

**A STUDY TO ASSESS THE AWARENESS ABOUT POLYCYSTIC OVARY
SYNDROME (PCOS) AND EFFECT OF LIFESTYLE –
USAGE OF FOOD OVER ON IT**

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Abstract:

Polycystic ovarian syndrome (PCOS) is a very common endocrine disorder encountered in women and is associated with several complications, such as menstrual irregularities; hirsutism; obesity; insulin resistance; acne; and, in later years, infertility with diabetes mellitus, cardiovascular risk, depression, obstructive sleep apnea (OSA), and uterine cancer. Early diagnosis is essential for early interventions to minimize the immediate and chronic consequences. The exact facts about PCOS has not yet been clearly determined. This study is an attempt to assess its influence of food usage and their relationship with PCOS. We undertook a survey among the PCOS affected women between the age group of 18 – 40 from the City of Tamil Nadu. The study population represents a random sample of PCOS female (139 women). The study period was six months from July 2021 to December 2021. This study definitely created awareness among the women in respect to PCOS. This will help them to modify their life style especially food habit and to have better reproductive life later. During this study we identified the adolescents with risk for developing PCOS, we ask them to take proper diagnosis and treatment with consultation of a gynaecologist and also dieticians. In married women, especially in the presence of other risk factors for infertility, early conception is advised and to find the effectiveness of awareness programme.

KEYWORDS: PCOS, Food Habit, Life Style in PCOS, Awareness programme.

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1. Introduction

Polycystic ovarian syndrome is one of the most common hormonal disorder occurring mainly in the adolescence stage when the menstrual regularity and hormonal balance develops. According to the World Health Organization (WHO) analysis revealed over 116 million women (3.4%) are affected by PCOS worldwide [1].

Polycystic ovarian syndrome (PCOS), which is a heterogeneous endocrine disorder with an underline indication of anovulation, Hirsutism, ovarian cysts, and endocrine variation affecting the women. PCOS can also be described as an oligogenic disorder in which the interaction of a number of genetic and environmental factors that governs the heterogeneous, clinical, and biochemical phenotype. Even though the genetic aetiology of PCOS remains unknown, a family history of PCOS is relatively common; but, familial links to PCOS are uncertain. A lack of phenotypic data prevents a formal segregation analysis. However, the current literature suggests that the clustering of PCOS in families resembles an autosomal dominant pattern [2][3].

Obesity, central obesity and insulin resistance are strongly implicated in its etiology [4].

Environmental factors that are implicated in PCOS such as obesity can be exacerbated by poor dietary choices and physical inactivity; toxins and infectious agents may also play a role. The metabolic and reproductive features of PCOS are constantly reversible with lifestyle modifications such as weight loss and exercise [5].

Clinical features of PCOS can present on a wide spectrum from milder to more severe manifestations, these are indicated as Phenotypes and include A, B, C, and D. PCOS is a complex condition characterized by Irregular periods, Acne, Hirsutism, Male pattern balding (Alopecia), High testosterone levels in blood (Hyperandrogenism), Pelvic pain, Overweight, Fatigue, Ovarian cyst, Mood changes. Hyperandrogenism, a clinical hallmark of PCOS, can cause inhibition of follicular development, micro cysts in the ovaries, anovulation, and menstrual changes [6][7][8].

PCOS has been associated with the metabolic syndrome lately. Patients may develop multiple complications such as infertility, obesity, insulin resistance, and Type 2 diabetes mellitus (DM-2), Acanthosis nigricans, hypertension, dyslipidaemias, non-alcoholic liver disease / non - alcoholic fatty liver disease / non - alcoholic steatohepatitis (NAFLD/NASH), cardiovascular risk, depression, endometrial cancer and obstructive sleep apnoea (OSA). The pathophysiological aspect of PCOS mainly focuses on insulin resistance, hormonal dysfunction, and Hyperandrogenism leading to impaired folliculogenesis which arise the risk of associated comorbidities such as endometrial cancer, type II diabetes [1].

There are different screening suggestions for each of these pathologies, but the clinician must have a low threshold for workup if any manifestation is shown in PCOS patients. Good clinical examination with haematological and radiological investigations is required for clinical assessment [9][10].

