POLYCYSTIC OVARIAN SYNDROME (PCOS): PREVALENCE, PREDISPOSING FACTORS AND AWARENESS AMONG YOUNG ADULTS IN THE AGE GROUP 18-30 YEARS.

Dissertation submitted to

ST. TERESA'S COLLEGE (AUTONOMOUS) ERNAKULAM

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In partial fulfilment of requirement for the

AWARD OF THE DEGREE OF MASTER OF SCIENCE IN

HOME SCIENCE (BRANCH A)

CHILD DEVELOPMENT

By

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'Certified as bonafide research work'

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29/04/2025
Date

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CERTIFICATE

This is to certify that the dissertation entitled, **POLYCYSTIC OVARIAN SYNDROME (PCOS): PREVALENCE, PREDISPOSING FACTORS AND AWARENESS AMONG YOUNG ADULTS IN THE AGE GROUP 18-30 YEARS** is a Bonafide record of work done by **Ms. SHIKHA K JAYARAJ** under my guidance as partial fulfillment of the award of the degree of **MASTER OF SCIENCE IN CHILD DEVELOPMENT** at St. Teresa's College (Autonomous), Ernakulam affiliated to Mahatma Gandhi University, Kottayam. No part of this work has been submitted for any other degree elsewhere.

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SHIKHA K JAYARAJ

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Chapter-1

INTRODUCTION

The World Health Organization (WHO) defines "Health as a state of complete physical, mental and social well-being. This is more than just the absence of disease."

Polycystic Ovarian Syndrome (PCOS) is a prevalent hormonal disorder affecting women of reproductive age. It usually begins in youth, but symptoms might vary with time. PCOS can cause hormonal abnormalities, irregular menstrual cycles, elevated androgen levels, and ovarian cysts. Irregular periods, usually due to a lack of ovulation, might make it difficult to conceive. PCOS is a chronic disorder that cannot be healed. However, certain symptoms can be alleviated with lifestyle modifications, drugs and fertility treatments. PCOS prevalence globally ranges from 4% to 21%. PCOS affects around 8-13% of reproductive age women. Up to 70% of affected women go undetected worldwide (WHO). PCOS is a hormonal condition that affects women between the ages of 15 and 44 who are pregnant. Of women with PCOS, up to 70% had not received a diagnosis (Mukerjee, 2018).

Over the past 170 years, our understanding of polycystic ovarian syndrome has improved. The earliest account of swollen, polycystic ovaries encased in a smooth capsule was published in France in 1844. Amenorrhea and polycystic ovaries were among the symptoms that Drs. Irving Stein and Michael Leventhal documented in 1935 in Chicago. They observed that the ovarian capsule was thicker in women who experienced these symptoms. In their first study, they reported seven individuals with polycystic ovaries that were noticeably enlarged, hirsutism, and amenorrhea. After witnessing the resumption of menstruation following an ovarian biopsy, they did an ovarian wedge resection on a number of them. They said that after bilateral ovarian wedge resection — the removal of half to three-fourths of each ovary — all seven resumed normal menstruation, and two of them became pregnant. The condition was first known as "Stein-Leventhal syndrome" after the two doctors who connected polycystic ovaries, amenorrhea, and infertility. However, as more research has been done and the pathophysiology has become clearer, the term has gradually changed to "Polycystic Ovarian Syndrome" (DeCherney et al, 2021).

By definition, there is no one diagnostic criteria that can be used to confirm a clinical diagnosis of polycystic ovarian syndrome (PCOS, Stein-Leventhal syndrome, or sclerocystic ovarian illness). It is identified by ultrasound evidence of hyperandrogenism or polycystic ovaries. PCOS is linked to increased ovarian androgen production and is characterized by an accumulation of anovulated, incompletely formed follicles in the ovaries. Clinical features include obesity, irregular or nonexistent menstruation and symptoms of androgen excess, such as seborrhea or acne. In addition to having raised blood luteinizing hormone (LH) levels and insulin resistance, women with PCOS are more likely to develop type 2 diabetes and experience cardiovascular events (David J Cahill, 2009).

PCOS is a diverse condition with neuroendocrine symptoms that is typified by hyperandrogenism and irregular menstruation, either with or without polycystic ovarian morphology. A wide range of phenotypes can be seen in PCOS. Not all PCOS patients have insulin resistance. Nonetheless, some characteristics are linked to insulin resistance, a higher lifetime risk of cardiovascular disease and metabolic syndrome (MBS), which are exacerbated by co-occurring obesity. A combination of the following conditions makes up metabolic syndrome: elevated insulin resistance, dyslipidemia, cardiovascular disorders, and elevated adiposity in the abdomen. Over the course of their lives, women with polycystic ovarian syndrome (PCOS) are more likely to acquire metabolic syndrome. The risk of serious cardiovascular events, morbidity, quality of life, and overall medical expenses are all increased by metabolic syndrome (Mukerjee, 2020). PCOS manifests in women in a variety of ways, as it is a range of clinical indications and symptoms. Clinical or biochemical hyperandrogenism, oligo anovulation, and polycystic morphology are commonly used diagnostic criteria. In general, women with PCOS have two phenotypes: lean and fat. A tiny percentage of PCOS patients have a normal body mass index (BMI< or = 25 kg/m2) and are classed as “lean PCOS”. Recent study indicates that metabolic, hormonal and haematological problems are similar to those seen in women with “obese PCOS”, but they are usually more mild and less severe (DeCherney et al, 2021).

The exact etiology and pathophysiology of PCOS is not well known. However, the genetic, hormonal, metabolic and environmental factors contribute to PCOS. A high percentage of PCOS is due to genetic predisposition. Specific polymorphisms have been

implicated for genes involved in insulin signaling, androgen biosynthesis and gonadotropin regulation. PCOS has a familial tendency. It is evidenced by polygenic inheritance, involving genes like FSH receptor genes and CYP11A, which influence androgen production and follicular development. Women with first degree relatives having PCOS are at an increased risk of developing the condition (Goodarzi et al., 2011).

Environmental and life factors that may contribute to PCOS in women. Diet, exercise, environmental toxins like endocrine chemicals, air pollutants, micro plastics and nanoparticles, stress, smoking, obesity etc affect PCOS. Exposures to EDCs (endocrine disrupting chemicals), including bisphenol A (BPA), phthalates and pesticides have been associated with PCOS. The main key factor of PCOS obesity, excess fat tissue leads to worsening insulin resistance. Obesity aggravates hyperandrogenism through increased free testosterone levels because of decreased synthesis of sex hormone-binding globulin in the liver. It also worsens ovulatory dysfunction, metabolic abnormalities and inflammation. Diets high in refined carbohydrates, sugars, and unhealthy fats, a deficiency in essential nutrients like vitamin D, magnesium and omega-3 fatty acids worsen insulin resistance and weight gain, both of which contribute to PCOS. Excess androgens in gestation may cause a female fetus to have PCOS like symptoms later in life. Stress causes cortisol release, which can impair insulin sensitivity and worsen metabolic dysfunction in PCOS. Chronic stress also affects the HPO axis, which contributes to menstrual abnormalities. Most women with PCOS have sleep disorders. Poor sleep quality has been correlated with increased insulin resistance, weight gain and hormonal imbalance. Physical inactivity is one of the major contributes to weight gain, insulin resistance and metabolic dysfunction in PCOS. Exercise deficiency decreases muscle glucose uptake, which exacerbates hyperinsulinemia. Socioeconomic status might influence access to healthcare, awareness about PCOS and lifestyle choices such as diet and exercise. Cultural norms may also influence body image, dietary patterns and willingness to seek medical intervention.

Around the time of their first menstruation, some women begin to experience symptoms. Others don't realize they have PCOS until they've put on a lot of weight or struggled to get pregnant. PCOS impacts a woman's ovaries, which are reproductive organs that generate the hormones progesterone and estrogen, which control the menstrual cycle. A tiny quantity of male hormones known as androgens is also produced by the ovaries. A man's

sperm fertilizes the eggs released by the ovaries. Ovulation is the term for the monthly release of an egg. Ovulation is regulated by luteinizing hormone (LH) and follicle-stimulating hormone (FSH). LH causes the ovary to release a mature egg after FSH encourages the ovary to develop a follicle, which is a bag that holds an egg. Ovulation and the ovaries are impacted by PCOS, a syndrome or collection of symptoms. Its three primary characteristics are:

- There are ovarian cysts.
- Excessive amounts of masculine hormones
- Periods that are irregular or skipped

Numerous tiny, fluid-filled sacs develop inside the ovaries in PCOS. The definition of "polycystic" is "many cysts." In reality, these sacs are follicles, and inside each is an immature egg. The eggs are never sufficiently developed to cause ovulation. Estrogen, progesterone, FSH, and LH levels are all affected when ovulation is absent. While androgen levels are higher than normal, estrogen and progesterone levels are lower. Women with PCOS experience fewer periods than normal because of the disruption of the menstrual cycle caused by excess male hormones.

INFERTILITY

Women must ovulate in order to become pregnant. Regular ovulation reduces the number of eggs released for fertilization by women. One of the main reasons why women become infertile is PCOS. In women with PCOS, insulin-sensitizing medications such as metformin, rosiglitazone, and pioglitazone have been shown to improve ovulation and fertility. The literature is divided on whether clomiphene, metformin, or a combination of the two can increase the likelihood of conception in PCOS-affected women. A recent study found that for anovulatory, non-obese women with PCOS, six months of metformin medication improved fertility more than six months of clomiphene therapy. Clomiphene is more effective than metformin in helping infertile women with PCOS give birth, according to a large random trial including over 600 women. Another study also found no advantages to taking medications like clomiphene and metformin together.

WEIGHT GAIN

Obesity affects more than 70% of women with PCOS. The synthesis of androgen, a male hormone, is increased by high insulin levels. Symptoms of high testosterone levels include excessive hair growth, acne, and inappropriate menstrual cycles and obesity. Only male hormones (androgen) can induce weight gain, and it usually occurs in the abdomen, which makes males more likely to carry weight. The largest type of fat in our bodies is found in our abdomens. For this reason, it is linked to a higher risk of heart disease and other illnesses.

METABOLIC SYNDROME

The risk for high blood pressure, low HDL (good cholesterol), and high LDL (bad cholesterol) is increased by both obesity and PCOS. These include metabolic syndrome, which raises the risk of angina pectoris and diabetes.

APNEA DURING SLEEP

Sleep is hampered by this condition's frequent breathing pauses during the night. Women with PCOS who are overweight are more likely to suffer sleep apnea. Obese women with PCOS have a 5–10 times increased chance of developing sleep apnea than women without PCOS.

CANCER

Endometrial hyperplasia or irregular vaginal bleeding can be treated medically with estrogen-progestin oral contraceptives, cyclic or continuous progestin, or the intrauterine device Mirena, which releases levonorgestrel.

It is recommended to manage obesity as a co-occurring risk factor for endometrial disease by altering one's lifestyle to include exercise and calorie restriction. Some women with PCOS may also have an elevated risk of ovarian cancer. The usage of oral contraceptives appears to be protective against ovarian cancer and appears to rise over the course of treatment, according to compelling data. Instead of preventing "incessant ovulation," this protection may be achieved by suppressing gonadotropin production. Although obesity-related metabolic dysfunction is a common factor in both PCOS and breast cancer, there is no clear correlation between the two

disorders. According to recent studies, using metformin may help prevent breast and endometrial cancer. To assess any correlation between PCOS and uterine leiomyosarcoma, vulvar and cervical cancer, or vaginal cancer, there is not enough information available.

INSULIN RESISTANCE

Insulin resistance, or the inability of cells to use insulin appropriately, affects up to 70% of women with PCOS. The pancreas secretes the hormone insulin, which aids the body in using the sugar in food as fuel. The body needs more insulin when cells are unable to use it correctly. To make up for this, the pancreas produces extra insulin. The ovaries create more male hormones in response to excess insulin. One of the main causes of insulin resistance is obesity. Insulin resistance and obesity can both raise your risk of type 2 diabetes.

INFLAMMATION

Women with PCOS frequently experience elevated levels of inflammation in their bodies. Being overweight might also lead to inflammation. Excess inflammation has been associated with greater levels of androgen (Mukerjee, 2018).

The diagnostic process should begin with a comprehensive history and physical examination. Clinicians should consider the patient's menstrual history, weight variations and how these affect PCOS symptoms, and cutaneous abnormalities. Patients should also be enquired about PCOS related comorbidities. The endocrine society recommends that clinicians diagnose PCOS using the 2003 Rotterdam criteria, albeit recommendations vary between guidelines. The Rotterdam criteria state that a diagnostic requires at least two of the following three findings: Hyperandrogenism, ovarian dysfunction and polycystic ovaries. A comprehensive history, physical examination, and basic laboratory testing are usually sufficient to make a diagnosis without the use of ultrasonography or other imaging. Clinically, hyperandrogenism can be identified by the presence of severe acne, androgenic alopecia, or hirutinism (terminal hair in a male pattern distribution), or chemically by high serum levels of total, bioavailable, or free testosterone or dehydroepiandrosterone sulphate. Androgen levels should be measured if an androgen-secreting tumour is suspected (for example, if a patient has marked virilisation or the signs of PCOS appear suddenly). Ovulatory dysfunction includes amenorrhea (absence of menstruation for 6 to 12 months after a cyclic pattern has been

established) and oligomenorrhea (cycles more than 35 days apart but less than 6 months apart).An ovary with 12 or more follicles (or 25 or more follicles using current ultrasound technology) with a diameter of 2 to 9 mm, or one with an ultrasonography volume of more than 10 mL, is considered polycystic. Polycystic ovaries can be diagnosed with a single ovary that satisfies one or both of these criteria. Nevertheless, unless imaging is required to rule out a tumor or the patient satisfies only one of the other Rotterdam criteria for PCOS, ovarian ultrasonography is not required. Up to 62% of patients with regular ovulation have polycystic ovaries that fit the aforementioned criteria; the frequency decreases with patient age. Further investigation of suspected PCOS aims to identify and treat long-term metabolic problems as well as rule out other curable illnesses that may mimic PCOS. The Endocrine Society advises ruling out pregnancy, thyroid issues, hyperprolactinemia, and nonclassical congenital adrenal hyperplasia in any woman with suspected PCOS. Conditions like primary ovarian insufficiency and hypothalamic amenorrhea should also be ruled out based on presentation. An androgen-secreting tumor should be ruled out in women who exhibit considerable virilization, such as clitoromegaly or deepening of voice, or who have symptoms that appear quickly (Williams et.al, 2016).

Awareness of PCOS significantly impacts a woman's health by enabling early diagnosis, proper management of symptoms like irregular periods, excess hair growth, acne, and infertility, and proactively addressing potential long-term complications such as type 2 diabetes, cardiovascular disease, and mental health issues, ultimately improving quality of life by empowering women to take control of their health through informed choices and proactive management. Early detection and treatment of this illness would reduce its long-term effects. 40–80% of PCOS patients who are overweight or obese have a higher risk of metabolic syndrome, endometrial hyperplasia, and endometrial cancer. Polycystic Ovarian Syndrome is the most common endocrine disease among women of reproductive age, however it is still under diagnosed. According to studies, students' understanding of PCOS, its symptoms, and its indicators was lacking, and lifestyle choices may make people more susceptible to PCOS. PCOS-related metabolic and reproductive problems may result from a delayed diagnosis. Despite the fact that many female students had experienced PCOS, other research has shown that the prevalence of PCOS indications and symptoms was rising without a change in

awareness among this demographic. Furthermore, the majority of students do not see their doctors when they exhibit the symptoms and indicators of PCOS (Alwani et.al, 2021).

Relevance of the topic

The relevance of the study is evidenced by the increasing prevalence of Polycystic Ovarian Syndrome (PCOS). According to the World Health Organization (WHO), Polycystic Ovarian Syndrome (PCOS) is a common hormonal condition that affects women of reproductive age. It usually starts during adolescence, but symptoms may fluctuate over time. PCOS affects an estimated 6-13% of reproductive aged women and up to 70% of affected women remain undiagnosed worldwide.

The study focuses on awareness of PCOS in young people having age of 18-30. Students are also not sufficiently knowledgeable and informed about the risk factors, diagnosis, and management of such diseases. Some of the students are not aware of the complexities and treatment of PCOS; they do not know how PCOS adrift infertility and complained of irregular periods. This awareness program and the leaflet can bridge the gap and provide students with information & awareness about PCOS.

Aim

The aim of the study is to assess the prevalence of the PCOS in young adults, along with the extent of their awareness regarding the symptoms, causes, risk factors and treatment.

General objectives

1. Check the current awareness of Polycystic Ovarian Syndrome (PCOS) among young adults in the age group 18-30.

Specific objectives

1. Develop an informative and interesting leaflet that teaches young adults about Polycystic Ovarian Syndrome (PCOS).

2. To give awareness regarding PCOS among young adults.
3. To assess the level of awareness and knowledge about PCOS.
4. To assess the knowledge of period status of young adults.

Hypothesis

- There is insufficient knowledge among young adults about the causes, symptoms, and complications of PCOS.
- There is a significant relationship between awareness programs and improved understanding of PCOS.
- The implementation of informative leaflet will lead to a significant increase in knowledge and understanding of PCOS among young adults.

Chapter 2

REVIEW OF LITERATURE

The review of literature of the research titled "**Polycystic Ovarian Syndrome (PCOS): Prevalence, Predisposing factors and Awareness among young adults in the age group 18-30 years**" are explained under the following titles:

2.1: Prevalence of PCOS among young adults

2.2: Risk factors for PCOS

2.3: Awareness and knowledge about PCOS among young adults

2.4: Consequences of untreated PCOS

2.5: Importance of early diagnosis and management of PCOS

2.1: Prevalence of PCOS among young adults

PCOS is an endocrine disorder accompanied by hormonal disturbance in which the women experience hyperandrogenism and elevated levels of activity of testosterone population categories. A South Indian study aimed for assessing the prevalence and awareness regarding PCOS among adolescent and young females. The study contained demographic data of 250 people, aged 13–25 years. The survey found that the main causes of poor awareness levels were a lack of exposure and information .The study comes to the conclusion that although PCOS is a common ailment among young women and teenagers, the true impact of the illness may be understated because of a lack of knowledge PCOS occurs in all age groups of women, and awareness of PCOS is the key to successfully treating the disorder and avoiding the long-term consequences of it such as insulin resistance, glucose intolerance, diabetes, cardiovascular disease, and endometrial cancers, etc. Still, the morbidity of PCOS and the symptom-knowledge,complications-knowledge,prevention-knowledge,and
treatment-knowledge about this condition vary greatly in dissimilar geographical regions and population categories (Jabeen *et al.,* 2022).

