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Comprehensive study of Dietary and Lifestyle Factors contribute Polycystic Ovarian Disease (PCOD): A Survey Based Study

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Abstract

The present study aimed to investigate the dietary and lifestyle determinants contributing to the onset and progression of Polycystic Ovarian Disease (PCOD) among women aged 18 to 45 years. A structured, targeted questionnaire was administered to assess 10 participants' nutritional intake, physical activity, sleep patterns, and daily habits. The primary objective was to identify lifestyle behaviors significantly associated with PCOD symptomatology and severity. Analysis of the survey responses revealed distinct lifestyle trends that appear to influence the pathophysiology of PCOD. Excess weight, particularly abdominal obesity, was associated with elevated androgen levels, exacerbating clinical manifestations such as acne, hirsutism, and menstrual irregularities. Additionally, stress-induced emotional eating which might increase cortisol levels, contributing to hormonal dysregulation. A sedentary lifestyle and poor sleep hygiene might further impaired insulin sensitivity, heightened systemic inflammation, and disrupted appetite-regulating hormones, collectively aggravating the condition. The study also acknowledged the complementary insights of modern medicine and Ayurveda in understanding PCOD as a multifactorial disorder rooted in lifestyle, diet, and emotional health. Ayurveda's emphasis on digestive restoration, dosha balance, and systemic detoxification offers a holistic framework for long-term management. Overall, the findings underscore the significance of lifestyle modification, stress management, and integrative therapeutic approaches in mitigating the onset and progression of PCOD and promoting reproductive and metabolic health.

Keywords PCOD, Dietary Habits, Sedentary Lifestyle, Doshas, Hormones, Ama, Srotas, Aartava srotas

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

1.Introduction

Polycystic Ovary Disorder (PCOD), also referred to as Hyperandrogenic Anovulation, is an endocrine disorder affecting millions of women globally. It is characterized by hormonal imbalances that interfere with ovulatory function and has profound implications for both physical and mental health (1). The condition is primarily marked by the overproduction of androgens and disrupted folliculogenesis, leading to the accumulation of immature or partially matured ovarian follicles. These follicles may develop into cysts, resulting in irregular menstrual cycles, abdominal adiposity, persistent fatigue, and other metabolic disturbances (1) Unlike some reproductive disorders, PCOD does not always result in infertility; however, it is frequently associated with subfertility due to ovulatory dysfunction.

The etiology of PCOD is multifactorial, involving a complex interplay of genetic predisposition, environmental exposures, and lifestyle factors. Evidence suggests a hereditary component, wherein a family history of metabolic or reproductive disorders increases susceptibility. Additionally, exposure to endocrine-disrupting chemicals, along with sedentary behavior and poor dietary habits, can further exacerbate hormonal imbalances (1)

According to Ayurveda prospective PCOD is not directly stated in the *Samhita*, but clinically it is similar to *Aartavavaha strotas dushti*, *NastaArtava*, *Granthi*, *Santarponnth vyadhi*, and *Yonivyapad*.According to reproductive point of view, the pathogenesis of PCOD is similar to condition of *Nastartva*:

दोषैरावृतमार्गत्वादार्तवंनश्यतत तियाः अत्र दोषाः कफ़ो वात (2)

Vitiation of *Vata-Kapha* (increase estrogenic state) leads to *Aavarana* of *Artava* (inhibition of FSH) leads to *NastArtava* (no proper growth of follicles and chronic anovulation).

Ahariya hetu of PCOD- Guru Ahar,Snigdha Ahar,Atyadhik Madhur Sevan, Abhishyandi ahar, Atiruksha or viparit ahar ,Virruddha ahar,Adhyashana, Asatmya Bhojan, Ajirna Bhojana,Ratri Bhojana(2) which aggrevates Kapha and meda leads to formation of Ama which obstracts Artavavaha srotas affects Jatharagni and Dhatvagni resulting Artava Dushti.