The prevalence ranges between 5% and 15% depending on the diagnostic scale applied. Regardless of its high prevalence, PCOS is undiagnosed and frequently takes more than one visit or different physicians to get identified, and these usually occur in more than a one-year time frame. It is a very aggravating process for the patient. Delay in diagnosis can lead to the advancement of comorbidities making it more difficult to implement lifestyle intervention, which is critical to improve the features of PCOS and quality of life [10].

Management is a combined effort involving an endocrinologist, gynaecologist, dermatologist, and nutritionist [9].

An unhealthy diet is a key component of the “deadly quartet” of metabolic risk factors such as obesity, diabetes mellitus, hypertension, and hypertriglyceridemia associated with PCOS pathophysiology, along with low-grade inflammation, Hyperinsulinemia, and Hyperandrogenism [13]. Dietary factors includes excessive intake of refined carbohydrates, fried foods, sugary beverages, processed meats, solid fats, and excess red meat may increase the risk of PCOS [11]. The three diets: A low glycemic index (GI) diet, an anti-inflammatory diet, the DASH diet which may reduce the risk of PCOS in women and may produce additional favourable results in overweight and obese PCOS subjects [12][13].

PCOS affects the quality of life and can also worsen depression and anxiety either due to its symptoms or due to the diagnosis of a chronic disease. A healthy lifestyle consists of a regular exercise, healthy diet, and achieving and maintaining a healthy weight [14].

Dietary weight loss is suggested as the primary treatment strategy; however, it is considered as effective means of achieving and maintaining weight loss. Lifestyle modification strategy with an emphasis on dietary and behavioural management and exercise interventions have been successful in the general population in reducing the risk of the metabolic syndrome and diabetes mellitus, and have had some initial success in improving fertility outcomes in PCOS [4].

Management of both those with a confirmed PCOS diagnosis and those at risk for PCOS includes education, therapeutic interventions, and healthy lifestyle interventions targeting their symptoms. Interventions can include combined metformin, oral contraceptive pills, spironolactone, and local treatments for acne and Hirsutism. In addition to ascertaining for associated comorbid conditions, management should also include regular follow-up visits and planned transition to adult care providers. Comprehensive knowledge regarding the pathogenesis of PCOS will enable earlier identification of girls and women with high propensity to develop PCOS. Well timed implementation of individualized therapeutic interventions will improve the overall management of polycystic ovarian syndrome (PCOS) during adolescence, prevent associated comorbidities, and improve quality of life [15].

2. Materials and Methods

This study is based on the survey questionnaires (Table 1.) to assess the awareness about PCOS and effect of lifestyle - usage of food over on it. We undertook a survey among the PCOS affected women between the age group of 18 – 40 from the City of Tamil Nadu. The study population represents a random sample of PCOS female. 139 women participated in this survey. The study period was six months from July 2021 to December 2021. All women provided informed consent to participate in the survey. This study is an attempt to assess its influence of food usage and their relationship with PCOS and to analyse the awareness among the women in respect to PCOS, their food usage and their lifestyle.

Table 1. A Survey Questionnaire about PCOS and the effect on food and their lifestyle