Polycystic ovarian syndrome includes a number of reproductive and metabolic disorders that can have transgenerational implications. PCOS prevalence rates differ significantly worldwide and in India as well. The present study demonstrates a high prevalence of PCOS in India. Moreover, the majority of patients also had comorbidities, including hypertension, metabolic syndrome, impaired glucose tolerance, obesity, and dyslipidemia, that add to the growing burden of noncommunicable diseases in India. The study on Polycystic Ovary Syndrome frequency, characteristics, and comorbidities in Indian 9824 women between the ages of 18 and 40 were enrolled for the study and were categorized using sonographic, hormonal, and clinical evaluations. Main results and measures highlight the frequency and characteristics of PCOS among reproductive-aged women, as well as the burden of PCOS-related comorbidities.. A significant number of subjects had metabolic problems. These insights are critical for developing prevention and treatment strategies, emphasizing the importance of including PCOS management within national healthcare initiatives (Chowdhury et al., 2024).

Another study conducted to assess risk factors linked to PCOS and to estimate the prevalence of PCOS in young women and adolescents using several criteria. 518 individuals in all, including young women (18–30 years, n = 272) and adolescents (12–17 years, n = 246), were enlisted. The Rotterdam, AE-PCOS, and NIH criteria were used to determine the prevalence of PCOS. The study revealed that key findings are assess risk for PCOS diagnosis in Indian adolescent girls and women, the prevalence of PCOS is high in young girls in India which increases steadily with age, and 2-year menstrual irregularity may be taken as an early warning sign for PCOS, and obesity, insulin resistance, and hypertension are the metabolic parameters seen in PCOS. (Mehreen *et al.,* 2021).

Younger patients had a higher tendency to have irregular menstruation, while those over 30 years old had a higher tendency to have hyperandrogenic features. To better know the frequency, symptoms, and generational characteristics of polycystic ovarian syndrome (PCOS), this research aimed to examine the demographic profiles of PCOS patients. The research population consisted of all the females in the 15-45 years age group diagnosed as having PCOS employing the Rotterdam criteria. Menstrual irregularity was more frequently observed among the below 21-year age category and was the most prevalent complaint among all the age

groups. Prevalence of PCOS decreases in higher age groups mainly because of natural aging of the ovarian function and menopausal hormonal changes. PCOS may even continue after menopause in certain individuals, especially if the diagnosis had occurred late or if women have concomitant metabolic disturbances (Mohapatra et al., 2024).

The study conducted by Jan (2021) investigated the prevalence and the contributing factors of obesity among young girls in the age group 20-30. The main finding was that a number of characteristics have been identified as key predictors that raise the probability of a high prevalence of excess adiposity, including being overweight or obese. The young adults were chosen using a stratified random sample technique. Socioeconomic, demographic, nutritional, and lifestyle data were gathered. The Asian-Pacific population reference cut-offs were used to determine the prevalence of overweight and obesity. According to the study, prevalence of overweight and obesity was associated with gender, marital status, family type, educational qualification, socio economic status, unhealthy dietary habits, poor food choices and history of obesity in the family. According to the study, in order to lessen the difficulties that result from excess adiposity in this population, the right healthcare strategies and intervention programs are needed.

A study on overview of the prevalence of polycystic ovarian syndrome (PCOS) among young women and adolescent girls aged 11 to 30 years residing in the National Capital Region. Based on the results of the study, the respondents were less aware of PCOS's actual prevalence and also attributed lifestyle modifications to the symptoms of the disorder. The results of the study show that respondents were less conscious of the actual frequency of PCOS and also attributed the condition's symptoms to changes in lifestyle. With the increasing rate of sedentary lifestyles and physical inactivity, these teen age girls and women are at higher risk of developing metabolic syndrome at such a tender age. The risk factors and issues of PCOS must be brought to the public eye, with emphasis on the necessity for regular exercise and proper diet. The research highlighted that an increase in sedentary habits and physical inactivity places young girls and women at a great risk for developing metabolic syndrome early in life. They concluded that a healthy diet, regular exercise, early detection, and existing treatment are all integral components of enhancing public awareness of PCOS and its risk factors (Tiwari and Mathur, 2023).

2.2: Risk factors for PCOS

A cross-sectional study in Rakmhsu, United Arab Emirates, to explore the risk factors of the development of polycystic ovarian syndrome among female students aged between 18 and 24 years. There were 250 female students who participated in the study. Individuals were divided into PCOS and non-PCOS groups based on NIH criteria. The study highlighted common risk factors for PCOS development, including family history, fast eating behaviors, physical activity, body mass index, and waist circumference, across research participants. The study indicated that a family history of PCOS, obesity and fast food diets are risk factors for developing PCOS. Predisposing variables for PCOS increase the probability of developing the condition and also found that the majority of predisposing factors are interconnected and easily changeable. Identifying and managing predisposing variables can prevent disease progression and improve disease management (Beegum *et al.,* 2017).

The study on the effect of predisposing factors for PCOS in Indian urban and rural populations. This study was a cross-sectional survey conducted on a randomly selected sample from the general population. A study was completed by 502 young women (aged 10 to 24) from Chennai and 566 females, representing the urban and rural populations, respectively. The study found that urban women are 0.1 times more likely to have PCOS than those in rural India. The study concludes family history was discovered to have a high association with the disorder's occurrence and expressions. Stress has been known to exacerbate PCOS symptoms and also discovered that awareness was low, particularly among the rural people, thus they were not unaware of the diagnosis (Swetha et al., 2017).

In 2024, Alenzi undertook a study to investigate the relationships between PCOS risk and demographic and socioeconomic variables, access to healthcare, health behaviors, and health status. This cross-sectional study was undertaken among women from various regions of Saudi Arabia to measure PCOS risk and associated variables. The majority were under 30 years old, single, educated, city dwellers, employed or students, and nonsmokers. Age, location of residence, income, weight status, smoking status, presence of chronic illnesses, medication and herbal remedy use, and felt stress all contributed to PCOS risk. The conclusions found that

younger age, reduced income, and stress levels were associated with an increased risk of PCOS, while chronic diseases were significantly related to PCOS diagnostic rates. The research identified that tailored therapies addressing lifestyle, stress, and concomitant disease management could reduce the risk of PCOS and enhance women's health outcomes.

In 2018, Desai conducted a research study among school-age girls between 13-18 years in Ahmedabad; Gujarat demonstrated a prevalence of PCOS based on the Rotterdam criteria. The research identified an increased prevalence of PCOS among girls belonging to higher socioeconomic status and a history of diabetes mellitus in the family. In addition, lifestyle factors also showed a significant correlation with PCOS indicating the contribution of diet, exercise, and other behavioral patterns in the etiology of the disease. In addition, a significant percentage of PCOS-diagnosed females had a lower quality of life than that of their non-PCOS peers, as measured on the SF-12 questionnaire. The results highlight obesity, socioeconomic status, family history, and insulin resistance as primary risk factors with PCOS. Clinically, the most common presentations reported were hirutinism, acne, oligomenorrhea, and dysmenorrhea. These observations add to the existing literature advocating the multifactorial etiology of PCOS and the imperatives of timely intervention measures that will enhance the health status of individuals with this condition.

Aggarval et al., (2019) conducted a study to identify young women who are at risk of developing PCOS, the purpose of this study is to determine the prevalence of PCOS and the risk factors linked to it among women aged 17 to 24.This cross-sectional study involved 456 medical, dentistry, and physiotherapy students between the ages of 17 and 24 who were enrolled at a medical college in Nerul, Navi Mumbai, and Maharashtra. Some of the participants had a low risk of PCOS, whereas others had a high risk. The majority of people with PCOS were obese or overweight, had a waist-to-hip ratio higher than 0.8, experienced irregular menstruation, hirsutism, and emotional issues like moodiness and easy fatigability. According to the study, PCOS is a prevalent issue among young women that necessitates lifestyle changes, more public awareness, and early diagnosis in order to stop future difficulties.

The polycystic ovary syndrome (PCOS), predominantly defined by clinical and/or biochemical hyperandrogenism, ovarian dysfunction and/or polycystic morphology together with concomitant metabolic disturbances, is the most prevalent endocrine disease among women of reproductive age. The family clustering of cases of PCOS and the cumulative evidence that involvement of multiple environmental and genetic factors is needed to develop the syndrome, have provoked the undertaking of genetic investigations into PCOS. The studies have targeted numerous genetic polymorphisms, searching for their potential positive or negative association with the syndrome. The related genes can be grouped in four categories: those related with insulin resistance, those that interfere with the biosynthesis and the action of androgens, those that encode inflammatory cytokines and other candidate genes. Despite the progress that has been made in the elucidation of the genetic mechanisms of the PCOS, the genetic studies on the syndrome still face many obstacles and challenges. More research is necessary, in order to cast new light in the pathogenesis of the syndrome, that will make it possible for new strategies in the diagnostics and therapeutics of PCOS (Deligeoroglou et al., 2009) .

2.3: Awareness and knowledge about PCOS among young girls

The research was to evaluate knowledge regarding PCOS among young females in Navi Mumbai, Maharashtra, India was conducted by Chainani in 2019.A cross sectional study was conducted on 500 women of age group 18-30 years visiting outpatient departments of D. Y. Patil Hospital, Navi Mumbai. Out of 500 participants, very few women knew about the term PCOS. Fewer than half of the women knew of the multiple symptoms of the disorder. The shocking findings of this research reveal that very few young women know what this disease is and hence when to seek a doctor. This might be the reason why PCOS is an underdiagnosed and underrepresented disease. This extremely common disease among young women needs to be discussed. More and more young women need to be educated about it to prevent the sequelae of this syndrome on fertility and insulin resistance.

In 2021, a study by Mishra was to identify the perception regarding PCOS and its occurrence in young and adolescent women. Among 965 youth patients, only a few knew of an entity known as PCOS. Of adolescents with PCOS, few knew of the condition. All patients who were aware were from the urban sector, with close to half coming from professional

backgrounds, including a smaller number who were students. Their information sources were majorly doctors, friends, and the internet, while others learnt from books, newspapers, and teachers. Diet restrictions and exercises were the best treatment strategies according to most, but few others knew about pills and their use in pill-taking management. The research stated that the perception about PCOS among the female youths is quite poor primarily in the rural situation. Physicians and healthcare workers are expected to perform a key function in creating an awareness of the entity so as to avoid complications in the long run.

Alwani conducted a study in 2021 to evaluate the awareness and attitude of university students about polycystic ovary syndrome at two universities in northern Jordan. It is a cross-sectional online survey that surveyed female students at two universities in the north of Jordan. The principal outcome measures were mean polycystic ovary syndrome awareness score, determinants of high awareness scores, and information sources. The research emphasized that age was a strong predictor of polycystic ovary syndrome awareness score. Being examined for, or diagnosed with polycystic ovary syndrome were strong predictors of the higher scores. Body mass index was a poor predictor of awareness for polycystic ovary syndrome. Healthcare professionals were the most frequent information source mentioned by participants. Lectures proved best at raising awareness scores but were not well exploited outside the curriculum. They also determined that students included in this study had a satisfactory degree of awareness about polycystic ovary syndrome and tended to consult more often from healthcare professionals, this degree of awareness needs to spread-out to other population segments.

Priya & Shwetha (2019) carried out research to evaluate the knowledge about polycystic ovarian syndrome among young female adults in the chosen college. The study was carried out at St. Martha's college of nursing, Bangalore among 60 young female adults. An information booklet was provided among young adult women. According to the study, it was seen that 38.4% possess good knowledge, 48.3% possess moderate knowledge and 13.3% possess poor knowledge about Polycystic Ovarian Syndrome. The analysis of data on association between knowledge score with chosen baseline variables indicated that there is no association between knowledge score with chosen baseline variables like age, religion, regularity of menstrual cycle and sources of information. They concluded that it is evident from the findings of this study

that young female adults possess moderate knowledge about Polycystic Ovarian Syndrome. It also underscores the importance of enhancing young female adult's awareness of Polycystic Ovarian Syndrome to avoid the development of the disease.

In 2018, Patel and Rai conducted a study on "Knowledge of PCOS among young females" to evaluate the awareness regarding PCOS among young females. It was a Cross sectional study conducted on 400 age groups 18-30 years females either studying in Colleges or working in Indore city. In 400 participants, a substantial percentage of women didn't know the name PCOS. Less than half of the participants familiar with PCOS knew about the organ system affected by this disease. The majority of the participants learned about PCOS from friends or relatives. Almost half of the women knew the diverse signs and symptoms of PCOS. Findings from this study revealed that none of the young women know about what this disease is and the initial symptoms on which they must beware to go and see a physician. Converse with girls in college, authors realized that the majority of people are assuming the pain during menses and any irregularities in menses as a phase of their bodily physiological process and never think of a doctor visit.

Awareness and correct diagnosis is the initial step in the management of PCOS as it enhances the quality of life of the patient. The research was carried out to evaluate the knowledge regarding PCOS among the medical students. Survey of 200 girls was conducted to evaluate the knowledge regarding polycystic ovarian syndrome among the medical students of various colleges pursuing 1st, 2nd, 3rd year and 3rd year. It is concluded in this study that 72% of girls had knowledge about PCOS and 28% of girls did not have knowledge about PCOS. Prevalence of PCOS in this current study is 6%.Those girls who had BMI greater than 23 must be educated regarding its risks and must be recommended weight reduction. Those girls who had menses irregularity and features of hyperandrogenism must be explored and should be treated accordingly. Early diagnosis of PCOS and its early treatment will assist the girls in enhancing quality of life and avoiding further health risks (Jayshree et al., 2017).

2.4: Consequences of untreated PCOS

In 2021, Rogers conducted a study about PCOS and postpartum depression symptoms. Their main aim was to evaluate the relation between pre pregnancy polycystic ovary syndrome

and postpartum depression after adjusting for significant baseline confounding factors and secondary aim was to examine the mediating effect of prenatal depression and anxiety on the relation between polycystic ovary syndrome and postpartum depression. This research was based on a population-based sample of 3906 postpartum (2–6 months) women. They concluded that clinical polycystic ovary syndrome is linked to postpartum depressed mood and symptoms in this population-based sample of high-risk mothers. Prenatal depression and anxiety are mediators of this link, highlighting the value of prenatal psychological screening in women with polycystic ovary syndrome.

The study by Yadav (2025) aimed to investigate the health complications and risks associated with polycystic ovary syndrome (PCOS), including diabetes, cardiovascular disease, and infertility. The main aim is to create more efficient management options for women with PCOS. A cross-sectional study was carried out, with 200 women with PCOS and 300 age-matched controls without PCOS. By comparing these two groups, the research hopes to shed light on the wider health implications of PCOS and contribute to the establishment of better clinical strategies. The investigation showed much larger percentages of insulin resistance and Type 2 diabetes in PCOS-women. Moreover, CVD risk factors such as hypertension, dyslipidemia, and increased CRP levels were higher in Group I. Infertility was also higher in Group I than in Group II. PCOS is a strong clinical-risk factor for most forms of diseases such as Diabetes, CVD, infertility, etc. The research concluded that management of PCOS is essential through a total approach comprising lifestyle changes, drug therapy, and periodic screening and monitoring of PCOS to mitigate disease risks and also enhance women's health in PCOS.

Barry conducted a study in 2014 to quantify the risk of breast, ovarian, and endometrial cancers separately among women with PCOS compared with non-PCOS controls. He also quantified the risk among women across all ages and premenopausal women differently. Studies that compared women with PCOS with non-PCOS groups for fatal or non-fatal gynecological cancers were included. They reported that while the risk of ovarian and breast cancers was not significantly increased, women with PCOS had a significantly increased risk of endometrial cancer. Their results highlight the potential association between PCOS and morbidities of gynecological cancer. Moreover, women with PCOS must be told that any

increased risk for endometrial cancer must be weighed against the disease's relatively low prevalence in the general population. To achieve a more accurate estimate of the risk of gynecological malignancies in women with PCOS, a large well followed prospective study is required.

Gunkaya (2022) reviewed a study to understand more about the prevalence and pathophysiology of depression and anxiety that could be induced by polycystic ovary syndrome and to plan for taking precautions required for this vulnerable population. The study included 120 women with polycystic ovary syndrome and 143 controls. They concluded that depression and anxiety occur more frequently in patients with polycystic ovary syndrome compared to healthy women. Their evidence supports screening for depression and anxiety in this population on a routine basis.

Polycystic ovary syndrome (PCOS) and autoimmune thyroid disease (AITD) are prevalent in women of reproductive age. PCOS may have long-term negative effects on health, including obesity, diabetes, and metabolic and cardiovascular risk elevation. The primary purpose of the study was to evaluate the prevalence of AITD in Polish women with PCOS as well as the metabolic influence of co-morbidity of both diseases in euthyroid patients. 424 women aged 16–46 years were enrolled in the study—230 women with PCOS and 194 women with PCOS and concomitance of euthyroid AITD. They concluded that the presence of increased serum levels of thyroid auto antibodies in euthyroid women with PCOS can pose a risk for obesity and metabolic effects. It is even noted in euthyroid and non-obese women. As such, cardiovascular risk in such women could be more than that of PCOS women with increased thyroid auto antibodies. It is vital to evaluate thyroid autoantibodies in every woman with PCOS. In euthyroid PCOS women with co-occurrence of high serum levels of thyroid autoantibodies, it is very important to focus more on having a proper body mass index. There is a pressing need for additional research in large cohorts of women examining the effect of isolated high thyroid autoantibodies on metabolic outcomes in euthyroid women with PCOS to confirm and define the findings (Suchta et al., 2025).

Insulin resistance and the resultant compensatory hyperinsulinemia are frequent observations in women with PCOS. The research emphasized the importance of insulin resistance in PCOS. The core problem is the role played by hyperinsulinemia in androgen excess, which is

potentiated by bidirectional relationships between insulin resistance and hyperandrogenism. They propose that the women with PCOS could exhibit insulin action defects of heterogeneous causes, which are responsible for peculiar abnormalities in them because of having intrinsic flaws. Obesity is present in most patients and plays its role in association between PCOS and insulin resistance, along with the action of PCOS by itself. Insulin sensitization exhibits a number of positive effects on the management of this condition. Insulin resistance and hyperandrogenism are seemingly interdependent central factors in the pathogenesis of PCOS. They theorize that PCOS may be a shared end-stage clinical phenotype of various processes, where there are defective insulin action and hyperandrogenism, likely favored by certain, intrinsic abnormalities of these women (Moghetti, 2016).

2.5: Importance of early diagnosis and management of PCOS

In 2024, Narula did a study to investigate and learn about the experiences of Indian women with PCOS/PCOD in terms of their diagnosis and treatment. The information was gathered from 12 women aged in their early twenties with PCOS/PCOD using snowball sampling. The primary 3 themes were, communicating the diagnosis, Experiences with the healthcare professionals, and Treatment and Acceptance. The research concluded with the necessity of sensitizing the healthcare professionals to the issues of women with PCOS/ PCOD, also making them aware of the psycho-social effect of it on women's lives.

