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# Assessment of Symptoms and Diet Intake in Young Adult with Polycystic Ovary Syndrome (PCOS)

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***Abstract:*** **Polycystic Ovary Syndrome is considered as a hormonal disorder commonly seen in women in their reproductive age. The objectives of the study were to assess the prevalence of Polycystic Ovary Syndrome among young adult, to study the causes and symptoms of Polycystic Ovary Syndrome and to study the food habits of Polycystic Ovary Syndrome subjects. The methodology includes that the area was Angamaly, at the age group of 18-22. Total 680 samples were selected for the survey. Then micro sample selected for further study. The sampling method was purposive. Interview schedule was used as a tool for the selection of sample. The results show that only 5% of the sample found in Polycystic Ovary Syndrome. Majority (96%) of the sample experienced irregularity of periods. 30% have excess facial/body hair. Majority (92%) of the sample have hair loss. 19% sample have dark patches on the skin. The preference of diet among sample was non-vegetarian diet. It can conclude that diet has an important role for decrease the symptoms of PCOS.**

***Index terms*****: Dark patches, hormonal disorder, prevalence, polycystic ovary syndrome, purposive.**

## I. INTRODUCTION

Polycystic ovary syndrome (PCOS) is considered to be the most common endocrine disorder in women of reproductive age, yet debate over appropriate diagnostic criteria and design limitations with sampling methodology have left some doubt as to the actual prevalence in the community. (Wendy A March, 2009).

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 *https://www.healthline.com/health/polycystic-ovary-disease*. Polycystic ovary syndrome (PCOS) affects up to almost 27 percent of women during their childbearing years . It involves cysts in the ovaries, high levels of male hormones, and irregular periodsMark O. Goodarzi,2016).

The prevalence of obesity and abdominal obesity is high and is increasing in Western countries (Australian Institute of Health and Welfare, 2004). Insulin resistance is therefore also an issue of increasing importance due to its association with obesity and abdominal obesity, and thus its increase in parallel with the increase in obesity and its aetiological role in metabolic syndrome, type 2 diabetes and cardiovascular disease (Reaven, 2005). Obesity also worsens the presentation of PCOS; obesity and abdominal obesity in adolescence and adulthood, and weight gain after adolescence is a predictor of the development of hirsutism and menstrual disturbances in PCOS (Laitinen et al., 2003). Furthermore, the risk of developing IGT and the metabolic syndrome increases as BMI increases. (Legro et al. (1999) documented increased rates of IGT and diabetes in obese (31.3% and 7.5%, respectively) compared with lean (10.3% and 1.5%, respectively) women with PCOS. In 394 women with PCOS, women in the upper BMI quartile were 13.7 times more likely to have the metabolic syndrome compared with those in the lowest quartile (Ehrmann et al., 2005).

Doctors don't know exactly what causes PCOS. They believe that high levels of male hormones prevent the ovaries from producing hormones and making eggs normally. Genes, insulin resistance, and inflammation have all been linked to excess androgen production.(Evanthia Diamanti-Kandarakis MD, *et al*., (2006), Pritam KumarPanda *et al*.,(2016).

Some women start seeing 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.The most common PCOS symptoms are: Irregular periods. Heavy bleeding,Hair growth,Acne,Weight gain, Male-pattern baldness, Darkening of the skin, Headaches. *Fahimeh Ramezani Tehrani and Samira Behboudi-Gandevani,(2014)*.Doctors diagnose PCOS if women have at least two of three main symptoms — high androgen levels, irregular periods, and cysts in the ovaries. A pelvic exam, blood tests, and ultrasound can confirm the diagnosis. Susan Sam, M D,(2007).

Treatment for PCOS usually starts with lifestyle changes like weight loss, diet, and exercise. Losing just 5 to 10 percent of your body weight can help regulate your menstrual cycle and improve PCOS symptoms (H Teede,et al 2010). Weight loss can also improve cholesterol levels, lower insulin, and reduce heart disease and diabetes risks.Any diet that helps you lose weight can

help your condition. However, some diets may have advantages over others.

Studies comparing diets for PCOS have found that low-carbohydrate diets are effective for both weight loss and lowering insulin levels. A low glycemic index (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 (Lisa J. Moran et al., 2013).

A few studies have found that 30 minutes of moderate-intensity exercise at least three days a week can help women with PCOS lose weight. Losing weight with exercise also improves ovulation and insulin levels (Cheryce L. Harrison et al., 2011).