Vihariya Hetu of PCOD- *Divaswapa, Raatrijagarana, Avyayama, Ajeerna Bhojana,Guru Snigdha Ahara, Vega Vidharana*,Lack of *Dinacharya* and *Ritucharya,Manasik Hetu.*(2) Above all Ahariya hetu and vihariya hetu causes presymptoms i.e. **Pruvarupa** Irregular menstruation

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

or delayed periods,Weight gain [*Bharvrudhi*], Acne, oily skin, Excess hair growth (hirsutism),Mild mood swings or emotional instability,Feeling of bloating or heaviness, Breast tenderness or swelling, *Udarvrudhi*, *Aalasya*, *Agnimandya* which shows symptoms i.e. **Rupa** *Anartava, Alpartava, Sthula Lomasha Ganda,Chala Sphik Stan Udar (3)* ***Sthansanshray***- In the *Artavavaha strotas, rasavaha* And *Medovaha.*(3)

The present study aimed to examine the dietary and lifestyle factors associated with the onset and progression of Polycystic Ovarian Disease (PCOD) in women aged 18 to 45 years. Utilizing a structured questionnaire, data were collected from 10 participants regarding nutritional intake, physical activity, sleep patterns, and daily habits. The findings identified specific lifestyle behaviors potentially linked to the severity and symptomatology of PCOD, suggesting their influence on its underlying pathophysiology.

2. Aim and Objectives

AIM- To Study about Diet [*Ahariya*] and lifestyle [*Vihariya*] influence PCOD among women.

OBJECTIVES

1. To study about how food and lifestyle vitiate *doshas* causes *Avarodha* in *Artavavaha strotas* according to *ayurveda*.

2. To analyze the role of daily Routine [*Dinacharya*] which has been followed by woman have impact on their hormones and Metabolism.

3. To Observe the dietary pattern and its effects on the body which is manifesting hormonal imbalance and metabolic disturbances causes PCOD.

3. Materials and Methodology

A structured survey was conducted using a carefully designed questionnaire aimed at evaluating the dietary habits and lifestyle patterns. A small-scale survey was conducted in Pune city targeting women within the age group of 18 to 45 years age group affected by Polycystic Ovarian Disease (PCOD). The questions focused on aspects such as meal frequency, dietary choices, physical activity levels, sleep patterns, stress management, and menstrual irregularities.survey performed one time.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

A total of 10 women from diverse professional backgrounds and some were housewives voluntarily participated in the survey. A set of structured questionnaires was administered, focusing on below points and personally interviewed with all participants-

- Dietary Habits (type, frequency, and nutritional quality)
- Physical activity levels
- Sleep duration and quality
- Stress levels and coping mechanisms
- Menstrual irregularities and medical history

Inclusion Criteria –1.This study encompassed female participants clinically diagnosed with Polycystic Ovarian Disease (PCOD), ranging in age from 18 to 45 years.

2.The study population represented diverse socio-economic backgrounds, ensuring a detail understanding of the condition across different lifestyle and dietary patterns.

3.Only biologically female individuals were included to maintain the specificity of the condition being investigated.

Exclusion Criteria –

Participants with secondary health conditions that may confound the outcomes of the study—such as diabetes mellitus, hypertension, malignancies (cancers), or coronary artery disease—were excluded from the study to maintain the specificity of findings related to PCOD.