The Chaudhary and Nidhi study conducted in 2013 analyzed the impact of the yoga-based life-style program in treating polycystic ovarian syndrome (PCOS) in teenage girls versus the physical exercise program.460 adolescent girls aged 15-18 years were screened for PCOS using Rotterdam's criteria. In interventional study, 90 adolescent girls (age 15-18 years) fulfilling Rotterdam criterion of PCOS and without any previous experience with yoga were randomized into Yoga and Exercise group. The Yoga group did Integrated Approach of Yoga Therapy (IAYT) and the exercise group did a comparable set of standard physical exercises (1 hour/day, for 12 weeks). They concluded that these findings indicate that the integrated method of yoga therapy for 12 weeks was much superior in restoration of normal endocrine and biochemical functions with improvement in the psychological profile of PCOS compared to physical exercises. They also emphasize the point that yoga induces beneficial changes at hormonal, biochemical and psychological levels irrespective of anthropometric changes.

Therefore, yoga may have played a reduction / normalization of SNS/HPA-axis activity and thus exert positive influences on physiological and psychological symptoms in PCOS.

Beltadze and Barbakadze (2015) have studied to compare the ovarian reserve of late reproductive age women by the method of treatment of PCOS in the adolescent age group. This unselected population cross sectional study was carried out from January to June 2014. 123 women of late reproductive age were enrolled. They had been diagnosed with PCOS between 1984 and 1990 when they were 13-18 yr. From them, the first study group consisted of 67 participants who received conservative treatment with antiandrogens and combined oral contraceptives and the second study group consisted of 56 participants after surgery. The subjects were gathered through history analysis at the initial diagnosis of PCOS during adolescence and at the time of investigation reproductive hormone analyses were carried out. Following conservative treatment, PCOS women possessed increased levels of anti- mullerian hormone and decreased follicle-stimulating hormone levels. The count of antral follicles and average ovarian volume were significantly higher also, compared to women who received surgical treatment. They assume that PCOS patients who were treated conservatively have a better ovarian reserve compared with women who were treated surgically for PCOS during puberty.

In 2023, Jauhari and Reenoo did a study was to enhance the outcome of treatment by comparing various management options (lifestyle modification vs. lifestyle modification with suggested therapy) in PCOS women of this part of Uttarakhand and to determine a correlation with Vitamin D. Female with PCOS in the age group of 15-40 years. The outcome of the study revealed a significant difference in group I (Lifestyle modification) where there was reduction in the anthropometric parameters, along with reduction in levels of LH and rise in levels of FSH. The study finding revealed a positive association of PCOS and vitamin D. The clinical Phenotype observed was the most prevalent being Normo-androgenic PCOS with 39% prevalence. The risk profile was evaluated based on the self-assessment questionnaire provided to the study participants. The finding revealed that 71% of the patients included in the research were at high risk to develop PCOS. Therefore, they concluded that lifestyle change alone can treat the symptoms of PCOS, if PCOS is diagnosed early and treated accordingly based on appearance of clinical features with vitamin D supplementation.

A research conducted by Mary et al. (2024) evaluated the effects of a regimen-based exercise program on the emotional and physical disturbances among young PCOS women. Purposive sampling was utilized to select 30 young adult women with PCOS diagnoses for this research. Individuals aged 19 to 25 who fall into the overweight and obese group, have PCOS confirmed by the Rotterdam consensus criteria, have monthly irregularities, low ovulation and anovulation, exhibit clinical and biochemical symptoms, and have many main ovarian follicles identified by ultrasound. According to their research, young adults' physical and mental health can be improved more effectively with aerobic and resistance training.

Polycystic ovary syndrome (PCOS) is one of the most prevalent female endocrine disorders affecting 6-15% of women. PCOS women experience hormonal imbalance and metabolic issues that could impact their overall health and physical appearance. Excess androgen and insulin resistance are now known to be the cause of much of the phenotypic presentation, although insulin resistance is a long way from being universally present. It is marked by irregular menstrual cycle, acne and is also linked with type-2 diabetes mellitus and cardiovascular disease. Effective management of PCOS offers a potential window of opportunity to prevent the risk of related complications. Treatment is generally directed towards addressing (IR), consequences of hyperandrogenism, irregular menstruation, and infertility. This article specifically addresses the etiology, pathophysiology, diagnosis and management of polycystic ovary syndrome. Lifestyle modification along with pharmacological treatment which enhances hyperandrogenism and enhances insulin sensitivity helps regular menstrual cycle and enhances fertility and avoids cardiovascular and other morbidity (muhas et al., 2018).

CHAPTER 3

METHODOLOGY

A research methodology explains the methods and procedures applied to identify and study information about a given research area. It is a procedure whereby researchers plan their study in a way that they are able to accomplish their goal through the adopted research tools. It encompasses all the crucial elements of research, such as research design, methods of data collection, methods of data analysis, and the overall structure within which the research is carried out.

The methodology of the present study titled **"Polycystic Ovarian Syndrome (PCOS): Prevalence, Predisposing factors and Awareness among young adults in the age group 18-30 years" is discussed under the following headings.**

3.1 Selection of Area

3.2 Selection of Sample

3.3 Selection of Tools and Techniques

3.4 Conduct of the Study

3.5 Analysis of data

3.1 Selection of Area

The selection of areas is an unavoidable part of the study. The area selected for the present study was Ernakulam district. The area was selected considering availability of samples required and convenience of the researcher. Ernakulam district has diverse student populations, representing different socioeconomic strata.

3.2 Selection of Sample

A primary survey carried 138 young adults to get information about knowledge and awareness on PCOS among 18-30 year old adults. Based on the primary data, the pre- and post-test was

carried out with a sample of 45 participants in order to assess the effectiveness of an awareness intervention. In those tests, the method used for sampling was convenience sampling.

3.3 Selection of Tools and Techniques

The study will use survey method to collect data about prevalence, predisposing factors and awareness among young adults in the age group 18-30 years. The survey method was chosen because it enables the systematic collection of numerical data from a large sample.

The tool selected for the study was a self-administered questionnaire to collect on the awareness and knowledge of PCOS. The technique used to collect the data was a survey method. The questionnaire on Google form was circulated among the selected samples to collect the data. A pre-test was conducted to assess the level of awareness followed by an informative session on PCOS. All participants were asked to fill up a post-test questionnaire to check the level of increase in the knowledge on PCOS. An informative leaflet about PCOS was circulated by the selected participants.

The primary questionnaire consisted of 3 sections-A, B, C. Section A had questions on general information of respondents (like name, age, class etc) were given in the beginning. Section B had questions related to awareness and knowledge of Polycystic Ovarian Syndrome (PCOS), and Section C was about the checklist of menstrual health status. The pre- and post-questionnaire was used to assess the effectiveness of the awareness intervention.

3.4 Conduct of the Study

The study was undertaken as a primary examination to identify Polycystic Ovarian Syndrome (PCOS) in young women and assess their awareness and knowledge of PCOS and find out the checklist of menstrual health status of the students. The primary study was carried out with 138 participants to check the awareness regarding PCOS. Based on the result, the study was conducted in three phases: pre-test, an awareness session with leaflet distribution, and post-test.

Phase 1: Pre-intervention assessment

A self-designed questionnaire was administered to 45 participants to evaluate the initial awareness and understanding of PCOS. These questions measure knowledge about PCOS

(which includes symptoms, causes, complications, diagnostic methods, etc.). Students from various classrooms were given it in order to collect responses.

Phase 2: Awareness session and distribution of leaflets

Based on the findings of the questionnaire, awareness classes on PCOS conducted with the help of the research guide. The aim of the session was to inform students about PCOS, including its symptoms, causes, potential complications, and management strategies for lifestyle changes, myths and beliefs on PCOS, and certain dietary tips. In order to increase awareness further, students were given informational leaflets which gave necessary information on early diagnosis, practice of healthy lifestyle, and medical complications of PCOS.

Phase 3: Post-intervention assessment

The same questionnaire was re-administered to the same 45 participants to evaluate any changes in their awareness and understanding following the intervention.

3.5 Analysis of data

The data collected from the survey was tabulated, analyzed and interpreted using proper statistical methods.

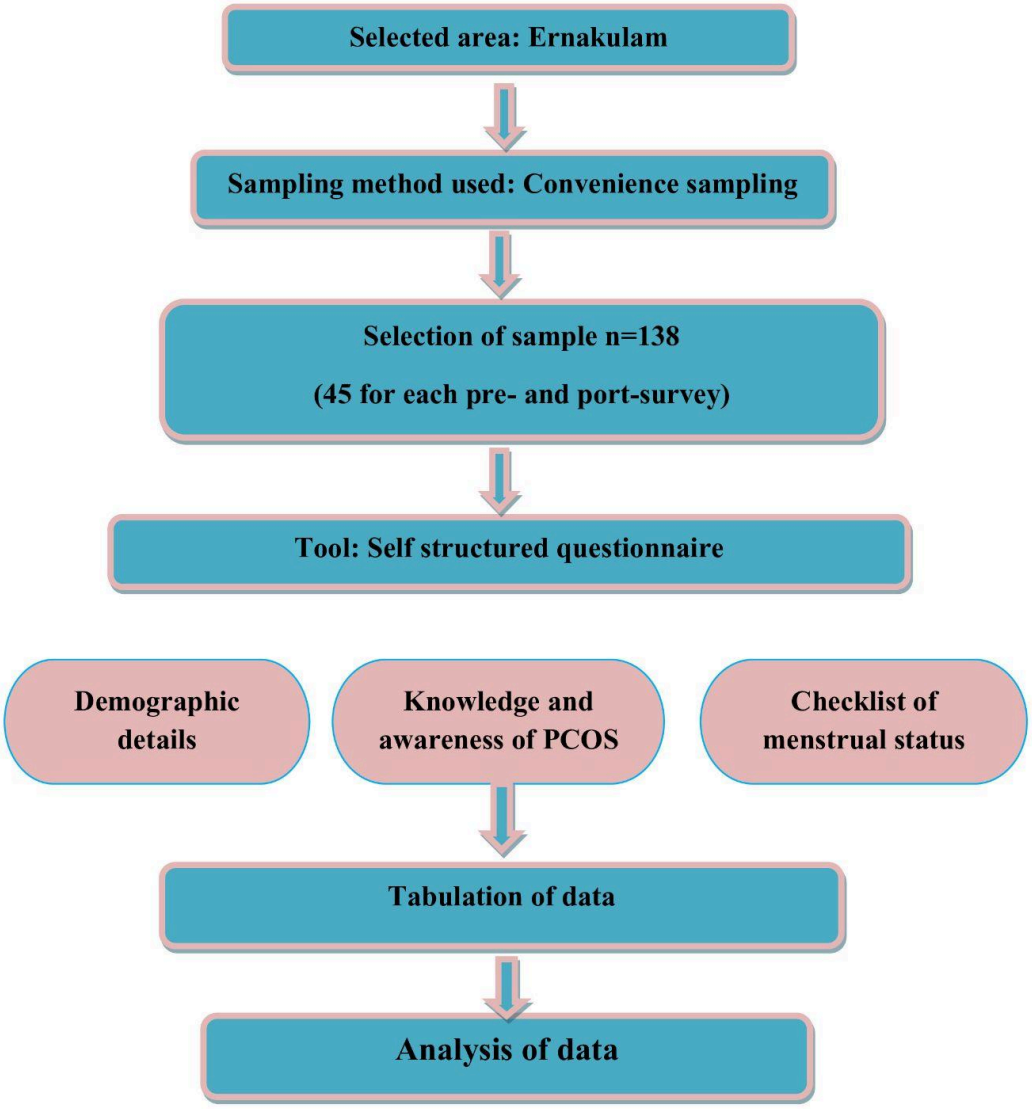


Figure 1: Research design

CHAPTER 4

RESULTS AND DISCUSSION

The results and discussion pertaining to the study titled "**Polycystic Ovarian Syndrome (PCOS): Prevalence, Predisposing factors and Awareness among young adults in the age group 18-30 years"** is discussed under the following headings.

4.1 General Information of the respondents.

4.2 Classification of respondents based on the awareness level about PCOS (initial survey).

4.3 Reasons for lack of knowledge about PCOS in the pre-survey participants.

4.4 To categorize and analyze aspects related to menstrual cycle pattern based on the responses given by sample population.

4.4.1 Regularity of menses.

4.4.2 Irregularity in menses.

4.4.3 Time gap between the menstrual cycles of the respondents.

4.4.4 Categorization of menstrual cycle length (in days).

4.5 Correlation between awareness about PCOS and the educational level of sample population in pre- survey and post- survey.

4.6 To compare the awareness level on aspects like causes, symptoms, complications and prevention of PCOS before and after the awareness class session.

4.6.1 Difference in awareness level about causes of PCOS before and after the survey

4.6.2 Difference in awareness level about symptoms of PCOS before and after the survey.

4.6.3 Difference in awareness level about complications of PCOS before and after the survey.

4.6.4 Difference in awareness level about prevention of PCOS before and after the survey.

4.1 General Information of the respondents.

General information forms an important part of any study. The basic details and general information collected from the female sample population has been arranged and tabularized as given below.

Table 1: General Information of the respondents

SL.NO	DEMOGRAPHIC DETAILS	RESPONSE	
		N=138	%
1.	**AGE**		
	18-20 years	56	40.57%
	21-23 years	68	49.27%
	24-26 years	8	5.79%
	27-29 years	4	2.89%
	30 years	2	1.44%
2.	**EDUCATIONAL LEVEL**		
	PG	70	50.72%
	UG	68	49.27%
3	**MONTHLY INCOME**		
	10000/- below	25	18.1%
	10001-30000	40	29%
	30001-50000	22	15.9%
	50001-100000	29	21%
	100000/- above	22	15.9%
4	**BMI**		
	Underweight	28	20.28%
	Normal weight	90	65.21%
	Overweight	17	12.31%

	Obese	3	2.1%
5	**Year of study**		
	1st year	56	40.6%
	2nd year	59	42.6%
	3rd year	23	16.7%

Table 1 indicated the demographic details of the respondents which included age in years, educational level, monthly income, BMI, and year of study. With regard to the age, the majority of the respondents 49.27 percent and 40.57 percent were in the age group 18-20 and 21-23 respectively. This indicated that the sample is predominantly composed of young adults in their early twenties. The representation decreases while looking in the old age groups, showing that 5.79 percent in the age group of 24-26 years, 2.89 percent in the age group 27-29 years, and just 1.44 percent in the age of 30 years.

The responses are nearly equally distributed between post graduate (50.72%) and undergraduate (49.27%). So respondents of PG and UG equally participated in the study. It allows the study to capture response from both levels of study, enabling a deeper understanding of awareness levels on each educational level.

A considerable number of the respondents (29%) belonged to the monthly income category of 10,001-30,000, and 18.1 percent were in the below 10,000 income group. On the other hand, 1.9 percent belongs to 30,001-50,000, 21 percent belongs to 50,001-100000, and 15.9 percent belongs above 100000. The distribution of income range shows that the participants are from different socioeconomic statuses.

The majority of the respondents are normal weight indicating 65.21 percent while 20.28 percent are underweight. Fewer participants were overweight (12.31%) and obese (2.2%).

The majority of the respondents are in their early academic years, according to the distribution of respondents by year of study. Second year students make up the largest percentage of participation (42.6%), with first year students coming in the second (40.6%). In

the third year, just 16.7% of the respondents fall into the category, a considerable decrease in representation.

4.2 Classification of respondents based on the awareness level about PCOS (initial survey).

To categorize the sample population based on the awareness of PCOS according to the responses collected in the pre-survey, the question, "have you heard about PCOS before?" was taken into account and the analysis was done.

The table given below shows the categorization of participants in numbers and percentages, according to their awareness.

Table 2: Categorization of initial-survey respondents based on their awareness about PCOS

PARTICULARS	NUMBER	PERCENTAGE
Participants who know about PCOS	91	65.9%
Participants who do not know about PCOS	47	34.1 %

The table 2 clearly shows that from the 138 respondents 65.9% were aware about PCOS and the rest 34.1 % were unaware about it.

The figure given below shows the graphical representation of the categorization of participants based on their awareness.

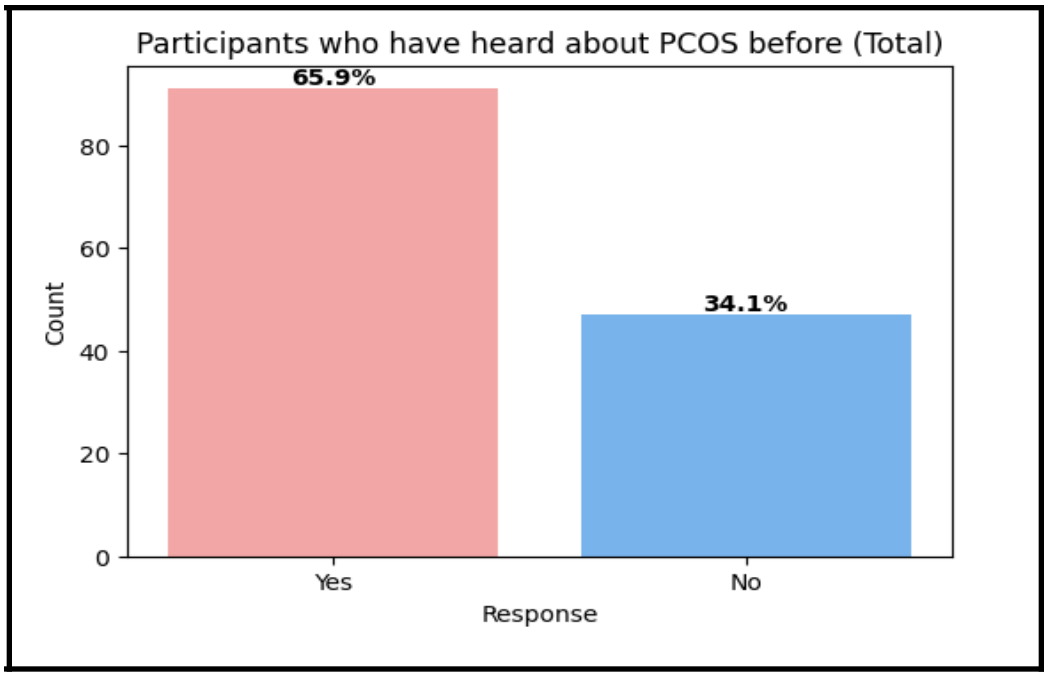


Figure 2: Categorization of initial-survey participants based on their awareness about PCOS.

Respondents are classified in Table 2 based on their previous knowledge of PCOS in the initial survey. 47 respondents 34.1 percent informed that they were not aware of PCOS, whereas 91 respondents 65.9 percent among 138 respondents informed that they have previously heard of the condition. In the above findings, the majority of participants are aware of what PCOS is, a large percentage are not. Over one-third participants were the very least aware of PCOS, suggesting a knowledge deficit. Based on the least awareness, the selected participants from the initial survey may conduct pre- and post-survey.

Some of the other responses show there is least awareness and knowledge of PCOS is shown in the below table.

