pumpkin seeds
- **Oils** : olive oil, coconut oil, sunflower oil, canola oil, peanut oil
- **Fatty fish** : Salmon, sardines, herring, mackerel
- **Fruits** : Avocado, olives

Lifestyle Modification:

Lifestyle modification is regarded as the primary management approach for women's affected by overweight and obesity. The most effective interventions include diet modifications, physical activity and exercise modifications. Life style modifications also appear to improve ovulation function as well as the menstrual cycle into a regular level, which increases the chances of successful pregnancy rates in PCOS women's would gain improvement both in regular menstrual cycle and ovulation function depending on the lifestyle modification could provide improvements such as alleviation of anxiety and improved quality of life, in obese female with PCOS.

PCOS mainly affects the body's hormone balance in female. Following steps will help in female to decrease androgen level in the body:

- **Maintaining healthy body weight:** BMI (Body mass index) ranges from 18.5-24.9 considered as ideal and healthy for females, above 30 considered as obese and not healthy. Maintaining healthy body weight or weight loss help in improving overall body cholesterol levels, reduce the risk of high blood pressure, heart disease, diabetes maintaining idea insulin levels and androgen levels that also restore ovulation phase in menstrual cycle.
- **Exercise:** This is important as regular activity speeds up resting metabolic rate and helps with weight loss. Exercise also improves the body's response to insulin (insulin resistance). 30 minute moderate intensity exercise at least 3 days a week can help women with PCOS lose weight, losing weight with exercise also improves ovulation and insulin levels. Exercise is even more beneficial when combined with healthy diet. Diet plus exercise helps lose more weight than either intervention alone, and it lowers your risks for diabetes and heart disease.
- **Regular exercise:** Doing regular exercise and becoming active will help in regulating blood sugar levels and keep weight under control.
- Five sessions per week of 20-60 minutes of enjoyable heart raising exercise, which will help with weight-reducing programme.
- Shorter burst of around 10 minutes moderate intensity exercise have been found to be most beneficial in those with insulin resistance; and insulin levels often continue to be reduced for a short time after stopping exercise.

Managing low mood and Proper Sleep

Women with PCOS often feel fatigued, low in energy and may experience sleep disturbances. Sleep deprivation can cause stress hormone levels to rise, and this can lead to increase in blood glucose, insulin levels, blood pressure and inflammation. A lack of sleep has also been linked to increased appetite and more snacking.

3 . Results

Females those who are diagnosed with PCOS problem should monitor their health on regular basis to avoid any complications in the future. If left untreated, PCOD problem in future, If left untreated, PCOS, problem in future can lead to type 2 diabetes, obesity and other mental issues due to Hormonal imbalance whereas PCOS in future can have serious complications such as risk of hypertension, hyperglycemia, endometrial cancer and pregnancy complications (premature birth/preeclampsia/miscarriage).

4. Conclusion

PCOS is a kind of common endocrine and metabolic disorder in women's of reproductive age. Polycystic ovary syndrome affects up to 27 percent of women during their child bearing age. Dietary interventions and lifestyle modifications are the first treatment for women's with polycystic ovary syndrome (PCOS) have been evaluated. Proper diet and the maintenance of

adequate nutritional status are of great importance in the prevention of this disorder and therapeutics and dietary habits play an important role in the recovery of women's with PCOS.

Lifestyle changes can help improve PCOS symptoms, these changes include exercise and daily physical movement and limiting intake of refined carbohydrate both can help reduce insulin resistance. Daily activity, low sugar intake, and a low-inflammation diet may also lead to weight loss. Women's with PCOS following these lifestyle tips may experience improved ovulation with weight loss. Yoga and meditation also helps in relieving the symptoms.

While PCOS cannot be cured permanently, treatment along with certain supplements, practices and dietary changes helps in managing the disorder.

5. Recommendations

Diets that can reduce rates of obesity and Insulin resistance are beneficial to women with PCOS, the status of obesity and Insulin resistance should be determined at the early stage of the disease, so as to develop individualized and sustainable dietary intervention. The long term efficacy, safety and health benefits of dietary management in patients with PCOS need tested by further researches.

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