1.	Are you aware of having PCOS problem?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2.	Name	
3.	What is your age?	<input type="checkbox"/> 18-24 <input type="checkbox"/> 25-30 <input type="checkbox"/> 31-35 <input type="checkbox"/> 36-40
4.	Blood Group	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> AB <input type="checkbox"/> O
5.	Height (cm)	<input type="checkbox"/> Below to 130 <input type="checkbox"/> 130 to 140 <input type="checkbox"/> 140 to 150 <input type="checkbox"/> 150 to Above
6.	Weight (kg)	<input type="checkbox"/> Below to 30 <input type="checkbox"/> 30 to 40 <input type="checkbox"/> 40 to 50 <input type="checkbox"/> 50 to Above
7.	BMI (kg/m ²)	<input type="checkbox"/> Below 19 <input type="checkbox"/> 19 to 25 <input type="checkbox"/> Above 25 <input type="checkbox"/> Above 30
8.	Have you ever diagnosed with PCOS?	<input type="checkbox"/> Yes <input type="checkbox"/> No
9.	Age of first period	<input type="checkbox"/> Below 15 <input type="checkbox"/> Above 15
10.	Regularity of Menstrual cycle	<input type="checkbox"/> Regular <input type="checkbox"/> Irregular
11.	Do you have Menstrual cramps?	<input type="checkbox"/> Yes <input type="checkbox"/> No
12.	Do you have Mood swings?	<input type="checkbox"/> Yes <input type="checkbox"/> No
13.	Do you exercise regularly?	<input type="checkbox"/> Yes <input type="checkbox"/> No
14.	Do you have Constipation problem?	<input type="checkbox"/> Yes <input type="checkbox"/> No
15.	Have you ever felt the growth of unwanted hair on face and body?	<input type="checkbox"/> Yes <input type="checkbox"/> No
16.	Marital status	<input type="checkbox"/> Married <input type="checkbox"/> Unmarried
17.	If married, do you have any fertility problems?	<input type="checkbox"/> Yes <input type="checkbox"/> No
18.	Do you have any other systemic disorders?	<input type="checkbox"/> None <input type="checkbox"/> Diabetes mellitus <input type="checkbox"/> Hyperlipidaemia <input type="checkbox"/> Hypertension <input type="checkbox"/> Hypothyroidism

		<input type="checkbox"/> Other
19.	Do you have frequent headaches?	<input type="checkbox"/> Yes <input type="checkbox"/> No
20.	Family history: • If your mother have PCOS? • If your sibling have PCOS?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Diet		
1.	Do you love to have street foods?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2.	Do you love to have dairy products such as cheese, etc.?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3.	Do you love to have spicy foods?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.	Do you love to have fried foods?	<input type="checkbox"/> Yes <input type="checkbox"/> No
5.	Do you love to have processed foods?	<input type="checkbox"/> Yes <input type="checkbox"/> No
6.	Do you regularly intake healthy vegetables?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7.	The frequency of usage of Potato in your food?	<input type="checkbox"/> Weekly Thrice <input type="checkbox"/> Weekly Twice <input type="checkbox"/> Weekly Once <input type="checkbox"/> Occasionally
8.	The frequency of usage of Raw Banana in your food?	<input type="checkbox"/> Weekly Thrice <input type="checkbox"/> Weekly Twice <input type="checkbox"/> Weekly Once <input type="checkbox"/> Occasionally
Medication		
1.	Do you take any nutritional or vitamin supplements to boost your immunity?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2.	Which mode of medication do you take for PCOS?	<input type="checkbox"/> Allopathy <input type="checkbox"/> Siddha <input type="checkbox"/> Ayurveda <input type="checkbox"/> Homeopathy <input type="checkbox"/> Unani <input type="checkbox"/> None