Table 3: Details of the number of respondents who have least knowledge about PCOS

STATEMENTS	RESPONSES (N=138)		
	Yes	**No**	**Not sure**
PCOS is considered a serious condition by many individuals	46.4	23.2	30.4
PCOS symptoms can vary significantly from person to person	47.1	23.9	29
Some individuals with PCOS may not exhibit any noticeable symptoms	40.6	24.6	34.8
PCOS can negatively impact fertility	60.9	14.5	24.6
PCOS affects a person's physical and well-being in various ways	52.2	20.3	27.5
PCOS can influence emotional regulation and mental health	50	21.7	28.3
There are specific diagnostic methods and tests available to identify PCOS	15.2	50	34.8
PCOS is a treatable condition	45.7	26.1	28.3
Adopting healthy lifestyle changes can reduce the impact of PCOS	58.7	19.6	21.7
People with PCOS may or may not receive adequate support from family, friends, and peers	39.9	29	31.2

Social stigma is associated with PCOS	50.7	49.3	0
Cultural beliefs can shape understanding and management of PCOS	48.6	51.4	0
The available resources and support systems for PCOS may not be sufficient	18.8	37	44.2

The data in Table 3 showed that 138 respondents had major gaps in their understanding of Polycystic Ovary Syndrome (PCOS). Majority of the respondents (23.2 % and 30.4%) are unsure or lack appropriate information about the seriousness of PCOS, while a significant (46.4%) agree that PCOS is a serious condition. Similarly, (47.1%) are aware that PCOS symptoms differ from person to person, while (23.9% and 29%) are unsure. The statement that people with PCOS may not exhibit any noticeable symptoms, with (40.6%) saying “yes” and (24.6% and 34.8%) saying “no” and “not sure”, potentially leading to an underestimation of the condition’s prevalence. Encouragingly, (60.9%) correctly identified that PCOS can harm fertility, indicating slight awareness about fertility. However, (14.5 % and 24.6%) were unsure or lacked awareness about fertility of the condition.

In the statement of a person's physical and well-being, about (52.2%) agreed that PCOS impacts physical and mental well-being, while (20.3% and 27.5%) remained unaware. Half of the participants (50%) recognized the impact of PCOS influence on emotional regulation and mental health. However, (21.7% and 28.3%) disagreed or lacked understanding, indicating that there is need for awareness regarding mental health within PCOS education. Only (15.2%) were aware of the precise diagnostic procedures available for PCOS, whereas 84.8 percent (50% were saying “no" and 34.8% were saying “not sure”) expressed uncertainty or a lack of understanding. Less than half (45.7%) of the respondents were aware that PCOS can be treated, with the remainder (26.1% and 26.3%) unsure of lack of knowledge.

Majority (58.7%) agreed that making healthy lifestyle adjustments can assist with PCOS. However, (19.6% and 21.7%) of respondents disagreed, demonstrating that not everyone appreciates the importance of lifestyle modifications. Only 39.9 percent of respondents said persons with PCOS received appropriate help, with the majority (29 and 31.2%) of respondents disagreeing. 50.7 percent of respondents said PCOS is related to stigma while 49.3 percent disagreed, indicating almost half of the participants had responded to both “yes” and “no”. The participants were fairly similarly divided on how cultural beliefs shape PCOS understanding, (48.6%) respondents agreed and (51.4%) were lacking knowledge regarding the cultural beliefs. Only 18.8 percent of respondents had known about resources and support systems were sufficient while significant (37 and 44.2 %) were lacking knowledge regarding the current resources.

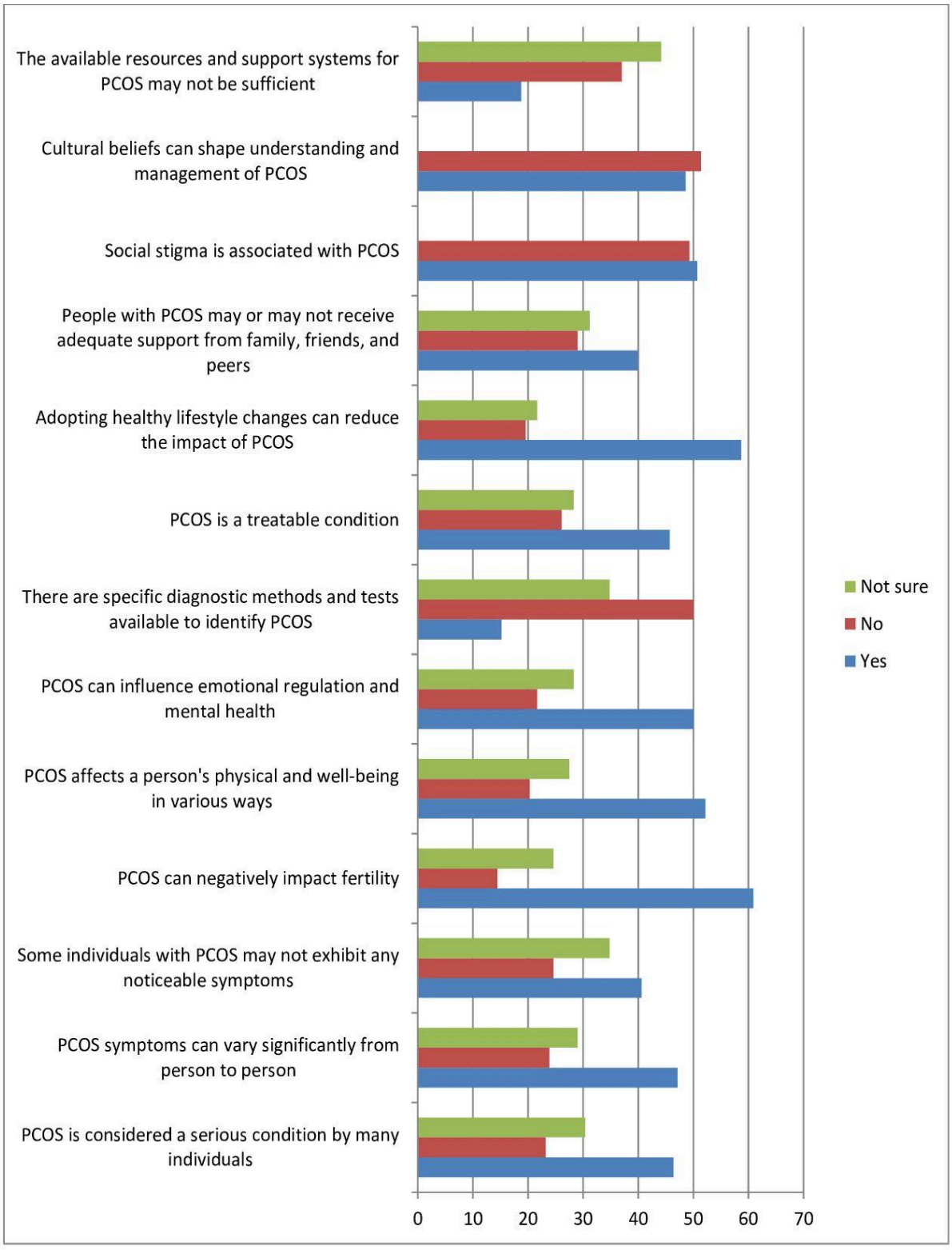


Figure 3: Details of the number of respondents who have least knowledge about PCOS

4.3 Reasons for lack of awareness about PCOS in the pre-survey participants.

The percentage of different barriers for the lack of knowledge according to the response filled by the sample population is represented in the table below.

Table 4: Reasons for the lack of awareness about PCOS

REASONS FOR THE LACK OF AWARENESS ABOUT PCOS	RESPONSES (N=45)
Lack of information	35.6 %
Improper knowledge	24.4 %
Cultural or social stigma	17.8 %
Illiteracy	8.9 %
Lack of advertisements	4.4 %
Do not know	8.9 %

Table 4 shows the barriers or reasons for the pre-survey participants' lack of knowledge regarding PCOS. The data shows a number of factors that inhibit awareness and understanding of the condition. 35.6 percent of participants attributed their lack of knowledge to the absence of information, making it the most important barrier that respondents mentioned. This indicates that a large number of people are unaware of PCOS simply due to a lack of adequate or easily available information. Inappropriate knowledge was mentioned by 24.4 percent of respondents as the second most common reason. This would suggest that some people have some information on PCOS, but that this may be incomplete, inaccurate, or misunderstood. This barrier makes the need for more accurate knowledge and correct understanding about PCOS. A sizable percentage (17.8%) of respondents reported that societal or cultural stigma was a knowledge barrier. This implies that the cultural and societal norms and misbeliefs in society regarding women's health, mainly PCOS. Illiteracy is another barrier, as stated by 8.9 percent of respondents. This factor suggests that certain people could not have or understand PCOS education materials. A small proportion of respondents (4.4%) reported lack of advertisements as the reason for lack of understanding about PCOS. This might suggest that the awareness of PCOS is not being effectively promoted through media or advertising efforts. Finally, 8.9

percent of participants said they did not know the particular barriers to their unfamiliarity with PCOS. This could be due to a generalized unawareness or lack of understanding of the factors of their knowledge on the topic. In conclusion, the most important barriers to PCOS knowledge are lack of information and incorrect knowledge combined, representing close to 60 percent of the answers.

The graphical representation of the above tabular information is given below.

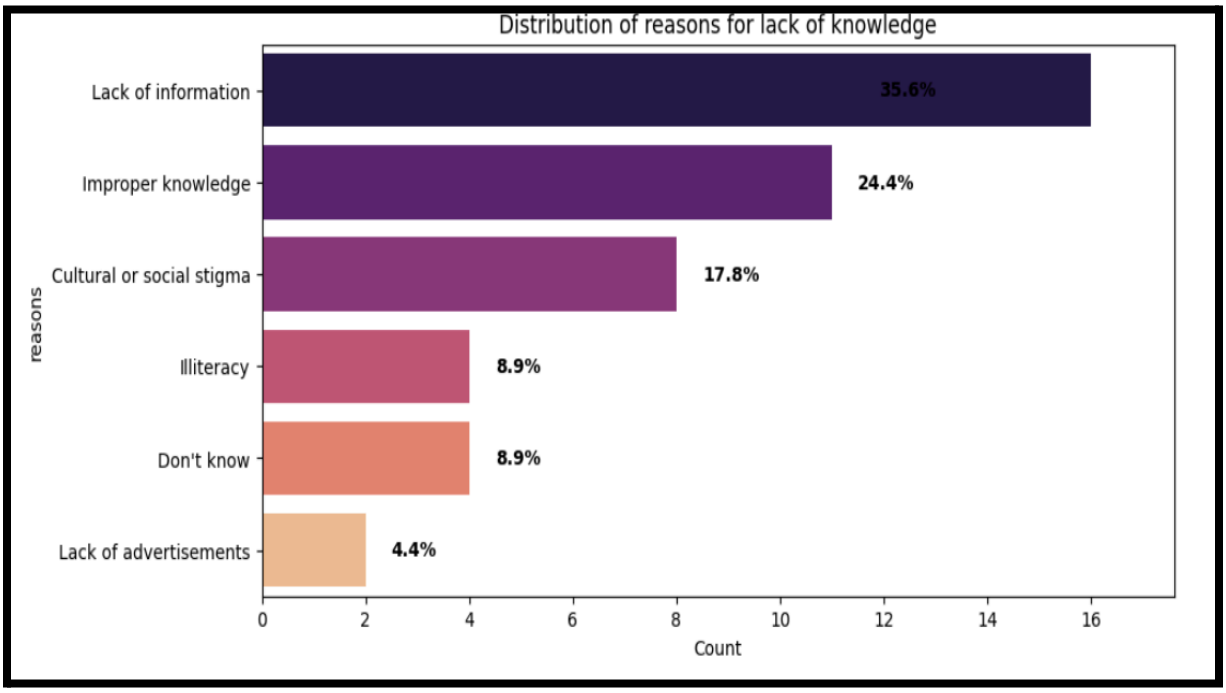


Figure 4: Reasons for the lack of awareness about PCOS.

4.4 Menstrual cycle pattern.

4.4.1 Based on regularity of menses.

Based on the responses collected, the regularity of the menses of the female sample population is categorized and is presented in table 5.

Table 5: Regularity of menses

REGULARITY OF MENSES	(N=138)	PERCENTAGE %
Regular periods	96	70.1%
Irregular periods	39	28.5%
Absent periods	3	2.2%

From the above Table 5, it was clear that the prevalence of menstrual regularity in the female study participants. Majority, 70.1 percent reported regular menstrual periods, which means that a vast majority of the respondents have no substantial interference with their menstrual health. But 28.5 percent reported irregular periods, which may be a sign of PCOS or other health issues related to reproductive health. In addition, 2.2 percent (3 participants) reported that there is absence of a menstrual cycle, which may be a sign of more serious issues with reproductive health.

The above data in the table is graphically represented in the figure below.

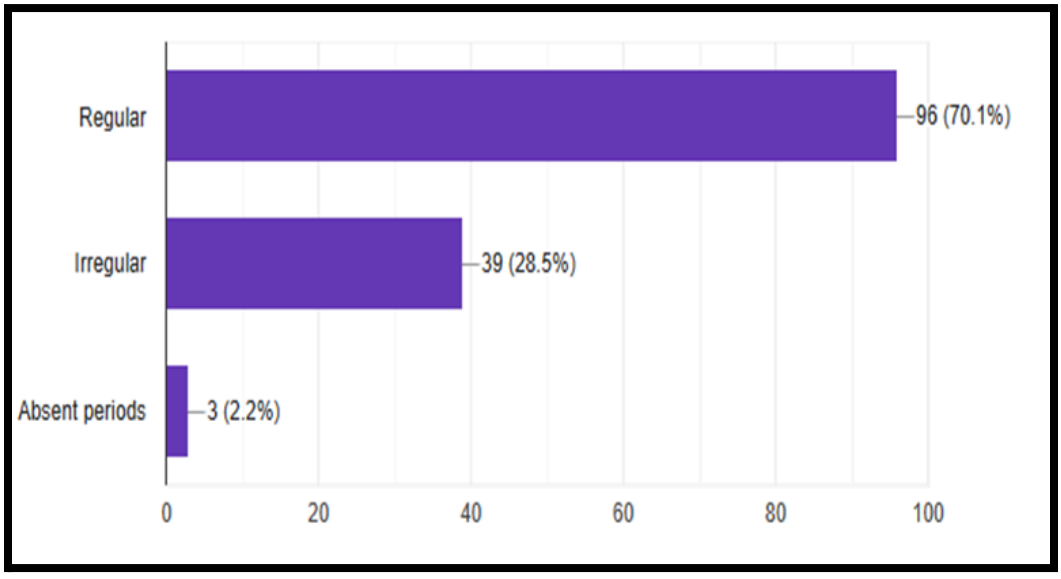


Figure 5: Regularity of menses among respondents.

4.4.2 Based on irregularity in menses.

From the above data of categorization based on regularity of menses, the respondents with irregular groups were taken into account and were categorized further to analyze its severity. The below given Table 6 represents the percentage of respondents having different irregularity levels of menses.

Table 6: Irregularity of menses

CATEGORIZATION OF IRREGULARITY OF MENSES	RESPONSES (N=138)
Occasionally	42.7%
Frequently	13.5%
Almost always	24.7%
Not sure	19.1%

Table 6 explained the categorization of respondents based on the irregularity of their menstrual cycles. The majority 42.7 percent reported that they have irregular periods occasionally, which shows that irregularity exists, it may not be severe or persistent for many respondents. 13.5 percent of respondents experience frequent irregularities. Almost 24.7 percent of the responders reported having frequent menstrual irregularity, which might suggest conditions such as PCOS. The remaining 19.1 percent of respondents did not know their menstrual regularity. This indicates that ignorance of menstrual health represents the demand for improved education.

The graphical representation of the above data is given below.

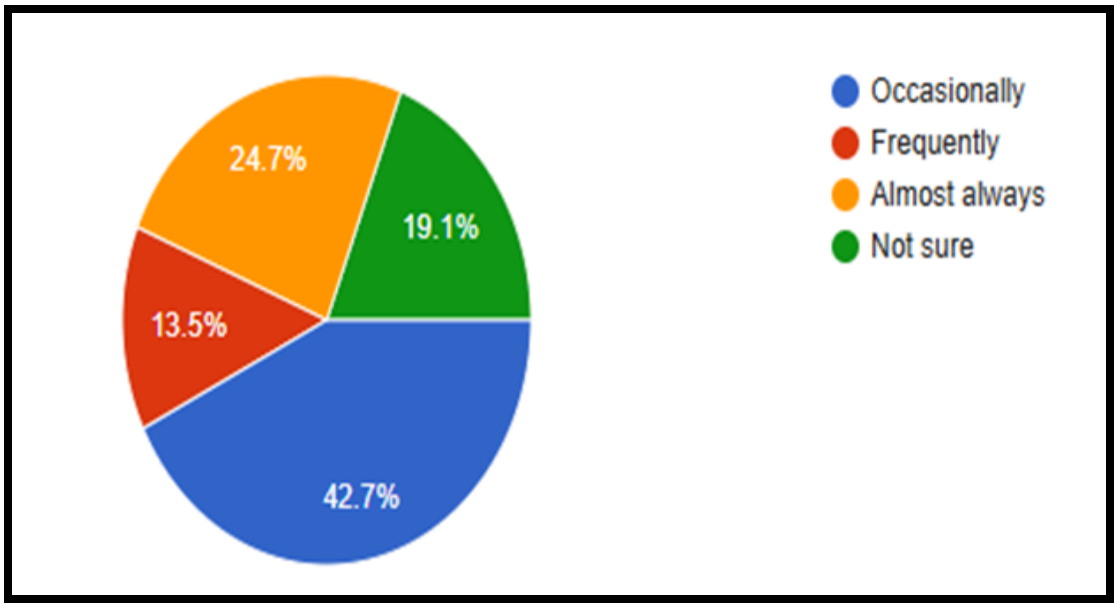


Figure 6: Irregularity level of menses.

4.4.3 Categorization based on time gap between the menstrual cycles of the respondents.

The time gap between each menstrual cycle of the respondents has been categorized and represented in Table 7.

Table 7: Categorization based on time gap between menstrual cycle

TIME PERIOD BETWEEN MENSTRUAL CYCLE	RESPONSES (N=138)
Exactly every 28 days	**34.3%**
Every 21-25 days	**38.7%**
Every 36-60 days	**14.6%**
Less than every 60 days	**2.9%**
More than every 21 days	**0.7%**
Not sure	**8.8%**

The information in Table 7 groups respondents according to the time gap between menstrual cycles. The result showed that 34.3 percent of the respondents have their menstrual cycle precisely every 28 days. 38.7 percent of the respondents reported a cycle of 21-25 days, indicating a shorter but nonetheless typically regular cycle. But 14.6 percent of the respondents

have cycles between 36-60 days, which indicate menstrual abnormalities. 0.7 percent reported having periods more than 21 days. And the remaining 8.8 percent were not sure about their menstrual cycle, indicating a lack of tracking or awareness among some of them. These results show the need for greater education about menstrual health because irregular periods may be associated with PCOS.