Exercise is even more beneficial when combined with a healthy diet. Diet plus exercise helps you lose more weight than either intervention alone, and it lowers your risks for diabetes and heart disease (Richard S. Legro,2013).There is some evidence that acupuncture can help with improving PCOS, but more research is needed.

Objectives

The objectives of this study were:

1. To assess the prevalence of Polycystic Ovary Syndrome among young adult,
2. To study the causes and symptoms of Polycystic Ovary Syndrome
3. To study the food habits of Polycystic Ovary Syndrome subjects.

## II. MATERIALS & METHODS

### *A. SELECTION OF AREA AND SAMPLE*

The area selected for the study was Angamaly in Ernakulam district. Kerala. Sampling may be defined as the selection of some parts of an aggregate or totality on the basis of which a judgment on inference about the aggregate on totality is made (Kothari, 2003).

The survey with some simptoms was conducted to assess the prevalence of PCOD as macro sample. The sample size was 680 young adult between age group of 18-22 years. Among the macro sample, PCOS observed sample were selected as micro sample for further study based on their willing.

The sampling method was purposive sampling. The sampling method was purposive sampling. “A purposive sample is a non-probability sample that is selected based on characteristics of a population and the objective of the study. Purposive sampling is also known as judgmental, selective, or subjective sampling” (https://www.thoughtco.com/purposive-sampling-3026727).

### *B. SELECTION OF TOOL*

The survey using some question and questionnaire used as tool on this study. Based on survey the prevalence of PCOD was asses.

A set of printed or written questions with a choice of answers, devised for the purpose of a survey or statistical study.

In a questionnaire respondent read the questions, interpret what is expected and then write down the answers. Questionnaire tool was used to collect information about PCOD from the sample. Information regarding the social status, symptoms, causes, diet etc., was included in the questionnaire.

### *C. STATISTICAL ANALYSIS*

Statistical Analysis Analysis was done after the collection of data, by using various statistical parameters such as Mean, Standard Deviation and percentage.

## III. RESULTS & DISCUSSION

### *A.* PREVALENCE OF PCOS AND GENERAL INFORMATION

A total number of 680 adults 32, (5%) were found to have PCOS symptoms.

The general information of micro sample shows that 48%) sample were in the age group of 18 to 19 and (52%) of them from 20 to 22 years. The religion reveals that about 44% of them were Hindus, 48% of them Christians and 8% of them Muslims. The family pattern of the sample shows that, majority (92%) of the sample from nuclear family and least (8%) number of sample from joint family. The area of residence of the sample have above the half (67%) of the sample in rural area and below the half (33%) in urban area. The marital status of the sample shows that 96% were single and 4% were married.

### *B.* CAUSES OF PCOD AMONG SAMPLE

#### 1. FAMILY HISTORY AND OTHER CAUSES PCOS

The family history among sample, 33% had familial history of PCOD and 67% sample had no such history. 41% had familial history of type-2 diabetes and 59% sample had no such history.

Subject’s opinion that Environmental factors related to PCOS (30%) had poor dietary choices, 65% subjects hadn’t regular physical inactivity (exercise) and 55% subjects think that they haven’t immunity power.

#### *2.* HEALTH RELATED ISSUES IN PCOS SUBJECTS

Some health related issues observed in PCOS sample was headache (52%) and majority of the sample cannot experience hypertension (93%), breathing problems (96%), giddiness (93%), shivering (93%) and anaemia (93%).

Menstrual related health condition of the sample shows that 7% sample experienced vomiting, 4% sample had nausea, 70% sample had stomach ache, 37% sample have head ache, 52% sample had leg pain and 37% sample had muscle pain.

### *C.* SYMPTOMS AMONG PCOS SUBJECTS

#### 1. PHYSICAL SYMPTOMS OF PCOD

In this study 4% sample experiences regular menstrual periods, 74% experiences irregular periods and 22% had infrequent periods.

The frequency of periods shows that, 29% have the menstrual period once in a month, nobody had twice in a month, 4% have thrice in a month, 37% have it bimonthly and 4% have in trimester. The duration for periods among the sample was 26% had menstruation in 1 to 3 days, above half (55%) of the sample had 4 to 6 days, 15% had 7 to 10 days and 4% had 16 to 20 days. During the menstrual period 26% have experienced excess bleeding.

The mean age of first menarche was found to be 12.23± 2.66 in PCOS subjects and the prevalence of menstrual irregularity was found higher in PCOS subjects (74%) as compared to non PCOS girls (12.59%). This shows significant correlation between menstrual irregularity and PCOS.