3. Results and discussion

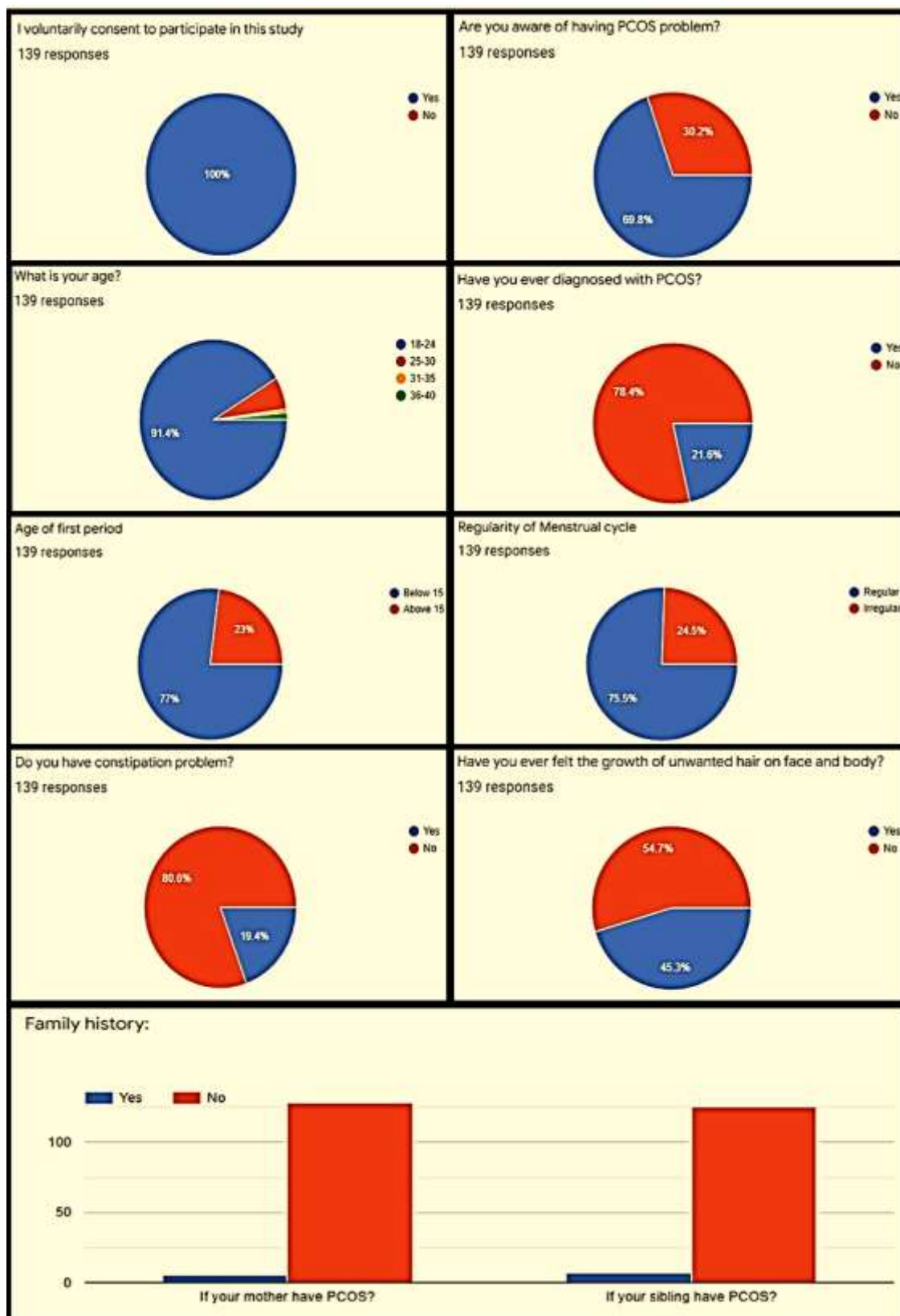


Figure 1. Summary of overall responses for PCOS awareness and their life style

As shown in Figure 1, In this study 139 volunteers are actively participated with full consents. Out of the 139 interested volunteers nearly 97 volunteers (69.8%) have awareness about PCOS problems and remaining 42 volunteers (30.2%) are not having any awareness about the PCOS. This indicates that

even well-developed healthcare providing media and other scientific sources are available nowadays, which is not sufficient to create more awareness about the PCOS and their complications to the community. The most of the attended participants have age in the range between 18 to 24 years. 107 (77%) participants had their first period below 15 years age and only 32 (23%) participants had their first period above 15 years of age. Among the participants who has awareness about PCOS, only 30 participants (21.6%) carried out the diagnosis and the remaining 109 (78.4%) participants have not given any diagnosis performance. It may be decided by the individual's perception on the sign and symptoms knowledge about PCOS. 34 (24.5%) participants was found with menstrual irregularity and 63 participants (45.3%) was found with growth of unwanted hair on face and body. Even though the diagnosis performed by the participants (21.6%) is less, the main PCOS sign and symptoms such as unwanted hair growth and irregular menstrual cycle found more, when compared to PCOS diagnosed participants 30/139. Hence additional diagnosis is essential to correct differentiation between the menstrual irregularities by other factors. While analysing the genetic relationship for PCOS, the results was found as very less or negligible.