The above information has been visually represented below.

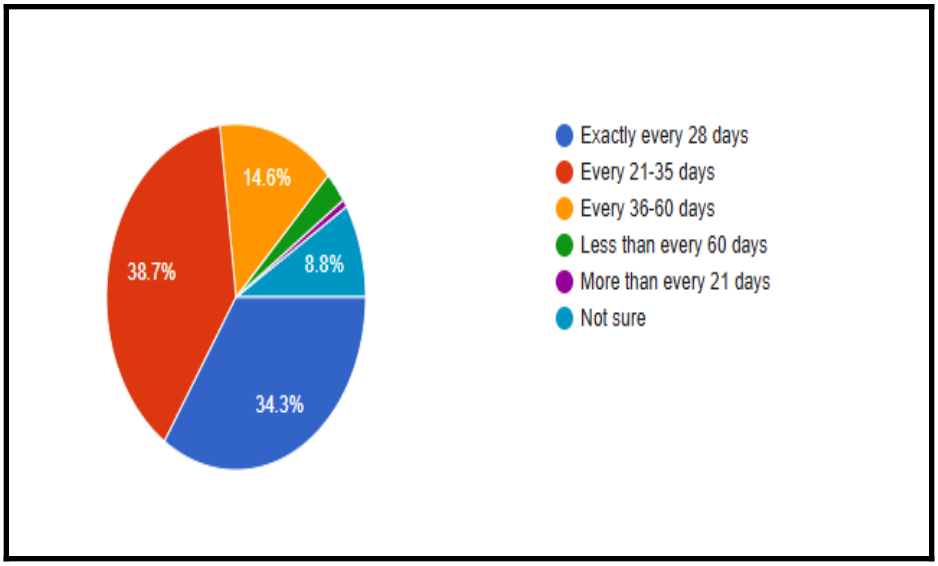


Figure 7: Time gap between menstrual cycles

4.4.4 Categorization of menstrual cycle length (in days)

The number of days that each respondent menstruates were taken into account and categorized as given in the table below.

Table 8: Categorization of menstrual cycle length (in days)

MENSTRUAL CYCLE LENGTH	RESPONSES (N=138)
2-3 days	19%
4-5 days	51.8%
6-7 days	25.5%
More than 7 days	3.7 %

The data presented in Table 8 categorizes respondents based on the length of their menstrual cycle. A relatively small percentage (19%) of respondents report having a menstrual cycle lasting 2-3 days while a large percentage (51.8%) reported menstrual cycles lasting 4-5 days, suggesting common cycle length. A significant portion (25.5%) of respondents has menstrual cycles lasting 6-7 days. A very small percentage (3.7%) of respondents report having a menstrual cycle lasting more than 7 days. The majority of the respondents have menstrual cycles within the average range.

The above data has been visually represented in the figure below.

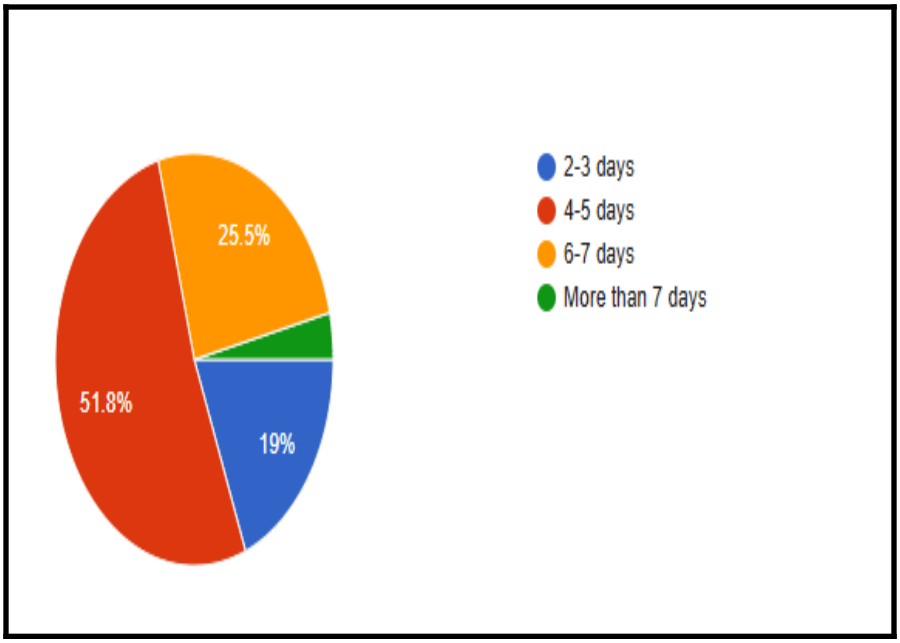


Figure 8: Menstrual cycle length (in days)

4.5 Correlation between awareness about PCOS and the educational level of sample population in pre- and post- survey.

The awareness level of the respondents based on their educational level was analyzed. The educational level of the sample population selected was categorized into Undergraduate and Postgraduate levels. The table below shows the percentage of respondents aware and unaware about PCOS in UG and PG level in both pre and post surveys.

Table 9: Percentage of respondents aware and unaware about PCOS based on educational level in the pre and post survey

AWARENESS LEVEL	EDUCATIONAL LEVEL			
	Pre-survey		Post-survey	
	UG	PG	UG	PG
Aware	13.3 %	33.3 %	96.7 %	93.3 %
Unaware	86.7 %	66.7 %	3.3 %	6.7 %

Table 9 presents the results of the awareness levels about PCOS among respondents based on their educational level. The data indicated a significant change in awareness levels between the pre-survey and post-survey, both among UG and PG students. Before the survey, just 13.3 percent of undergraduate students were aware of PCOS, while a significant 86.7 percent were unaware. This indicated a low baseline level of awareness about PCOS among undergraduate students. While comparing PG students their awareness was relatively higher, with 33.3 percent known about PCOS, while remaining 66.6 percent unaware.

After the survey, 96.7 percent UG were aware about PCOS, while only 3.4 percent were not. This indicates a significant rise in awareness. This noticeable change indicates that the awareness program had a very successful effect on UG students. Similarly, 93.3 percent PG were aware about PCOS, while only 6.7 percent were not. This indicates that PG students also showed an impressive increase in awareness.

The results show that both UG and PG students' awareness of PCOS significantly increased following the survey, which implies the effectiveness of the educational intervention. The most significant gain is evident among UG, as awareness increased by 83.4 percent from 13.3 percent to 96.7 percent. For PG students, awareness increased by 60 percent from 33.3 percent to 93.9 percent. These findings indicate that both groups benefited greatly from awareness campaigns or educational intervention.

The graphical representation of the above table is given below.

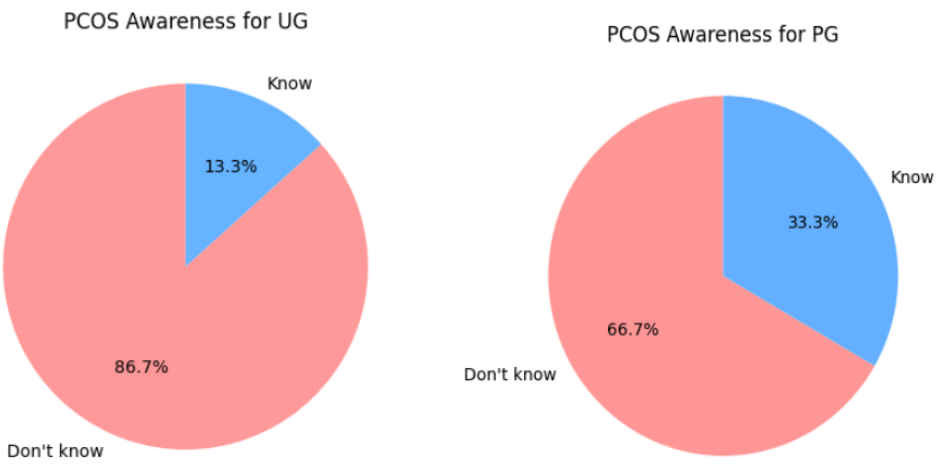


Figure 9: Percentage of respondents aware and unaware about PCOS based on educational level in the pre- survey.

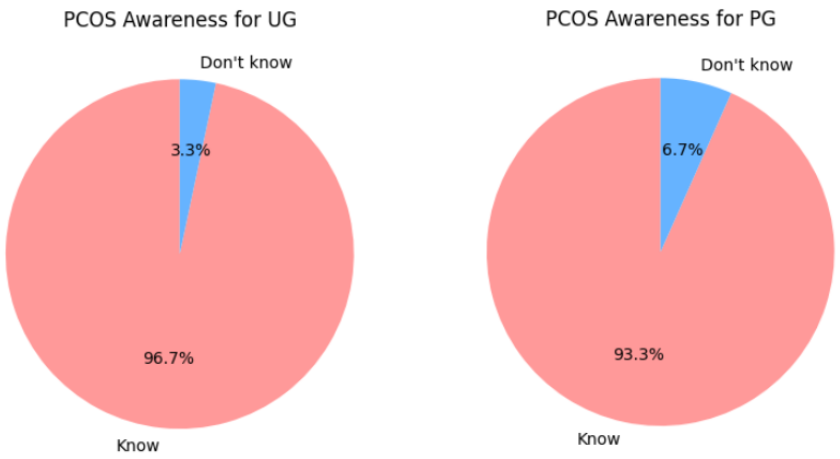


Figure 10: Percentage of respondents aware and unaware about PCOS based on educational level in the post survey.

4.6 To compare the awareness level on aspects like causes, symptoms and prevention of PCOS before and after the awareness class session.

To compare the awareness level on aspects like causes, symptoms and prevention of pcos before and after the awareness class sessions, McNemar's Test was carried out in SPSS.

4.6.1 Difference in awareness level about causes of PCOS before and after the survey

The causes of PCOS were categorized into environmental factors, obesity or overweight hormonal imbalance and do not know.

The tabular representation of percentage of respondents who chose different causes for PCOS in the pre- and post-survey is represented below.

Table 10: Causes for PCOS in pre- and post-survey

CAUSES	RESPONSES (N=45)	
	Pre- survey	**Post- survey**
Environmental factors	17.8 %	6.7 %
Obesity or Overweight	8.9 %	26.7 %
Genetics	0 %	17.8 %
Hormonal Imbalance	2.2 %	46.7 %
Do not Know about causes	71.1 %	2.2 %

The Table 10 indicated the percentage of respondents who correctly identified the causes of PCOS both before and after an awareness program is shown in the table. The results clearly show that there is a significant shift from unaware to aware. From the pre-survey a small proportion of respondents (17.8%) thought that environmental factors contribute to PCOS. This implies some of them have an understanding of environmental factors, but the response was still relatively low. A smaller proportion of respondents (8.9%) linked PCOS to obesity or being overweight. This may indicate that respondents were aware of certain lifestyle factors. There is no response of the factor genetics, which indicates a lack of awareness or understanding about the hereditary nature of the condition. Only a very small percentage (2.2%) reported hormonal imbalance as a cause of PCOS. A significant majority (71.1%) had no idea about the causes of PCOS. This highlights a lack of awareness about the condition.

After the post-survey, the percentage of respondents who thought environmental factors to PCOS dropped to 6.7 percent. The number of respondents who identified obesity or

overweight, genetics, and hormonal imbalance as a cause of PCOS grew to 26.7 percent, 17.8 percent, and 46.7 percent. This indicates that the educational intervention was effective in raising awareness regarding the main causes of PCOS. The greatest change was in the acknowledgement of hormonal imbalance as an important factor for PCOS. Compared to the previous survey, the percentage of respondents who do not know about the causes of PCOS fell sharply to just 2.2 percent. This suggests that survey was very effective in educating respondents about PCOS. The findings clearly indicate that educational intervention can significantly affect awareness of the causes of PCOS.

From the above table it is evident that the most compelling finding is the significant reduction from 71.1 percent of respondents are unaware about the causes of PCOS in pre- survey and it shifted to 2.2 percent in post survey. The graphical representation of the above data is given in the figures below.

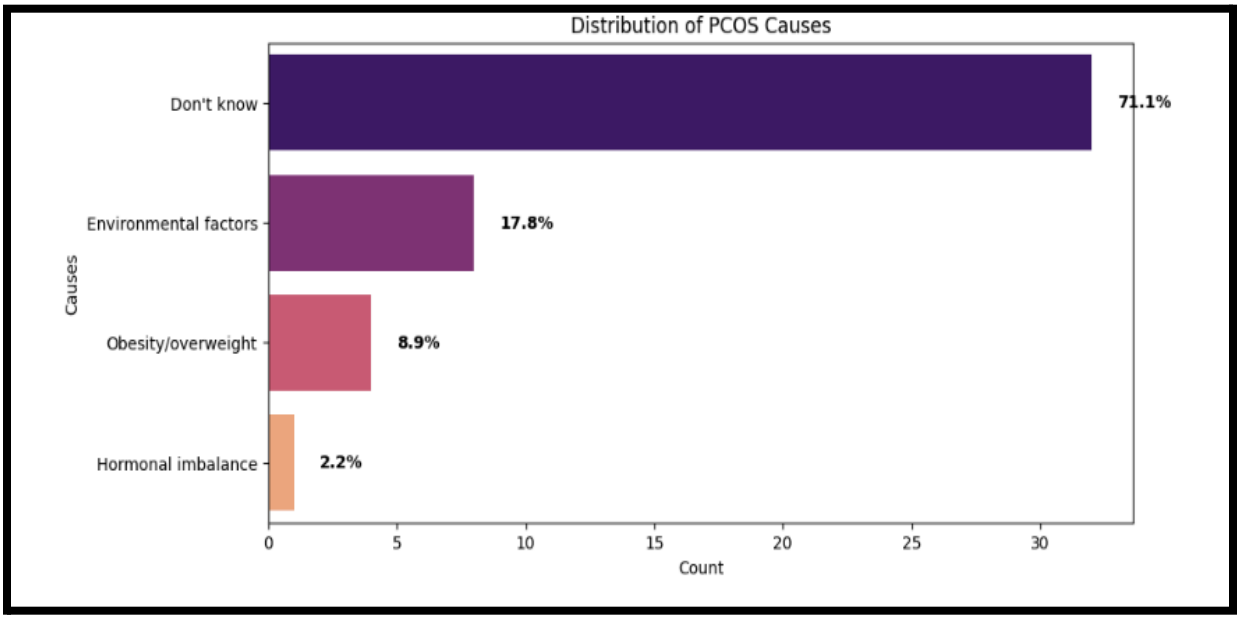


Figure 11: Causes for PCOS in pre-survey.

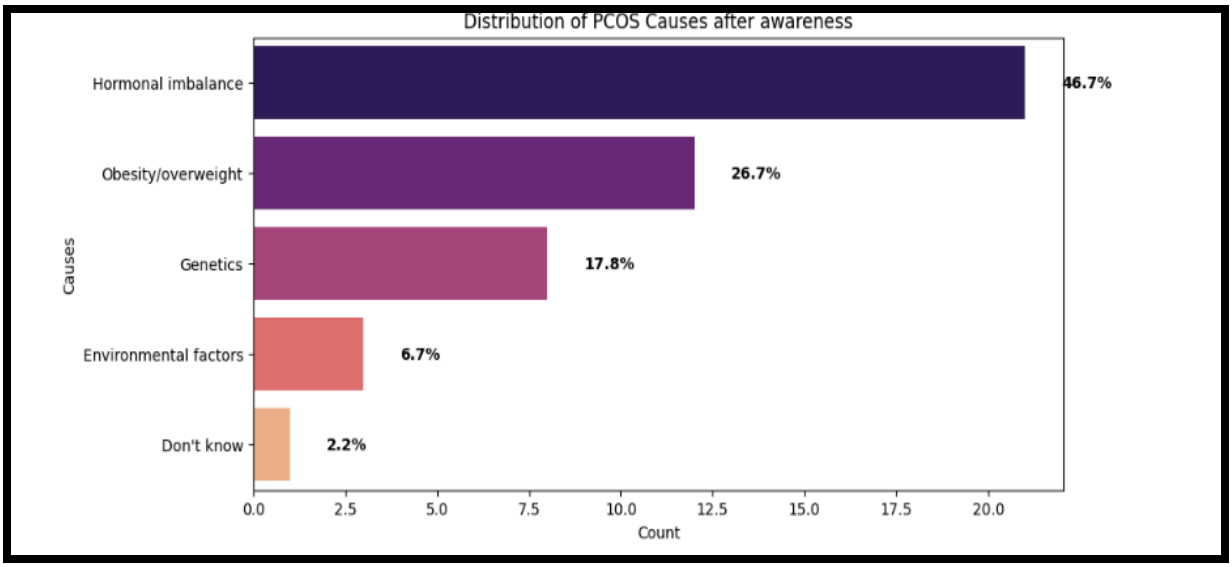


Figure 12: Causes for PCOS in post-survey

4.6.2 Difference in awareness level about symptoms of PCOS before and after the survey

The symptoms of PCOS were categorized into mood swings, acne, hair loss, irregular menses, weight gain, hirutinism, hyperpigmentation and do not know.

The tabular representation of percentage of respondents who chose different symptoms for pcos in the pre- and post-survey is represented below.

Table 11: Symptoms for PCOS in pre and post survey

SYMPTOMS	RESPONSES (N=45)	
	Pre- survey	Post- survey
Mood Swings	8.9 %	11.1 %
Acne	4.4 %	0 %
Hair Loss	4.4 %	8.9 %
Irregular Menses	4.4 %	33.4 %
Weight gain	2.2 %	11.1 %
Hirutinism	2.2 %	20 %
Hyperpigmentation	2.2 %	13. 3 %
Do not Know about symptoms	71.1 %	2.2 %

The percentage of respondents who chose different PCOS symptoms both before and after an awareness program is shown in Table 11. The findings show a noticeable improvement in the post-survey. Before the survey, only a relatively small percentage of respondents (8.9%) recognized mood swings as a symptom of PCOS. This indicated reduced awareness of the psychological effects of PCOS. 4.4 percent of respondents thought that acne, hair loss, and irregular menses were a sign of PCOS. This clearly shows the lack of knowledge about them. Weight gain, hirutinism, and hyperpigmentation were recognized by 2.2 percent of participants, indicating moderate familiarity with these symptoms. This might be less familiar than some other symptoms. A high proportion (71.1%) of respondents reported that they were not aware of the symptoms of PCOS. This reflects the general lack of knowledge regarding PCOS among the respondents before the survey.

After the post-survey, a small rise was observed in the identification of mood swings as a PCOS symptom, to 11.1 percent. None of the respondents chose acne as a symptom after the survey. This might be because respondents might have moved their knowledge towards more important symptoms, such as irregular menses or weight gain. A relatively small percentage (8.9%) was increased in the post-survey of the symptom of hair loss. With 33.4 percent of respondents recognizing irregular menses as a symptom, this indicates a greater understanding of the menstrual cycle and its connection to PCOS. A relatively greater change in the symptoms like weight gain, hirutinism, and hyperpigmentation as 11.1 percent, 20 percent, and 13.3 percent. This indicates that the knowledge of the respondent has been greatly affected.