4. Observation and Result-

1. Detail information of Mensuration of 10 Participants

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

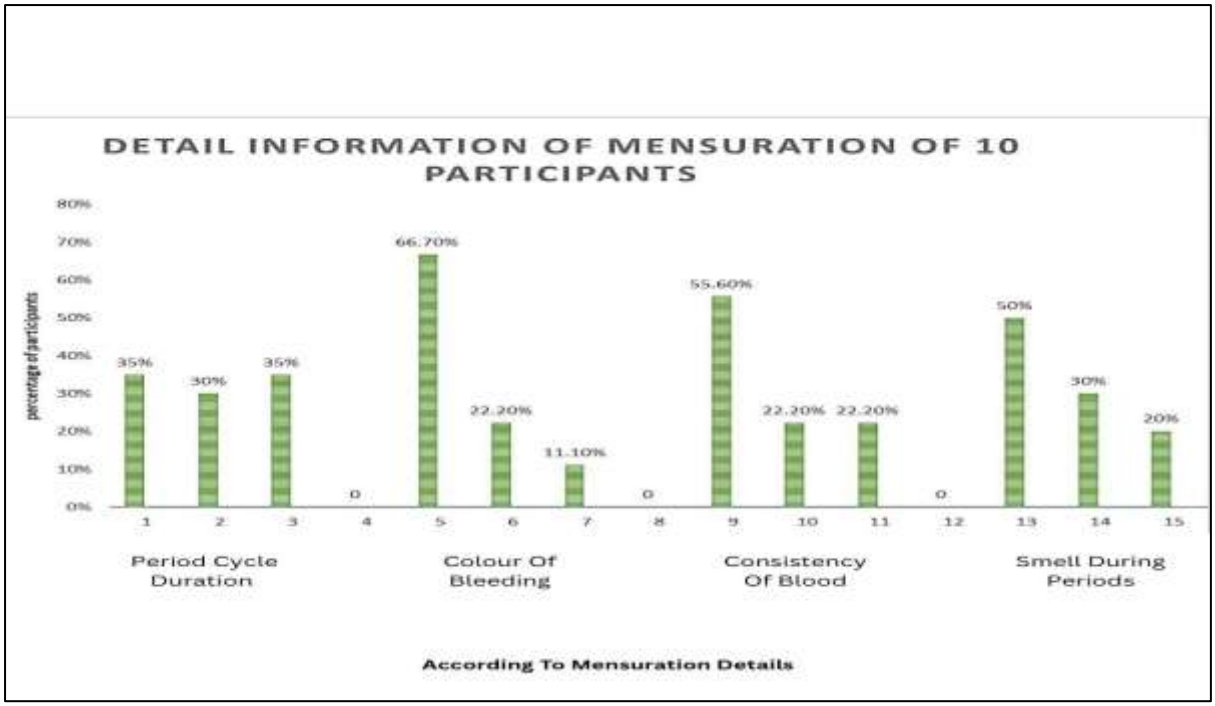

Fig no.01-Detail information of Mensuration of 10 Participants

2. Observation according to Symptoms shown in participants-

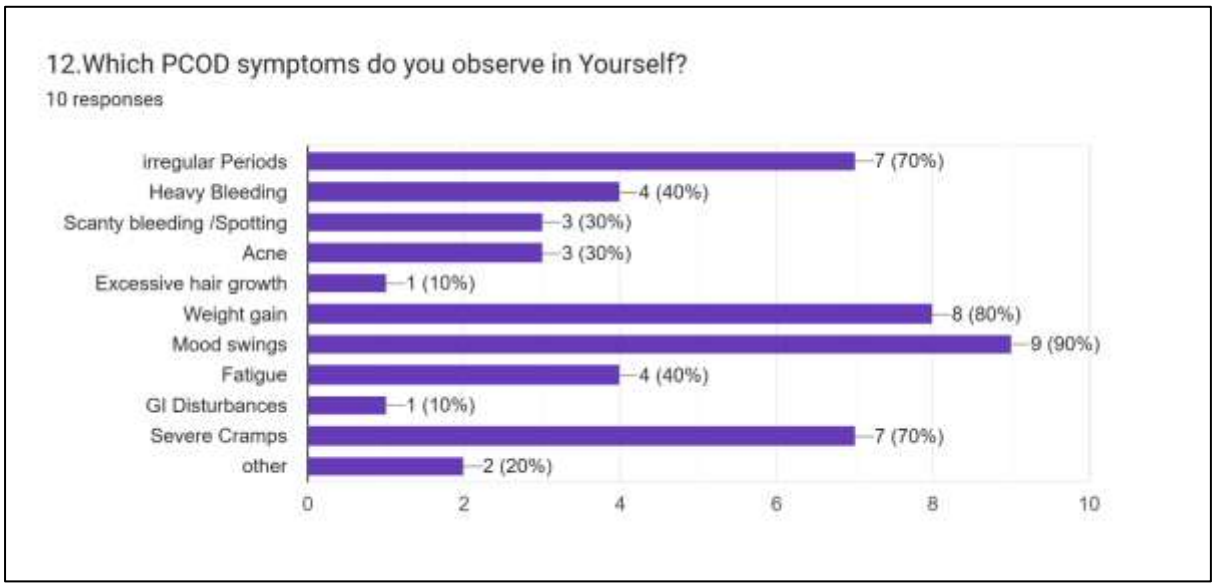

Fig No.02- Symptoms shown in participants