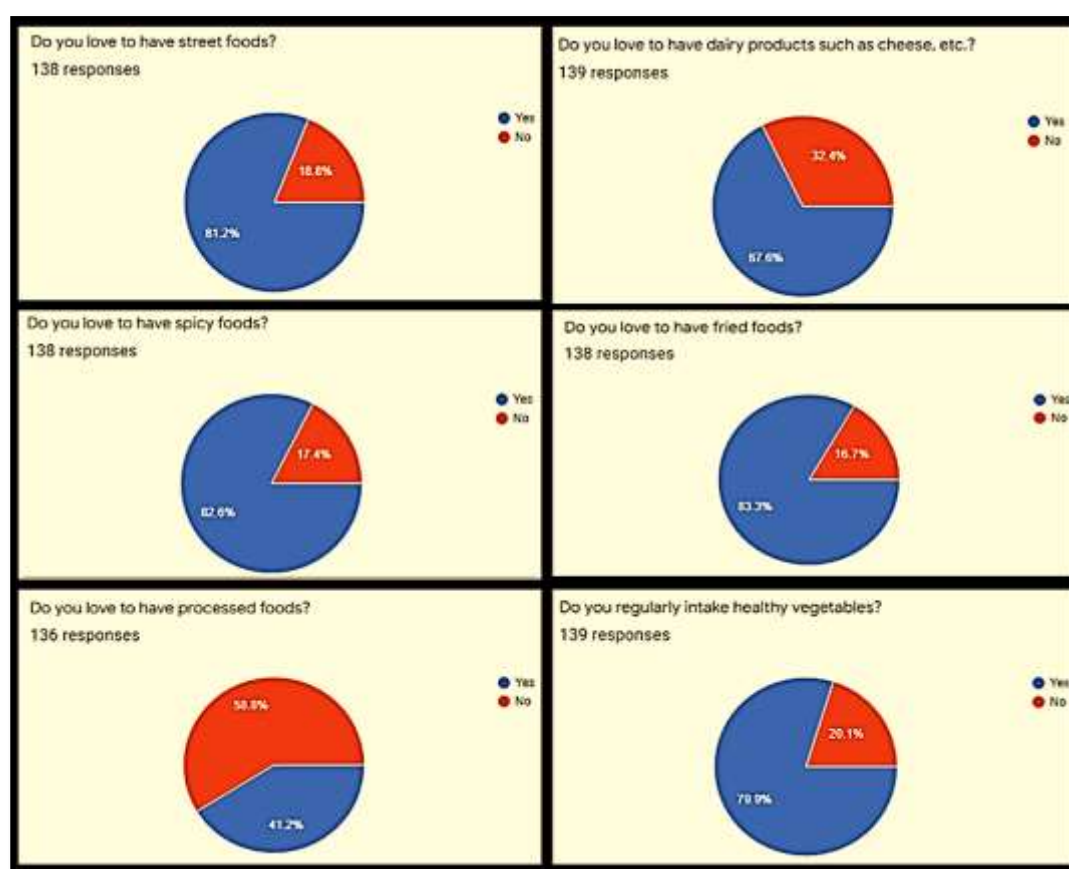


Figure 2. Impact of Food habits on PCOS

Finally life style modification -food usage habit was taken and their impact on PCOS was analysed. The most constipation forming foods such as street foods, dairy products such as cheese, spicy foods, fried foods, processed foods, frequency of usage of potato and raw banana in the diet was analysed and their habits was taken for this studies. Mostly used food has no significant effect over the constipation but it may have an impact on PCOS (Figure 2). During this study, we identified the adolescents with risk for developing PCOS, we ask them to take proper diagnosis and treatment with

consultation of a gynaecologist and also dieticians. In married women, especially in the presence of other risk factors for infertility, early conception is advised and to find the effectiveness of awareness programme.

4. Conclusion

From this Study, we conclude that even though the participants' intake constipation forming food, the impact of constipation is less since the intake of green vegetables is more. Hence the effect caused by the constipation on PCOS is less. This study will definitely create awareness among the women in respect to PCOS and helps to understand the importance of awareness programmes. This will help them to modify their life style especially food habit and to have better reproductive life later. Further, the usage of huge data and direct survey may be more useful.

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Nil.

7. Authors Contributions

All the authors have contributed equally.

8. Conflict Of Interest

The authors declared that they have no conflict of interest.

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