From the table one of the most evident findings is the reduction in the percentage who were unaware of the symptoms, which dropped from 71.1 percent before the survey to 2.2 percent afterwards.

The graphical representation of the above table is given below.

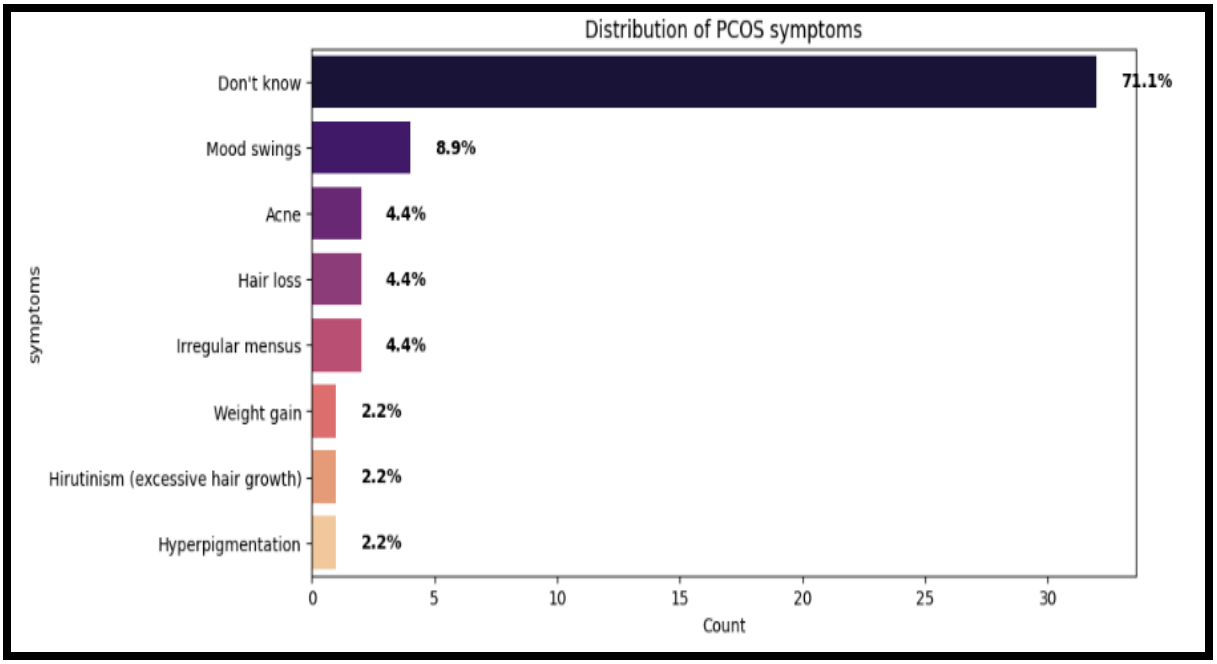


Figure 13: Symptoms for PCOS in pre-survey.

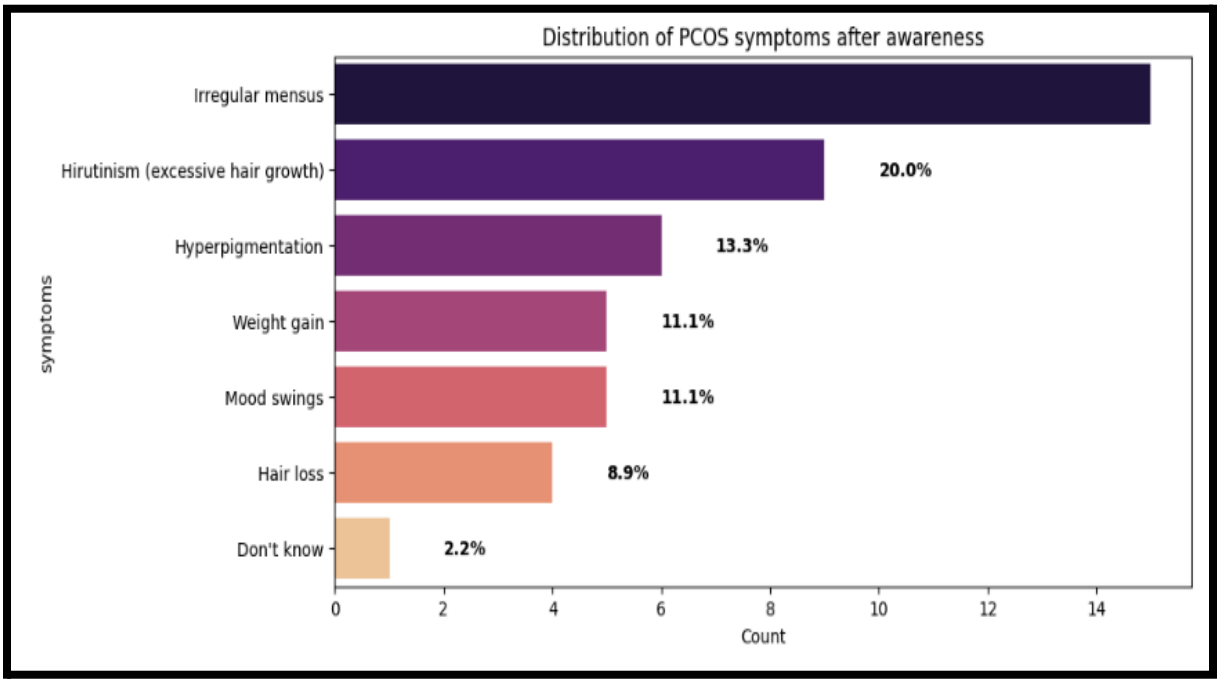


Figure 14: Symptoms for PCOS in post-survey

4.6.3 Difference in awareness level about complications of PCOS before and after the survey.

The complications of pcos were categorized into diabetes, cardiovascular disease, infertility and pregnancy complications, abortion, cancer and do not know.

The tabular representation of the percentage of respondents who chose different complications for PCOS in the pre- survey is represented below.

Table 12: Complications for PCOS in pre and post survey

COMPLICATIONS	RESPONSES (N=45)	
	Pre-survey	**Post-survey**
Diabetes	2.2%	11.1%
Cardiovascular disease	0%	20.0%
Infertility and pregnancy complications	11.1%	44.4%
Abortion	8.9%	11.1%
Cancer	4.4%	11.1%
Don't know	73.3%	2.2%

The Table12 shows the participants' responses on the complications of PCOS before and after an educational program. The results showed that the respondents' awareness of the complications associated with PCOS increased significantly following the survey, highlighting the effectiveness of the intervention.

Before the survey, only 2.2 percent of the respondents had mentioned diabetes as complications of PCOS. None of the respondents noted cardiovascular disease as a PCOS complication in the pre-survey. Both showed that there was a lack of awareness of the link between PCOS and the risks. 11.1 percent of respondents identified infertility and pregnancy complications as a possible side effect of PCOS. Given that PCOS is a prominent cause of infertility, it appears

that many respondents were unaware of its effects on reproductive health. A small number of responders (8.9%) linked abortion to PCOS. This suggests that few respondents were unaware of the higher risk of miscarriage. 4.4 percent respondents mentioned cancer as a possible PCOS consequence. Most of the respondents (73.3%) didn't know the complications of PCOS, which indicates a large knowledge gap regarding this condition and its long term effects.

After the survey, the number of participants who indicated that diabetes is a complication of PCOS rose to 11.1 percent. 20 percent respondents identified cardiovascular disease as a possible problem, indicating a considerable increase in the acknowledgement of cardiovascular disease as a complication. 44.4 percent of respondents recognized infertility and pregnancy difficulties as a complication of PCOS, making the most remarkable change in this regard. There is a slight increase in the percentage of (11.1%) the respondents who identified abortion as a complication of PCOS. Increase in the percentage of (11.1%) respondents who chose cancer as a complication of PCOS. There was a significant improvement in reducing the percentage of people unaware of PCOS complications, dropping from 73.3 percent before the survey to just 2.2 percent afterward. This makes a great increase in overall awareness of PCOS and its associated risks.

According to the research, a sample of Hispanic women in their reproductive years may not know enough about PCOS and its long-term effects. Most significantly their findings demonstrated that even individuals who have been diagnosed with PCOS are unaware of their condition or the issues that come with it. Their research highlights the necessity of creating educational resources and tactics to increase public awareness of the illness, its avoidable consequences, and the value of prompt treatment.

The graphical representation of the above table is given below.

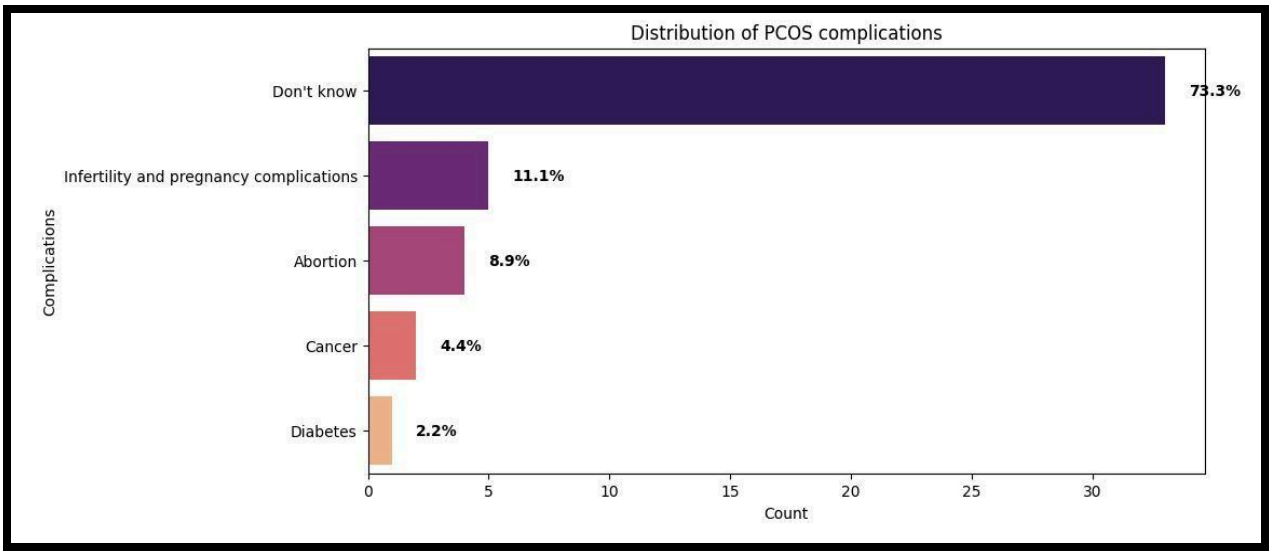


Figure 15: Complications for PCOS in pre-survey.

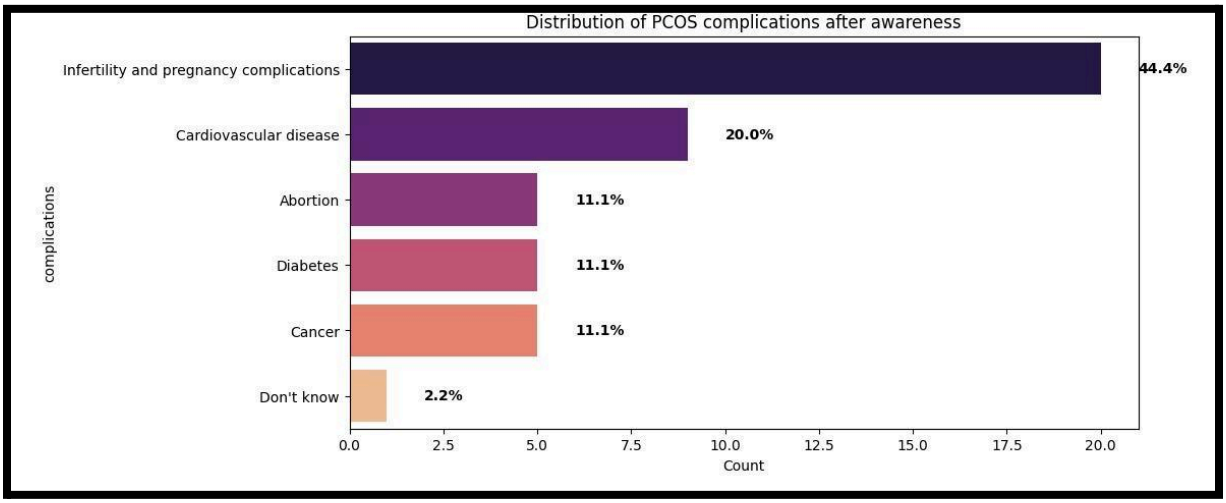


Figure 16: Complications for PCOS in post-survey.

4.6.4 Difference in awareness level about prevention of PCOS before and after the survey.

The prevention aspect of PCOS was categorized into weight management, medical consultation, healthy diet, physical activity, reduction of stress and, does not know.

The tabular representation of percentage of respondents who chose different prevention tips for PCOS in the pre- and post-survey is represented below.

Table 13: Prevention tips for PCOS in pre and post survey.

PREVENTION TIPS	RESPONSES (N-45)	
	Pre- survey	Post- survey
Weight Management	8.9 %	24.5 %
Medical Consultation	4.4 %	22.2 %
Healthy Diet	4.4 %	20 %
Physical activity.	4.4 %	20 %
Reduction of stress.	2.2 %	11.1 %
Do not know.	75.6 %	2.2 %

According to the pre- and post-survey data, respondents' knowledge of several PCOS prevention strategies has significantly increased. Table 13 shows that participants gained a better understanding of lifestyle modifications and medication strategies that can help control or avoid PCOS symptoms as a result of the educational intervention.

Before the survey, 8.9 percent of respondents considered weight management as a significant prevention tip for PCOS. This implies most people were not fully educated on the major role that having a healthy weight can play in controlling PCOS. 4.4 percent responses for medical consultation, healthy diet, and physical diet which indicates low awareness in treatment and management of PCOS. Reduction of stress was identified by 9.2 percent of participants, reflecting a certain level of awareness of the role that stress can play in contributing to PCOS symptoms. A large number (75.6%) of respondents did not know the prevention tips for PCOS. This reflects a huge knowledge gap regarding lifestyle modification and medical treatments that can treat or prevent the condition.

After the survey, the percentage of respondents who indicated weight management as a significant prevention tip rose to 24.4 percent. Medical consultation increased remarkably, with 22.2 percent of respondents acknowledging its significance after the survey. Knowledge about the significance of a healthy diet as a preventive tip also increased to 20 percent, showing that the educational intervention made participants aware of the importance in the management of

PCOS. Physical activity was identified by 20 percent of respondents after the survey, indicating a higher awareness of how exercise can be used to control weight. Stress

reduction awareness increased by 11.1 percent. The most important change was the significant decrease in the number of respondents, who did not know about PCOS prevention tips from 75.6 percent to 2.2 percent. According to the study results, respondents' comprehension of PCOS preventive strategies has improved significantly. The decrease in the number of respondents who were uninformed of preventive tips-from 75.6 percent to 2.2 percent-indicates that the survey was extremely helpful in raising awareness and giving useful information about PCOS management.

The graphical representations of the above table are shown below.

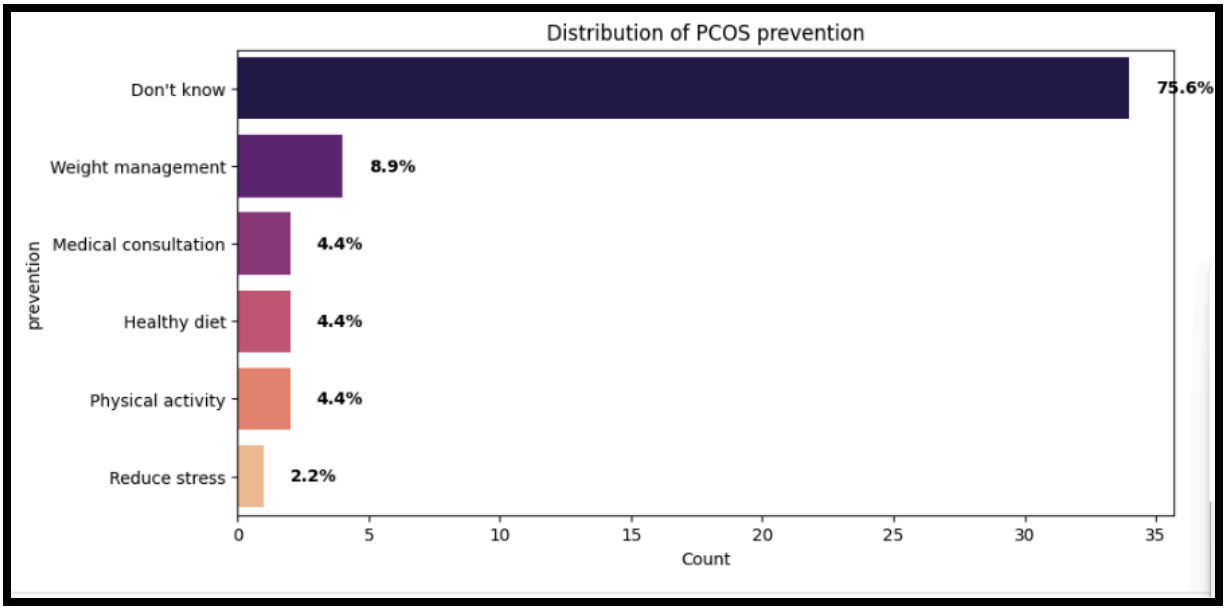


Figure 17: Prevention tips for PCOS in pre-survey.