3. Observation according to food type-

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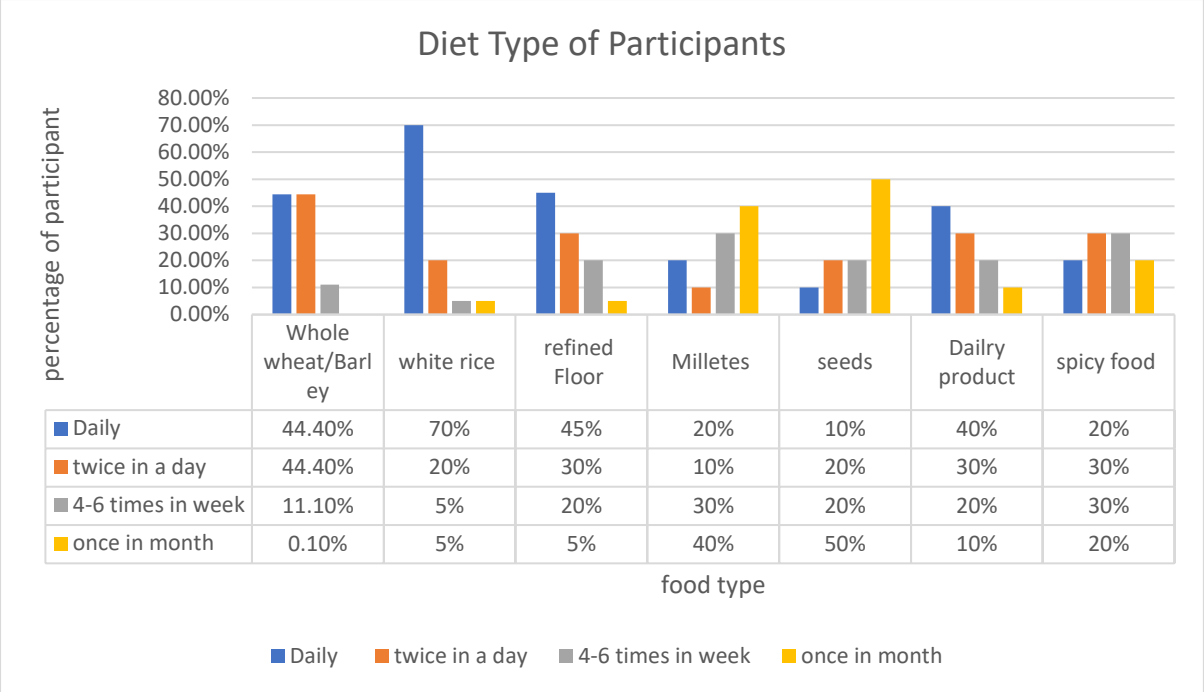


	Whole wheat/Barley	white rice	refined Floor	Milletes	seeds	Dailry product	spicy food
Daily	44.40%	70%	45%	20%	10%	40%	20%
twice in a day	44.40%	20%	30%	10%	20%	30%	30%
4-6 times in week	11.10%	5%	20%	30%	20%	20%	30%
once in month	0.10%	5%	5%	40%	50%	10%	20%