Table I. physical Symptoms of PCOD

| Symptom | Present | | Absent | |
|---|---|---|---|---|
| | Frequency | % | Frequency | % |
| Irregularity of periods | 20 | 74 | 7 | 26 |
| Excess facial/body hair | 8 | 30 | 19 | 70 |
| Acne on the face and/or body | 9 | 33 | 18 | 67 |
| Hair loss | 25 | 92 | 2 | 8 |
| Weight gain | 11 | 41 | 16 | 59 |
| Dark patches on the skin | 5 | 19 | 22 | 81 |

The results of symptoms of PCOD showed that PCOS subjects were having higher prevalence of (74%) of irregularity of periods and 26% sample are free of this symptom. 30% have excess facial/body hair. 33% had acne in their face. Majority (92%) of the sample have hair loss. While 41% had weight gain and 19% sample have dark patches on the skin.

About majority (92%) of the sample experienced hair loss, out of which (11% have receding frontal hair line, 44% have androgenic alopecia and 37% have other type of hair loss) and 8% have no hair loss.

### 2. BODY MASS INDEX

Table 2. Body Mass Index

| BMI (Categories) | Mean ±SD | % |
|---|---|---|
| < 18.5 (Underweight) | 7±6.36 | 26 |
| 18.5-24.9(Normal) | 10± 3.13 | 37 |
| 25-29.9( Overweight | 11±7.76 | 41 |
| 20-34.9(Obese Grade I ) | 0 | 0 |
| 35-39.9(Obese Grade II ) | 0 | 0 |
| - > 40(Obese Grade III ) | 0 | 0 |

Body mass index explain that 26% of the sample were underweight, 59% sample were normal BMI and 15% of them were overweight (table 2).

### 3. PSYCHOLOGICAL SYMPTOMS

In this study psychological symptom of PCOD shows that 7% sample experienced depression, while 41% sample sometimes experienced depression. About 41% sample experienced fatigue/tiredness, but 33% sample sometimes experienced fatigue/tired. About 18% sample experienced anxiety, while 30% sample sometimes experienced anxiety. Above half of the sample 63% sample experienced anger, but 30% sample sometimes experienced anger. About 37% sample experienced hot flesh, while 22% sample sometimes experienced hot flesh. Only 4% of sample felt insecure, 18% sample sometimes experienced insecure feel and 78% were secured (Fig. 1).

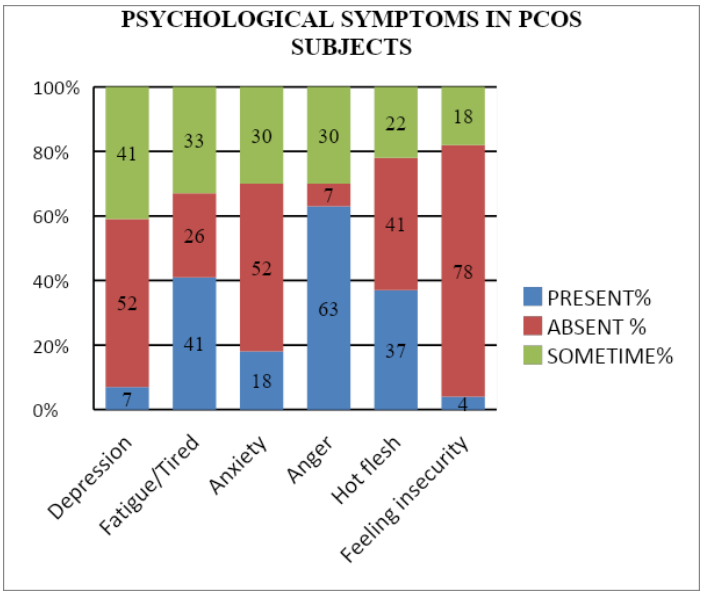


*Fig. 1. Psychological symptoms*

## D. INFORMATION REGARDING THE DIET

### 1. DAILY MEAL CONSUMPTION PATTERN

The daily meal plan of the sample reveals that majority (74%) of the sample follows three meal patterns and 26% sample had four meals a day. Majority (89%) of the sample preferred to dine out and least number of sample do not prefer to dine out.

Table 3 Food preference prior to PCOD diagnosis

| Food groups | Frequency | % |
|---|---|---|
| Chicken | 14 | 52 |
| Lean Meat | 11 | 41 |
| Fish | 12 | 44 |
| Vegetables | 18 | 67 |
| Cereals | 14 | 52 |
| Pulses | 8 | 30 |
| Milk & Milk products | 12 | 44 |

The food preference of the sample prior to PCOS diagnosis was that 52% sample used chicken, 41% used meat, 44% used fish, 67% used vegetables, 52% used cereals, 30% used pulses and 44% used milk & milk products.