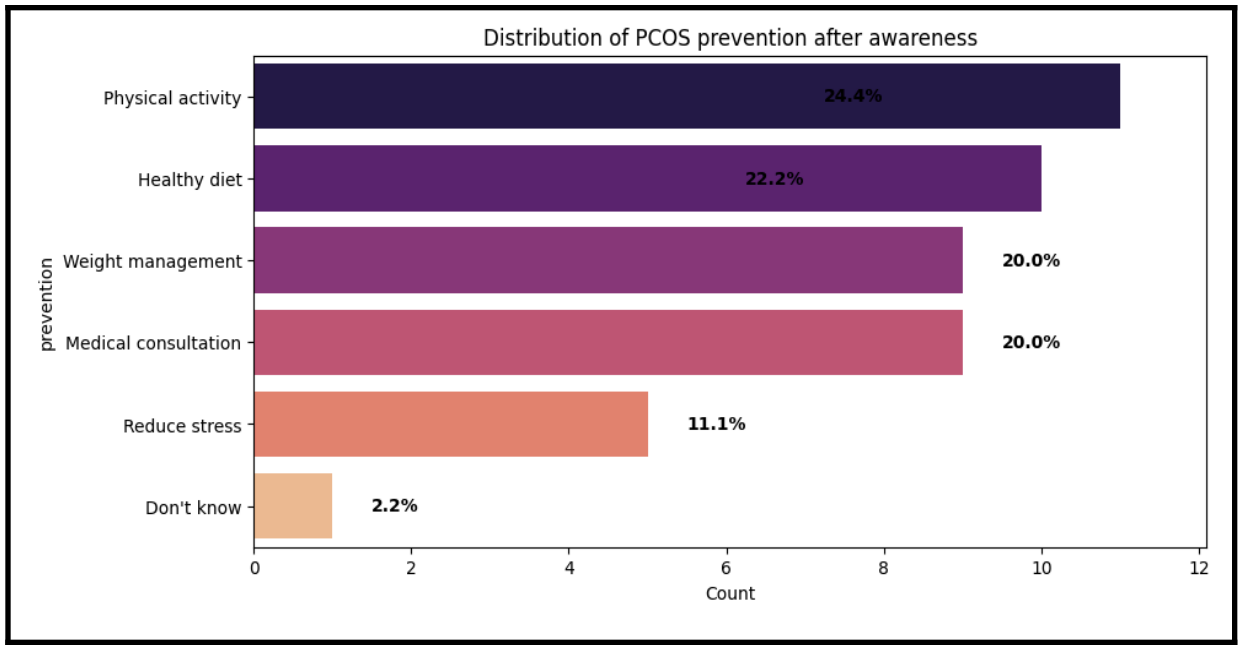


Figure 18: Prevention tips for PCOS in post-survey.

The above comparison of aspects related to causes, symptoms and prevention is well supported with the level of significance and is shown in the table given below. In the table 0 represents unawareness and 1 represents awareness.

Table 14: Representation of the effectiveness of awareness sessions

CATEGORY	0 → 1	p- value	Interpretation
Causes	31	0.00000	Significant increase in awareness
Symptoms	31	0.00000	Significant increase in awareness
Complications	32	0.00000	Significant increase in awareness
Prevention tips	33	0.00000	Significant increase in awareness

Table 14 illustrates the effectiveness of the awareness sessions on different aspects of PCOS, such as its causes, symptoms, complications, and prevention tips. The data indicates a significant change in awareness on all the categories, where the respondents moved from unawareness (0) to awareness (1) after the survey. Particularly, there was a remarkable rise in the knowledge of the causes, symptoms, complications, and prevention tips related to PCOS

with a p-value of 0.00000 in all categories, which implies that the awareness program had a statistically significant effect. Initially, most of the participants were not aware of these components of PCOS, but after the sessions, there was a significant increased awareness, as evident in decreased unawareness from 31-33 participants.

In the cause category, 31 participants were aware of the causes of PCOS after the session; this change is an improvement of a high level regarding the causes of PCOS, mainly hormonal imbalance.

In the category of symptoms, 31 respondents at the beginning didn't know what the symptoms of PCOS are. After the session of awareness, 31 were aware of such symptoms, representing a high rate of increase in knowledge.

In the category of complications, 32 respondents became aware of these complications after the awareness session, indicating a significant improvement in understanding the long-term consequences of the condition.

In the prevention category, 33 respondents were not aware of these methods of managing and preventing PCOS. Following the awareness session, those respondents learned about the preventive measures.

In total, the major change of unawareness (denoted by '0') to awareness (denoted by '1') across all categories, supported by the p value 0.00000, indicates the effectiveness of the educational intervention to empower people to take proactive measures in dealing with PCOS. Studies suggested that the majority of the women do not know about anything PCOS, including causes, symptoms and problems. By analyzing the proportion of participants who were aware of the majority of the causes, symptoms, and complications of PCOS, it was determined that only a small fraction of participants had good awareness of the condition (Satish et al., 2021).

REPORT ON THE EDUCATIONAL AWARENESS CLASS ON PCOS

Polycystic Ovarian Syndrome (PCOS) is a common endocrine disorder in women, particularly in their reproductive years. PCOS has been on the rise globally, and it is essential to create awareness, particularly among young adults, to ensure early diagnosis and correct management.

This report is a comprehensive awareness session on PCOS in a sample population of 45 students who were between the age group of 18-30 years. The primary objective was to make the students aware of the lack of information and knowledge regarding PCOS, its etiology, clinical presentation, and management. The session consisted of a comprehensive lecture, and a distribution of leaflets for better comprehension. Prior to the survey, a pre-survey was organized among 45 students in order to test their base knowledge about PCOS. The survey indicated a marked lack of awareness.

The session began with the explanation of what PCOS is, its characteristics, and how it affects the hormonal balance in women. The students learned that PCOS leads to an imbalance of the reproductive hormones. One of the points of discussion was the difference between PCOS (Polycystic Ovarian Syndrome) and PCOD (Polycystic Ovary Disease). The students were taught about the common signs of PCOS, which include irregular menses, acne, hirutinism, and weight gain. The etiology of PCOS was also taught, including genetic factors, insulin resistance and inflammation. Reading about the causation helped the students to realize how intricate PCOS was and why it affected each individual in a different manner.

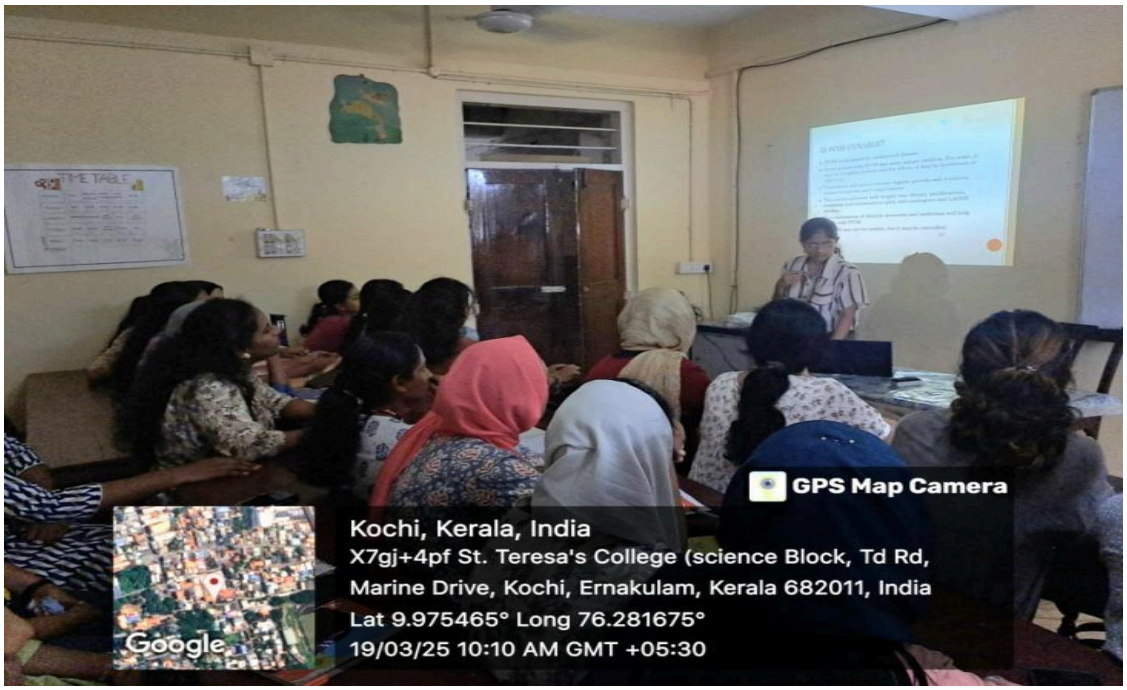
One of the most important parts of the session was creating awareness regarding possible long-term PCOS complications. Different management strategies were discussed, including both lifestyle and medical interventions. Medical interventions involving the prescription of birth control pills to control menstrual cycles and other interventions such as sensitizing medications were also discussed for women with insulin resistance. Lifestyle changes such as regular exercise, a healthy diet, and weight control were also highlighted as important measures in the control of PCOS. One of the frequent questions that came up was whether it is

possible to have PCOS yet show no apparent symptoms. And yes, it is possible-some women have polycystic ovaries but never have symptoms of irregular periods or weight gain.

A particular section was given to the students, which included diet in the treatment of PCOS. There is a need to pay special attention to a low glycemic index diet that is high in fiber, lean proteins, and healthy fats. Students were instructed to restrict processed foods, refined carbs, and have more vegetables, whole grains, and legumes. In order to enhance learning further, informative leaflets were distributed towards the end of the session. The leaflet includes information about PCOS, such as its symptoms, causes, complications, management, and dietary advice, as well as some myths and beliefs concerning PCOS.

The PCOS awareness class was extremely useful in increasing the knowledge of this common condition among young adults. By dispelling myths and presenting correct, evidence-based facts, the session empowered students to become health-conscious and make informed choices. Distribution of information leaflets meant that the students would have a resource to fall back on in the future, and this helped to reinforce the most important points raised during the session. As PCOS incidence continues to increase and long-term consequences can develop over years, these awareness programs play a vital role in ensuring early diagnosis, improved management, and quality of life for affected women.

PICTURES FROM THE AWARENESS CLASS REPORT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CHAPTER 5

SUMMARY AND CONCLUSION

SUMMARY

The study entitled "**Polycystic Ovarian Syndrome: Prevalence, Predisposing factors and Awareness among young adults in the age group 18-30 years**". PCOS is a frequent hormonal disorder that impacts a considerable percentage of women, habitually resulting long-term complications if not addressed. The study employs a multi-phase survey design, consisting of an initial survey to measure baseline knowledge, and pre- and post-surveys following an awareness intervention. The aim was to determine the level of existing awareness regarding PCOS, determine predisposing factors, symptoms, complications, prevention tips and measure the effect of an educational intervention on enhancing the knowledge of participants. For this study, a sample size of 138 was selected, and 45 participants for each pre- and post-survey from Ernakulam district through convenient sampling.

A self-structured questionnaire was used to assess the awareness about PCOS among young adults. For the pre-survey, to assess the awareness about PCOS, 45 of the young adults in the age group were interpreted to have a low awareness regarding PCOS. Then an awareness class was conducted along with the distribution of leaflets. The leaflet includes what is PCOS, its symptoms, causes, PCOS control tips, diagnosis and treatment, and separation of facts from fiction. After that post-survey was conducted, the results indicated it was effective. Through various statistical analyses, including correlation test, McNemar's test, and percentage analysis, it was found that there is a correlation between the awareness and the educational level of the sample population, and a huge difference between pre- and post-surveys regarding the knowledge about the condition. Also, McNemar's proved the significant increase in awareness about PCOS's causes, symptoms, complications, and prevention tips.

Key findings of the study

The findings of the study can be summarized as follows:

- **General information of the respondents**

The general information was collected and analyzed and it was found that all of the respondents were female (100%) in the age group 18-30 years.

- There were a total of 138 respondents in the initial survey for the assessment of knowledge of PCOS, and checklist of menstrual status.
- For the pre- and post-survey, 45 respondents were taken.

- **Classification of respondents based on the awareness level about PCOS**

- From the 138 responses, majorities (65.9%) had heard about PCOS and the rest (34.1%) were unaware about it. Hence, the finding shows over one-third of participants were least aware of PCOS. Based on the least awareness (34.1%), participants were selected for further pre- and post-survey.
- Majority of the respondents were unsure or lacked appropriate information about the seriousness of PCOS, unaware that PCOS symptoms differ from person to person, and individuals with PCOS may not exhibit any noticeable symptoms.
- Nearly half of the respondents have a lack of awareness regarding physical, mental well-being of persons with PCOS.
- The responses also noted limited knowledge regarding support systems and how cultural beliefs affect knowledge of PCOS.

- **Examined what are the reasons responsible for lack of knowledge about PCOS in the pre-survey participants**

- Based on the pre-survey participants' responses, their lack of knowledge regarding PCOS stems from several barriers, including a lack of information, improper knowledge, cultural or social stigma, illiteracy, lack of advertisements, and unawareness about these barriers. This may be as a result of generalized ignorance or lack of awareness of the causes of their knowledge on the issue. Finally, the most critical barriers to knowledge of PCOS are lack of information and incorrect knowledge together, accounting for nearly 60 percent of the responses

- **Categorization of menstrual cycle based on regularity, irregularity, and time period of menstrual cycles**

- With the help of percentage analysis, it was discovered that, the majority of 96 participants (70.1%) reported having regular menstrual periods, while 39 participants (28.5%) reported irregular periods, which could indicate conditions like PCOS or other reproductive health concerns.
- According to the irregularity, the majority (42.7%) reported having irregular periods occasionally while (24.7%) of respondents reported menstruation irregularities practically always, which could indicate a more chronic illness. Meanwhile, 19.1 percent of respondents were unsure about the frequency of their periods. These findings show that individuals have varied levels of menstrual irregularity, with a considerable proportion suffering frequent or non-constant irregularities.
- According to the length of the menstrual cycles, the majority of the respondents (51.8%) reported a menstrual cycle length of 4-5 days, while just (3.7 %) reporting a menstrual cycle length of more than 7 days, and some have reported their menstrual cycles are 6-7 days and 2-3 days. These data show the variance in the menstrual cycle lengths across respondents.

- **Determining the correlation between awareness and the educational level of the sample population in the pre- and post-survey**

- With correlation analysis, it was found that both UG and PG students' awareness of PCOS increased significantly after the educational intervention. An awareness increased by 83.4 percent from 13.3 percent to 96.7 percent in UG students, and for PG students, an awareness increased by 60 percent from 33.3 percent to 93.9 percent. These findings demonstrated that both groups benefited greatly from awareness campaigns or educational intervention.

- **Examined about the awareness about causes of PCOS before and after the awareness session**

- Using McNemar's test, it was found that there is a significant shift from unaware to aware. The most compelling finding is the significant reduction from 71.1 percent of

respondents unaware about the causes of PCOS in pre- survey and it shifted to 2.2 percent in post survey. This suggests that survey was very effective in educating respondents about PCOS. The findings clearly indicate that educational intervention can significantly affect awareness of the causes of PCOS.

- **Examined about the awareness about symptoms of PCOS before and after the awareness session**

- Using McNemar's test, it was found that there is a significant result from the pre- and post-survey. A pre-survey shows there is a lack of knowledge about the symptoms of PCOS. After the educational intervention, a relatively greater change in the symptoms, like weight gain, hirutinism, and hyperpigmentation, was seen in the post-survey. The results indicate that the knowledge of the respondent has been greatly affected.

- **Examined about the awareness about complications of PCOS before and after the awareness session**

- With the help of McNemar's test, it was found that most of the participants didn't know about the complications of PCOS, which indicates a large knowledge gap regarding this condition and its long term effects. After the survey, there was a significant improvement in the percentage of people unaware of PCOS complications, dropping from 73.3 percent before the survey to just 2.2 percent afterward. This makes a great increase in overall awareness of PCOS and its associated risks.

- **Examined about the awareness about prevention of PCOS before and after the session.**

According to McNemar's test, respondents' knowledge of several PCOS prevention strategies has considerably increased based on pre-and post-survey data. The study was quite successful in raising awareness and offering helpful information on PCOS management, as evidenced by the decrease in the number of respondents who were unaware of preventive tips from 75.6 percent to 2.2 percent. The outcome indicates that the participants became more knowledgeable about lifestyle changes and medication management that can aid in controlling or preventing PCOS symptoms due to educational intervention.

- To evaluate the effectiveness of the sessions, the information presents a remarkable transformation in awareness for all the categories, where the respondents shifted from unawareness (0) to awareness (1) following the survey. Specifically, it was seen that there was significant increase in awareness of causes, symptoms, complications, and prevention advice regarding PCOS with p-value 0.00000 in all aspects, suggesting that the awareness program was statistically effective.

Conclusion

The study showed that participants' knowledge of Polycystic Ovarian Syndrome (PCOS) was significantly impacted by the educational intervention. The research revealed a strong relationship between the participants' awareness levels and educational background, indicating that education is essential for increasing understanding of PCOS. To be precise, the study has turned out to prove the aim set forth by it, that is, participants' understanding of PCOS was noticeably lacking prior to the awareness session, especially with relation to its etiology, symptoms, consequences, and prevention. Participants' comprehension of these elements, however, significantly improved after the awareness session. The study also discussed menstrual status, showing that the majority had normal periods status but some participants had many irregularities in terms of menstrual cycle awareness.

In conclusion, the awareness program and the development of leaflets have proven to be a valuable resource in enhancing knowledge and awareness about conditions like Polycystic Ovarian Syndrome. In certain areas or cultures, people follow specific myths and beliefs about PCOS. Through educational intervention, young adults can achieve the correct information by distinguishing fact from fiction. By addressing the knowledge gaps and providing comprehensive information about the factors, symptoms, consequences, and tips for various foods that can minimize the condition; the leaflet equips young individuals with the necessary tools and better knowledge to understand and manage PCOS effectively.

Limitations of the study

- The sample size and duration of the study can be expanded to enhance the depth and accuracy of the analysis.
- The data were collected through self-reported questionnaires, self-reported data can influence the responses, recall bias and their accuracy.
- The sample was drawn from specific college and particular classes, which may limit the generalizability of the findings to young girls from diverse cultural or environmental backgrounds.
- The research was carried out on people in the age group 18-30, without younger teenagers and elderly women who can be influenced by PCOS as well.

Recommendations of the present study

- Expand awareness programs to diverse populations.
- To measure the long-term impact of awareness programs like follow–up surveys should be conducted.
- Use multiple awareness tools to increase comprehension and involvement.
- Educational institutions should explore including reproductive health subjects such as PCOS into the curriculum.
- Promote lifestyle modifications and balanced diet in college students.

BIBLIOGRAPHY

Aggarwal, M., Yadav, P., Badhe, S., & Deolekar, P. (2019). A cross sectional study on prevalence of PCOS and risk factors associated with it among medical students. Indian J Obstet Gynecol Res, 6(4), 522-526.

Alenzi, E. O., Alqntash, N. H., Almajed, E. H., & AlZabin, A. K. (2024). Risk of polycystic ovary syndrome: a population-based analysis of sociodemographic factors, healthcare access, health behaviors, and health status. BMC Women's Health, 24(1), 623.

Alshdaifat, E., Sindiani, A., Amarin, Z., Absy, N., AlOsta, N., Abuhayyeh, H. A., & Alwani, M. (2021). Awareness of polycystic ovary syndrome: A university students' perspective. Annals of Medicine and Surgery, 72, 103123.

Barry, J. A., Azizia, M. M., & Hardiman, P. J. (2014). Risk of endometrial, ovarian and breast cancer in women with polycystic ovary syndrome: a systematic review and meta-analysis. Human reproduction update, 20(5), 748-758

Begum, G. S., Shariff, A., Ayman, G., Mohammad, B., Housam, R., & Khaled, N. (2017). Assessment of risk factors for development of polycystic ovarian syndrome. diabetes, 1(2).