Fig No.03- Graph of according to Food Type

4. Most commonly Food combination consumed –

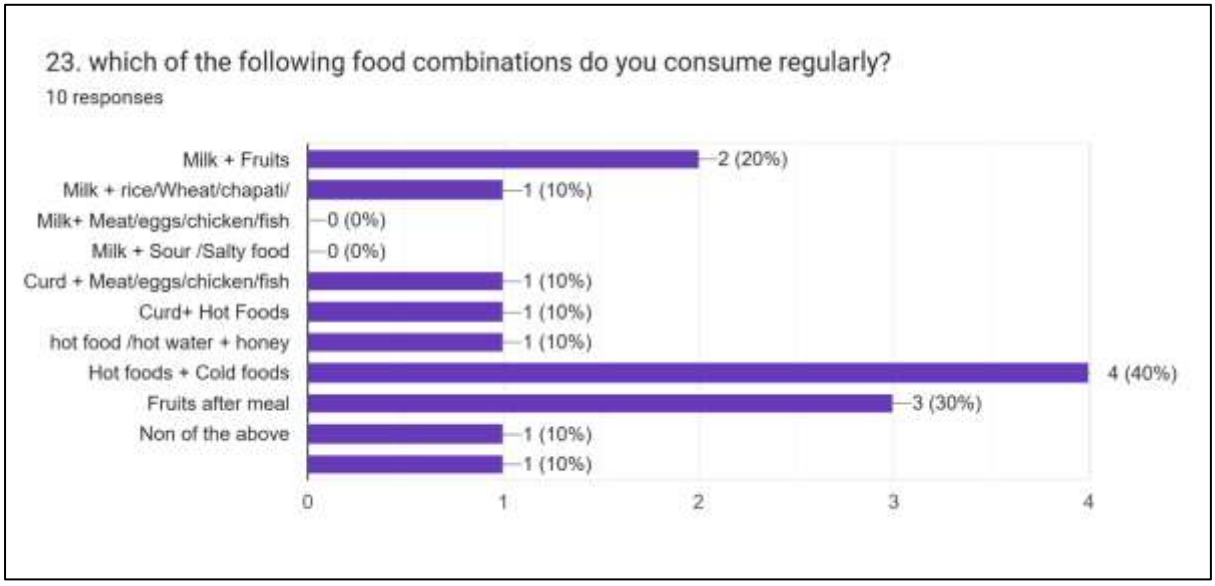


Fig No.04- Food frequency of participants according to food combination

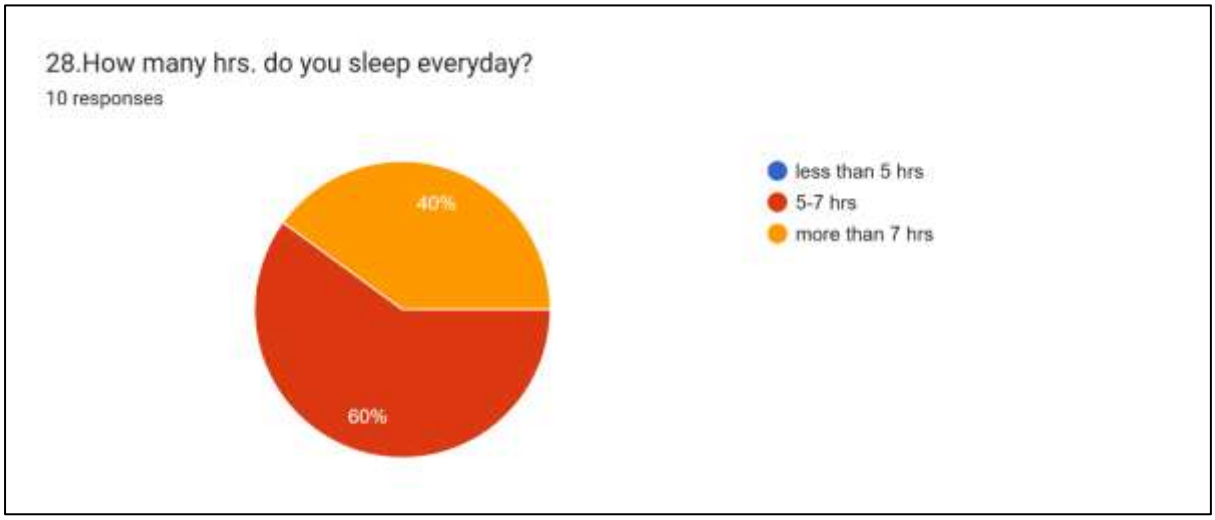
ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

Sr.No.	Food Combination	No. of participants consumed Regularly.
1.	Milk + Fruits	02
2.	Milk + rice/Wheat/chapati/	01
3.	Milk+ Meat/eggs/chicken/fish	00
4.	Milk + Sour /Salty food	00
5.	Curd + Meat/eggs/chicken/fish	01
6.	Curd+ Hot Foods	01
7.	hot food /hot water + honey	01
8.	Hot foods + Cold foods	04
9.	Fruits after meal	03
10.	Other	01

Table no.05- No. of participants consumed Food Combinations Regulary.