The choice of food while outing with family, 59% sample liked fast food, 7% likes junk food, 4% choose fluid meals, 26% choose spicy meals and 11% sample preferred other kinds of foods. The majority (74%) of the sample preferred homely food, 22% is preferred restaurant food and 4% are preferring fast foods.

### 2. WATER CONSUMPTION PATTERN

The sample's daily water consumption pattern reveals that about 11% sample drank only 1-2 glass of water, 30% had 2-4 glasses, 37% had 4-8 glasses and 22% had 8-12 glasses. No sample drank more than 12 glasses of water.

*3.* CONSUMPTION OF FIBER AND PROTEIN RICH FOODS

The sample consumption of fiber rich foods shows that 100% sample used vegetables daily. Majority (77%) of the sample never use broccoli. Above half (52%) of the sample use beans weekly. Majority (66%) of the sample rarely use almonds. Above half of the sample rarely use berries, sweet potatoes and cauliflower. Above half (55%) of the sample weekly use fruits.

The consumption of protein rich foods shows that 59% sample use pulses daily. Below half (48%) of the sample use meat and chicken weekly. 30% sample use legumes daily. 26% sample use egg twice in a week. 15% sample never use meat and 11% sample never use fish.

*4.* PREFERENCE OF COOKING OIL

*1)* The preference of cooking oil reveals that majority of the sample prefer coconut oil (92%) and sunflower oil (87%), very least number of sample used olive oil, mustard oil and bran oil for cooking.

*2)* Majority (81%) of the sample used coconut oil daily and most of the sample never used olive oil, mustard oil and bran oil for cooking.

*5.* BAKERY PRODUCT CONSUMPTION

The bakery product consumption among sample shows that majority (93%) of the sample consumed bakery products and least number (7%) of sample not consumed bakery products. About 15% sample consumed bakery products daily and 85% sample not consumed bakery products daily. Above half (55%) of the sample consumed snack items and fluid items not consumed to the sample.

*6.* CONSUMPTION OF REFINED CARBOHYDRATE FOODS

The sample consumption of refined carbohydrate foods. Reveals that 37% sample consumed white bread weekly, 11% consumed white bread in fortnightly, 22% consumed white bread monthly and 30% consumed white bread rarely. 7% sample consumed muffins weekly, 19% consumed muffins monthly, 30% consumed muffins rarely and 44% never consumed muffins. 4% sample consumed breakfast pastries fortnightly, 14% consumed breakfast pastries monthly, 41% consumed breakfast pastries rarely and 41% never consumed breakfast pastries (table 4).

About 8% sample consumed sugary dessert weekly, 11% consumed sugary dessert fortnightly, 30% consumed sugary dessert monthly, 44% consumed sugary dessert rarely and 7% never consumed sugary dessert. 19% sample consumed white potatoes weekly, 19% consumed white potatoes monthly, 44% consumed white potatoes rarely and 19% never consumed white potatoes. 4% sample consumed refined wheat flour daily, 41% consumed refined wheat flour weekly, 15% consumed refined wheat flour fortnightly, 22% consumed refined wheat flour monthly and 18% consumed refined wheat flour rarely.

Table 4 Consumption of refined carbohydrate foods N=27

| Food items | Daily | Weekly | Monthly | Rarely | Never |
|---|---|---|---|---|---|
| | % | % | % | % | % |
| White bread | - | 37 | 22 | 30 | - |
| Muffins | - | 7 | 19 | 30 | 44 |
| Breakfast pastries | - | - | 14 | 41 | 41 |
| Sugary dessert | - | 8 | 30 | 44 | 7 |
| White potatoes | - | 19 | 19 | 44 | 19 |
| Refined wheat flour | 4 | 41 | 22 | 18 | - |

*7.* PREFERENCE FOR PROCESSED FOODS

Majority (70%) of the sample preferred processed foods while 30% sample not preferred processed foods.

*8.* DAILY CONSUMPTION OF MILK

The daily milk consumption of the sample shows that Below half (44%) of the sample consumed milk daily and above half (56%) of the sample not consumed milk daily.

## CONCLUSION

The study can conclude that prior awareness, practice of exercise, yoga, meditation, and physical activity help to control PCOD. If the subject consults the doctor for PCOD and take some treatment in correct time a person can reduce the risk as well as prevent the PCOS. Ayurveda treatment, homeopathic treatment, natural therapy treatment and allopathic treatment can undergo for the same.

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