Beltadze, K., & Barbakadze, L. (2015). Ovarian reserve in women of late reproductive age by the method of treatment of PCOS. Iranian journal of reproductive medicine, 13(5), 263.

Bharathi, R. V., Swetha, S., Neerajaa, J., Madhavica, J. V., Janani, D. M., Rekha, S. N., ... & Usha, B. (2017). An epidemiological survey: Effect of predisposing factors for PCOS in Indian urban and rural population. Middle East Fertility Society Journal, 22(4), 313-316.

Cahill, D. J. (2009). Pcos. *BMJ clinical evidence*, *2009*, 1408.

Chainani, E. G. (2019). Awareness of polycystic ovarian syndrome among young women in Western India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 8(12), 4716-4721

Choudhary, N. (2013). Effect of Yoga Based Lifestyle Program on PolyCystic Ovarian Syndrome (PCOS)-A Randomized Controlled Trial (Doctoral dissertation, SVYASA).

Deligeoroglou, E., Kouskouti, C., & Christopoulos, P. (2009). The role of genes in the polycystic ovary syndrome: predisposition and mechanisms. Gynecological Endocrinology, 25(9), 603-609.

Desai, N. A., Tiwari, R. Y., & Patel, S. S. (2018). Prevalence of polycystic ovary syndrome and its associated risk factors among adolescent and young girls in Ahmedabad region. Indian J Pharm Pract, 11(3), 119.

Ganie, M. A., Chowdhury, S., Malhotra, N., Sahay, R., Bhattacharya, P. K., Agrawal, S., ... & PCOS Study Group. (2024). Prevalence, Phenotypes, and Comorbidities of Polycystic Ovary Syndrome Among Indian Women. JAMA Network Open, 7(10), e2440583-e2440583.

Goodarzi, M. O., Dumesic, D. A., Chazenbalk, G., & Azziz, R. (2011). Polycystic ovary syndrome: etiology, pathogenesis and diagnosis. Nature reviews endocrinology, 7(4), 219-231.

Gunkaya, O. S., Tekin, A. B., Bestel, A., Arslan, O., Şahin, F., Taymur, B. D., & Tuğ, N. (2024). Is polycystic ovary syndrome a risk factor for depression and anxiety?: a cross-sectional study. Revista da Associação Médica Brasileira, 70(3), e20230918.

Jabeen, A., Yamini, V., Amberina, A. R., Eshwar, M. D., Vadakedath, S., Begum, G. S., & Kandi, V. (2022). Polycystic ovarian syndrome: prevalence, predisposing factors, and awareness among adolescent and young girls of South India. Cureus, 14(8).

Jan, S. Prevalence and the Factors Associated with Overweight and Obesity in Srinagar City, Northern India. Health and Population: Perspectives and Issues, 279.

Jauhari, R. (2023). Comparative evaluation of the efficacy of two different treatment strategies in management of PCOS and correlation with vitamin D3 levels (Doctoral dissertation). Shri Guru Ram Rai University. http://hdl.handle.net/10603/479258

Jena, S. K., Mishra, L., Naik, S. S., & Khan, S. (2021). Awareness and opinion about polycystic ovarian syndrome (PCOS) among young women: a developing country perspective. International journal of adolescent medicine and health, 33(3), 123-126.

Koric, A., Singh, B., VanDerslice, J. A., Stanford, J. B., Rogers, C. R., Egan, D. T., ... & Schliep, K. (2021). Polycystic ovary syndrome and postpartum depression symptoms: a population-based cohort study. American journal of obstetrics and gynecology, 224(6), 591-e1.

Mary, S. D., Janani, R. V., & Paul, J. EFFECTIVENESS OF STRUCTURED EXERCISE PROGRAMME ON YOUNG ADULT WOMEN WITH PCOS: ANALYTICAL STUDY.

Mathur, A., & Tiwari, A. (2023). Prevalence of polycystic ovary syndromes (PCOS) in adolescent girls and young women: A questionnaire-based study. Indian Journal of Obstetrics and Gynecology Research, 10(3), 330-334.

Mehreen, T. S., Ranjani, H., Kamalesh, R., Ram, U., Anjana, R. M., & Mohan, V. (2021). Prevalence of polycystic ovarian syndrome among adolescents and young women in India. Journal of Diabetology, 12(3), 319-325.

Moghetti, P. (2016). Insulin resistance and polycystic ovary syndrome. Current pharmaceutical design, 22(36), 5526-5534.

Mohapatra, I., & Samantaray, S. R. (2024). Age matters: Demographic insights into polycystic ovarian syndrome across generations. Philippine Journal of Obstetrics and Gynecology, 48(3), 162-167.

Muhas, C., Nishad, K., Naseef, P., & Vajid, K. A. (2021). An overview on polycystic ovary syndrome (PCOS). Technol Innov Pharm Res, 6, 19-30.

Mukerjee, N. (2020). Polycystic Ovary Syndrome (PCOS) symptoms, causes & treatments-a review. International Journal of Science and Research, 9(7), 1949-1957.

Narula, N., & Bharadwaj, I. U. Exploring the experiences of Indian women in diagnosis and treatment of PCOS/PCOD.

Patel, J., & Rai, S. (2018). Polycystic ovarian syndrome (PCOS) awareness among young women of central India. Int J Reprod Contracept Obstet Gynecol, 7(10), 3960-3964.

Prakash, L., Sunil, S., & Shabaraya, A. J. W. J. P. P. S. (2021). Knowlegde and awareness on polycystic ovary syndrome among female population. *World J Pharm Pharm Sci*, *10*(11), 953-961.(prevention)

Priya, P. N., & Shwetha, M. N. (2019). Knowledge regarding Polycystic Ovarian Syndrome among Young Female Adults. Asian Journal of Nursing Education and Research, 9(1), 84-86.

Rivera-Rodriguez, Y. G., Rios, B. D., Casas Loyola, C. M., Rodriguez, B. M., Reyes, P. A., Romaguera, J., & Gonzalez-Rodriguez, L. A. (2024). 8417 Knowledge Of PCOS and Its Complications In A Population Of Hispanic Women. *Journal of the Endocrine Society*, *8*(Supplement_1), bvae163-1623. (complications)

Suchta, K., Zeber-Lubecka, N., Grymowicz, M., Smolarczyk, R., Kulecka, M., & Hennig, E. E. (2025). Autoimmune Processes and Chronic Inflammation as Independent Risk Factors for Metabolic Complications in Women with Polycystic Ovary Syndrome. Metabolites, 15(3), 141.

Tsilchorozidou, T., Overton, C., & Conway, G. S. (2004). The pathophysiology of polycystic ovary syndrome. Clinical endocrinology, 60(1), 1-17

Williams, T., Mortada, R., & Porter, S. (2016). Diagnosis and treatment of polycystic ovary syndrome. American family physician, 94(2), 106-113.

World Health Organization. (n.d.). Polycystic ovary syndrome. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/polycystic-ovary-syndrome

Yadav, S., Rai, A., Gupta, A., & Kumari, R. (2025). Long-term implications of polycystic ovary syndrome (PCOS): An in-depth study on associated health risks and complications. Indian Journal of Obstetrics and Gynecology Research, 12, 74–78. https://doi.org/10.18231/j.ijogr.2025.014

ABSTRACT

Polycystic Ovarian Syndrome (PCOS) is a common hormonal condition that affects women of reproductive age. It usually starts during adolescence, but symptoms may fluctuate over time. The goal of this research is to determine PCOS prevalence, determine predisposing factors, and measure awareness in young adults with an age of 18-30 years. The study examines socio-demographic factors, and measures the awareness regarding the condition's symptoms, causes, possible complications, and treatment alternatives among the study age group and identifies areas of knowledge gaps and potential interventions for raising awareness and early diagnosis. Through a convenient sampling method the sample group was selected. The data was collected from a sample group of 138 young adults using the self-structured questionnaire. The pre- and post-test was carried out with a sample of 45 participants in order to assess the effectiveness of an awareness intervention.Data was collected using questionnaires, distributed in classroom settings for accessibility.

Data were analyzed using correlation tests, McNemar's test, and percentage analysis. The results indicated that a significant number of people were initially unaware of PCOS, but their knowledge improved significantly after the educational intervention. Specifically, it was seen that there was significant increase in awareness of causes, symptoms, complications, and prevention advice regarding PCOS with p-value 0.00000 in all aspects, suggesting that the awareness program was statistically effective.

Keywords: *Polycystic Ovarian Syndrome, Prevalence, Predisposing factors, Awareness, Young adults, Reproductive health, Health education, Educational intervention*

APPENDIX 1

QUESTIONNAIRE TO ELICIT INFORMATION REGARDING AWARENESS ON POLYCYSTIC OVARIAN SYNDROME

INSTRUCTIONS

Below are a few statements to assess your knowledge on Polycystic Ovarian Syndrome. Please read them carefully and fill them with appropriate answers. All questions should be answered. All your answers would remain confidential.

1 GENERAL INFORMATION

A.DEMOGRAPHIC INFORMATION

1. Name:
2. Age:
3. Email id:
4. Phone number:
5. Gender:
6. Educational level:

   UG: ☐

   PG: ☐
7. Year of study:

   1st year: ☐

   2nd year: ☐

   3rd year: ☐
8. Monthly income of the family:

10000/- below ☐

10001-30000/- ☐

30001-50000/- ☐

50000-1000000/- ☐

100001/- above ☐

9. Height (cm):
10. Weight (kg):

2 SPECIFIC INFORMATION

B.AWARENESS AND KNOWLEDGE OF PCOS

1. Do you know PCOS?

Yes ☐

No ☐

2. If yes, how did you know?

Social media ☐

Doctors ☐

Family/friends ☐

Personal experience ☐

Others ☐

3. Do you think PCOS is a serious condition?

Yes ☐

No ☐

Not sure ☐

4. What do you think about the causes of PCOS?

Hormonal imbalance ☐

Insulin resistance ☐

Obese ☐

Genetics ☐

Family history ☐

Environmental factors ☐

Not sure ☐

5. Do you know the symptoms of PCOS?

Yes ☐

No ☐

Not sure ☐

6. Do you think PCOS symptoms can vary from person to person?

Yes ☐

No ☐

Not sure ☐

7. What are the possible health risks associated with PCOS?

Heart disease ☐

Diabetes ☐

Infertility and pregnancy complications ☐

Cancer ☐

Skin disease ☐

Not sure ☐

8. Do you know any family members or friends experiencing PCOS?

Yes ☐

No ☐

Not sure ☐

9. Are you aware that some people with PCOS may not exhibit any noticeable symptoms?

Yes ☐

No ☐

Not sure ☐

10. Do you think PCOS can affect fertility?

Yes ☐

No ☐

Not sure ☐

11. Do you think PCOS can affect a person's physical well-being?

Yes ☐

No ☐

Not sure ☐

12. Do you know people who have PCOS can affect emotional regulation?

Yes ☐

No ☐

Not sure ☐

13. Do you know what are the diagnostic method and test for PCOS are?

Yes ☐

No ☐

Not sure ☐

14. If yes, what are the diagnostic methods?

15. Do you believe PCOS can be misdiagnosed or under diagnosed?

Yes ☐

No ☐

16. Is PCOS treatable?

Yes ☐

No ☐

Not sure ☐

17. Do you believe that adopting lifestyle changes can reduce the impact of PCOS?

Yes ☐

No ☐

Not sure ☐

18. Do you think a balanced diet can assist with PCOS?

Yes ☐

No ☐

Not sure ☐

19. Do you think women with PCOS become pregnant?

Yes ☐

No ☐

Not sure ☐

20. Women with PCOS often experience a range of physical transformations. Do you think that these physical changes can cause discomfort or self-consciousness for them?

Yes ☐

No ☐

Not sure ☐

21. Do you think people with PCOS can get effective assistance from others (family, friends and doctors)?

Yes ☐

No ☐

Not sure ☐

22. Do you think there is a social stigma related to PCOS?

Yes ☐

No ☐

23. Do you think cultural beliefs can influence PCOS?

Yes ☐

No ☐

24. Do you know the available resources are enough for PCOS?

Yes ☐

No ☐

Maybe ☐

25. Did you ever have a thought about getting awareness about PCOS?

Yes ☐

No ☐

26. Do you have any suggestions or comments on how to increase awareness and support for people with PCOS?

C. CHECKLIST OF MENSTRUAL HEALTH STATUS

1. Menstrual cycle

Regular ☐

Irregular ☐

Absent periods ☐

2. If there are irregular periods, how often do you experience your periods?

Occasionally ☐

Frequently ☐

Almost always ☐

Not sure ☐

3. How often do you get your period?

Exactly every 28 days ☐

Every 21-35 days ☐

Every 36-60 days ☐

Less than every 60 days ☐

More than every 21 days ☐

Not sure ☐

4. How long do your periods typically last?

2-3 days ☐

4-5 days ☐

6-7 days ☐

More than 7 days ☐

5. Do you experience any pain or discomfort during menstruation?

Yes ☐

No ☐

Maybe ☐

6. How heavy are your periods?

Light ☐

Medium ☐

Heavy ☐

Very heavy ☐

7. Do you experience any of the following symptoms during your periods?

Menstrual cramps ☐

Bloating ☐

Mood swings ☐

Breast tenderness ☐

Fatigue ☐

Other: ☐

8. Do you have any of these symptoms?

Hirutinism (excessive hair growth) ☐

Skin issues (acne, oily skin or other skin issues) ☐

Loss of hair ☐

Darkened skin color around the neck ☐

Obesity ☐

Other: ☐

9. Have you ever experienced any of the following emotional dysregulation?

Mood changes ☐

Depression/sad ☐

Sleep problems ☐

Self harming ☐

Other: ☐

10. Did you experience weight gain?

Yes ☐

No ☐

Sudden weight gain ☐

11. Have you ever been diagnosed with PCOS?

Yes ☐

No ☐

APPENDIX 2

PRE-QUESTIONNAIRE TO ASSESS THE AWARENESS ON POLYCYSTIC OVARIAN SYNDROME

1. Name:

2. Age:

3. Educational level

   UG: ☐

   PG: ☐

4. Year of study

   1st year: ☐

   2nd year: ☐

   3rd year: ☐

5. Monthly income

   10000/- below: ☐

   10001-30000/-: ☐

   30001-50000/-: ☐

   50000-1000000/-: ☐

   100001/- above: ☐

B. INITIAL AWARENESS AND KNOWLEDGE OF PCOS

1. Have you heard of PCOS before?

Know: ☐

Don't know: ☐

2. Do you believe PCOS is a serious health condition?

Know : ☐

Don't know: ☐

3. Do you know what the symptoms of PCOS are? Choose the one you are most aware of the following options.

Hirutinism (excessive hair growth) ☐

Irregular menses ☐

Acne ☐

Mood swings ☐

Weight gain ☐

Hair loss ☐

Hyper pigmentation ☐

Don't know ☐

4. Do you think the severity and type of PCOS symptoms vary from person to person?

Know ☐

Don't know ☐

5. Do you know what factors contribute to the development of PCOS? Choose the one you are most aware of from the following options.

Genetics ☐

Hormonal imbalance ☐

Obesity/overweight ☐

Environmental factors: ☐

Don't know: ☐

6. Do you know what the possible health risks associated with PCOS are? Choose the one you are most aware of from the following options.

Diabetes ☐

Cardiovascular disease ☐

Infertility and pregnancy complications ☐

Abortion ☐

Cancer ☐

Don't know ☐

7. Are you aware that some people with PCOS may not exhibit any noticeable symptoms?

Know ☐

Don't know ☐

8. Do you believe PCOS can affect fertility?

Know ☐

Don't know ☐

9. Do you think PCOS can affect a person's physical and mental well-being?

Know ☐

Don't know ☐

10. Do you know what are the common diagnostic tests and methods for PCOS?

Know ☐

Don't know ☐

11. Can PCOS be managed or treated?

Know ☐

Don't know ☐

12. Do you believe that healthy lifestyle habits can reduce the impact of PCOS?

Know ☐

Don't know ☐

13. Do you think the following measures can help in preventing or managing PCOS? Choose the one who you are most aware of from the following options.

Healthy diet ☐

Weight management ☐

Physical activity ☐

Reduce stress ☐

Medical consultation ☐

Don't know ☐

14. Do you believe PCOS can be misdiagnosed or under diagnosed?

Know ☐

Don't know ☐

15. Do you think what are the most factors that contribute to the lack of understanding about PCOS? Choose the one you are most aware of from the following options.

Lack of information ☐

Lack of advertisements ☐

Cultural or social stigma ☐

Improper knowledge ☐

Illiteracy ☐

Don't know ☐

APPENDIX 3

C. POST-QUESTIONNAIRE ABOUT THE AWARENESS AND KNOWLEDGE OF PCOS

1. Have you heard of PCOS before?

Know: ☐

Don't know: ☐

2. Do you believe PCOS is a serious health condition?

Know : ☐

Don't know: ☐

3. Do you know what the symptoms of PCOS are? Choose the one you are most aware of the following options.

Hirutinism (excessive hair growth) ☐

Irregular menses ☐

Acne ☐

Mood swings ☐

Weight gain ☐

Hair loss ☐

Hyper pigmentation ☐

Don't know ☐

4. Do you think the severity and type of PCOS symptoms vary from person to person?

Know ☐

Don't know ☐

5. Do you know what factors contribute to the development of PCOS? Choose the one you are most aware of from the following options.

Genetics ☐

Hormonal imbalance ☐

Obesity/overweight ☐

Environmental factors: ☐

Don't know: ☐

6. Do you know what the possible health risks associated with PCOS are? Choose the one you are most aware of from the following options.

Diabetes ☐

Cardiovascular disease ☐

Infertility and pregnancy complications ☐

Abortion ☐

Cancer ☐

Don't know ☐

7. Are you aware that some people with PCOS may not exhibit any noticeable symptoms?

Know ☐

Don't know ☐

8. Do you believe PCOS can affect fertility?

Know ☐

Don't know ☐

9. Do you think PCOS can affect a person's physical and mental well-being?

Know ☐

Don't know ☐

10. Do you know what are the common diagnostic tests and methods for PCOS?

Know ☐

Don't know ☐

11. Can PCOS be managed or treated?

Know ☐

Don't know ☐

12. Do you believe that healthy lifestyle habits can reduce the impact of PCOS?

Know ☐

Don't know ☐

13. Do you think the following measures can help in preventing or managing PCOS? Choose the one who you are most aware of from the following options.

Healthy diet ☐

Weight management ☐

Physical activity ☐

Reduce stress ☐

Medical consultation ☐

Don’t know ☐

14. Do you believe PCOS can be misdiagnosed or under diagnosed?

Know ☐

Don’t know ☐

15. Do you think which are the most factors that contribute to the lack of understanding about PCOS? Choose the one you are most aware of from the following options.

Lack of information ☐

Lack of advertisements ☐

Cultural or social stigma ☐

Improper knowledge ☐

Illiteracy ☐

Don’t know ☐

APPENDIX 4

LEAFLET ABOUT POLYCYSTIC OVARIAN SYNDROME