5] Observation according to sleep Habits –



ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

Fig No.06-Total Sleeping Hrs.of Participants

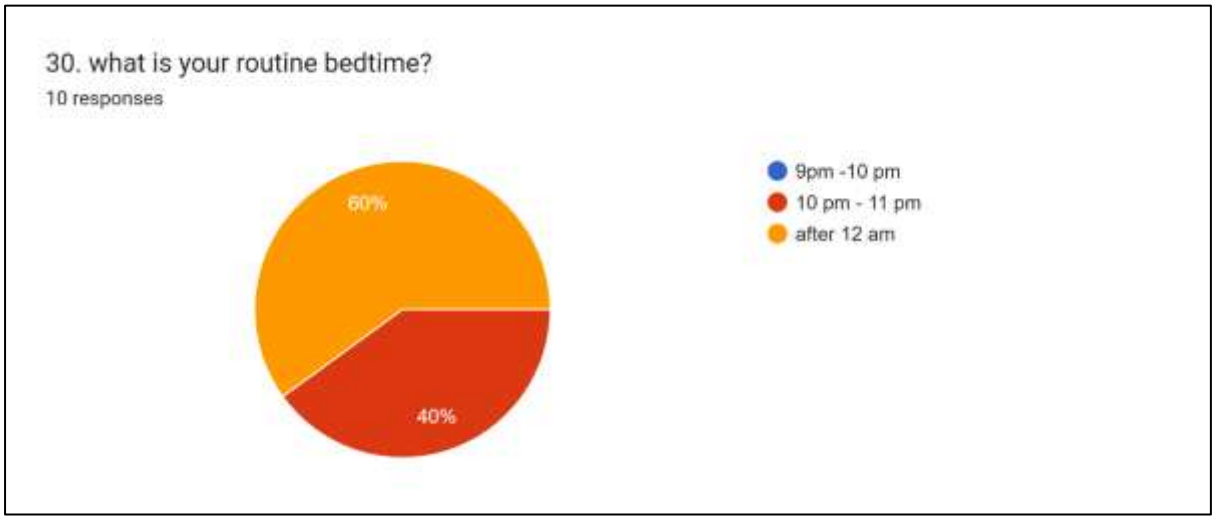


Fig No.07-Routine Bedtime of Participants

6] According to Exercise –

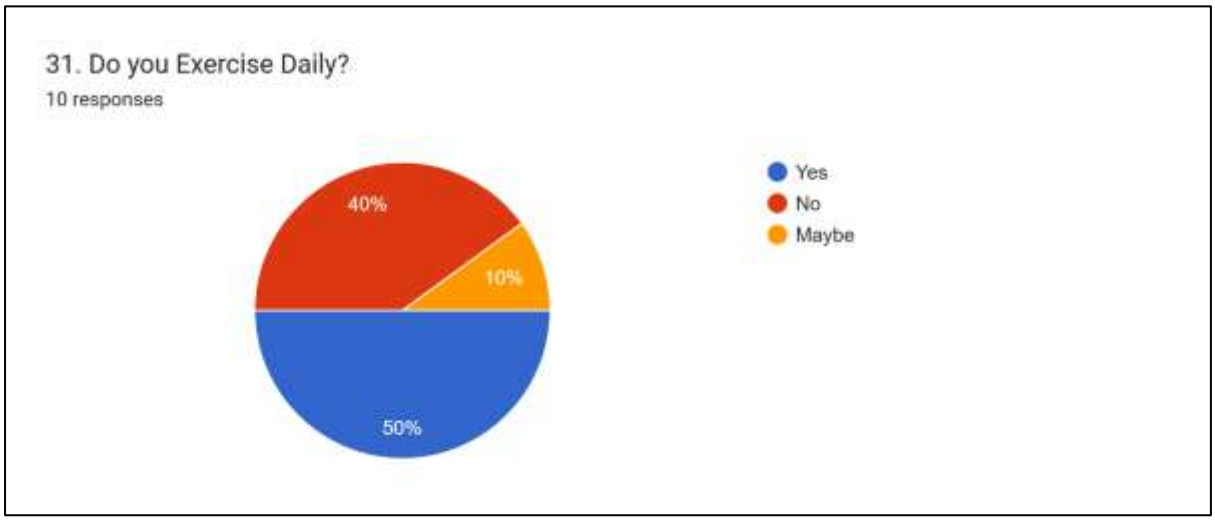


Fig No.08-Frequency of exercise of participants

7] According to Stress in participants

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

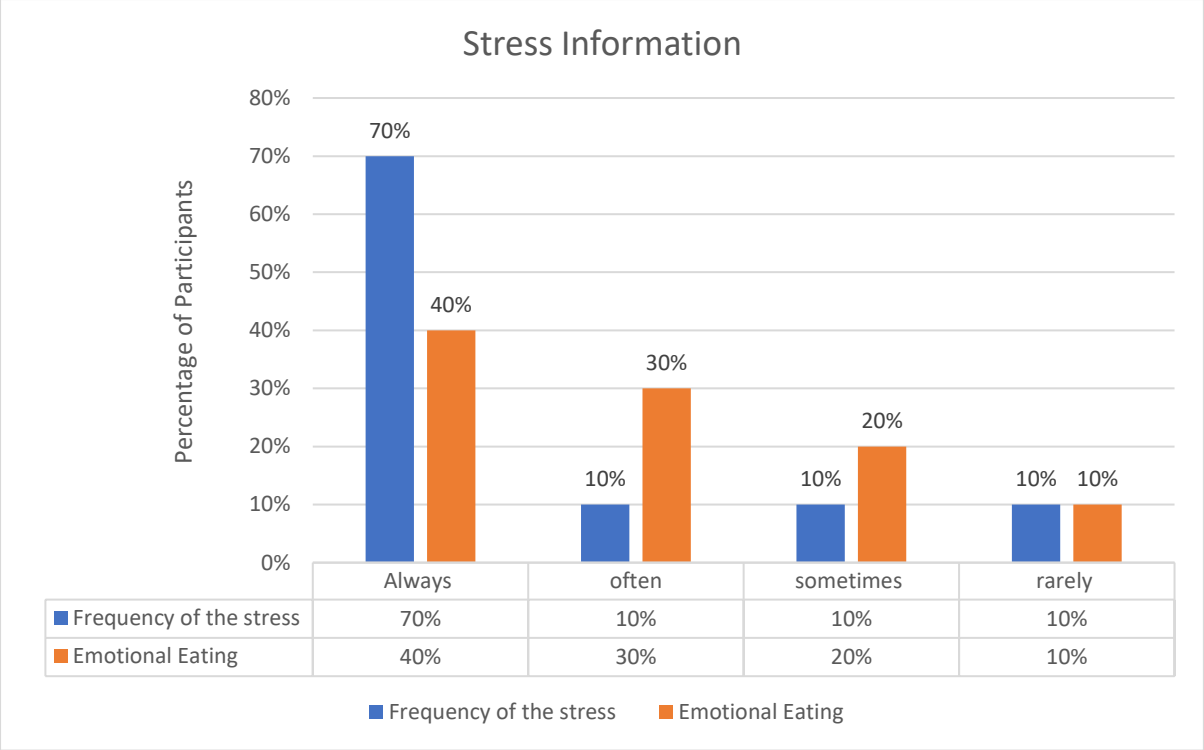


Fig No. – 09 According to stress information of participants

5. Discussion

Polycystic Ovarian Disease (PCOD) is a complex endocrine disorder commonly affecting women of reproductive age, marked by hormonal imbalance, metabolic disturbances, and menstrual irregularities. Survey data indicate a peak incidence around age 26, a period associated with increased susceptibility to insulin resistance, obesity, and androgen excess. From an Ayurvedic perspective, this age corresponds to heightened *Kapha* and *Vata* imbalances, often exacerbated by impaired *Agni*, accumulation of *Ama*, and unhealthy lifestyle practices, leading to dysfunction in the *Artava Vaha Srotas* (reproductive channels).

According to Symptoms shown in Participants-

According to the survey findings, the most commonly reported symptoms among participants were mood swings and weight gain. From a modern scientific standpoint, these symptoms are often linked to hormonal imbalances particularly elevated androgens and insulin resistance which is common in individuals with PCOD. Weight gain, especially central obesity, contributes to worsening metabolic and reproductive outcomes, [refer fig no.10] while mood disturbances may result from fluctuating estrogen and cortisol levels. In Ayurveda, these

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

manifestations are associated with imbalances in *Vata* and *Kapha* doshas, aggravated by *Mandāgni* (impaired digestion), *Ama* (toxic buildup), and improper lifestyle practices such as irregular eating and insufficient physical activity. The accumulation of *Kapha* is particularly linked with weight gain and metabolic sluggishness, while aggravated *Vata* is associated with psychological symptoms like anxiety and mood instability. This integrative view highlights the need for both metabolic correction and mental-emotional balance in the management of PCOD.

According to food Frequency – Whole grain,white rice,refined Flour-

In the context of PCOD, dietary carbohydrate quality plays a crucial role in metabolic and hormonal regulation. From a modern scientific standpoint, the consumption of **whole grains** (such as whole wheat, barley, and oats), which are rich in dietary fiber and have a low glycemic index, is associated with improved insulin sensitivity, reduced inflammation, and better weight management. all of which are central to managing PCOD.[refer fig no.16 from observation] In contrast, **refined carbohydrates** such as **white rice**, with a high glycemic index, contribute to postprandial hyperglycemia, insulin resistance, and fat accumulation, thereby exacerbating PCOD symptoms.[Refer fig no.17 and 18 from observation] From an Ayurvedic viewpoint, whole grains are considered *laghu* (light) and *sātvik*, promoting *Agni* (digestive fire) and balancing *Kapha* and *Vata* doshas, which are typically aggravated in PCOD. Conversely, excessive consumption of white rice is regarded as *Guru* (heavy) and *Kapha-vardhak*, potentially leading to *Ama* formation (toxic buildup) and obstruction of *Srotas* (bodily channels), thereby worsening metabolic imbalances. Therefore, the preference for whole grains over refined grains such as white rice is recommended in both systems for the dietary management of PCOD.

According to Millets and importance of millets in PCOD -

Millets, including varieties such as foxtail, finger, and pearl millet, have shown promising benefits in the dietary management of Polycystic Ovarian Disease (PCOD). From a modern scientific perspective, millets are high in dietary fiber, essential micronutrients (such as magnesium, iron, and B vitamins), and have a low glycemic index, making them effective in improving insulin sensitivity, reducing postprandial glucose spikes, and supporting weight management key components in controlling PCOD symptoms. Several studies suggest that

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

replacing refined carbohydrates with millets can positively impact hormonal balance, lipid profiles, and menstrual regularity in women with PCOD.[For Data -Refer fig no.19]

From the Ayurvedic viewpoint, millets are considered *Laghu* (light), *Ruksha* (dry), and Tridoṣa-balancing, particularly helpful in reducing *Kapha* and *Medo Dhatu* (fat tissue), both of which are involved in the pathogenesis of PCOD. Millets aid in enhancing *Agni* (digestive fire), preventing *Ama* (toxic residue) accumulation, and maintaining the regular flow of *Artava* (menstrual fluid) through unobstructed *Srotas* (channels). Their inclusion in a balanced Ayurvedic diet supports the body's detoxification process and hormonal equilibrium.Thus, incorporating millets into the daily diet is encouraged in both modern and traditional systems as a natural and effective strategy for managing PCOD.

Seed Consumption and its Link to PCOD: An Integrative Perspective

Recent integrative nutritional approaches highlight the role of seed consumption—particularly flax, pumpkin, sesame, and sunflower seeds—in the management of Polycystic Ovarian Disease (PCOD). These seeds are rich in omega-3 fatty acids, lignans, phytoestrogens, zinc, and selenium, which contribute to improved insulin sensitivity, hormonal regulation, and reduction of systemic inflammation. The concept of seed cycling, which involves the timed consumption of specific seeds during the menstrual phases, has been suggested to support estrogen and progesterone balance. Despite these benefits, the present survey data revealed that approximately 50% of participants do not consume seeds, indicating a potential dietary deficiency in this population that may influence PCOD symptoms.

In the context of Ayurveda, seeds possessing *Snigdha* (unctuous), *Madhura* (sweet), and *Ushna* (warming) qualities are recommended to balance aggravated *Vata* and *Kapha* doshas, which are often implicated in PCOD pathophysiology. Such seeds are believed to enhance *Artava Dhatu* (reproductive tissue health) and improve *Agni* (digestive fire), thereby reducing *Ama* (metabolic toxins) and clearing obstructions in *Artavavaha Srotas* (reproductive channels). Seeds like *Til* (sesame), *Alasi* (flaxseed), and *Methi* (fenugreek) are traditionally utilized to regulate menstrual function and promote reproductive well-being.

Thus, both modern science and Ayurvedic principles underscore the therapeutic value of seeds in the dietary management of PCOD. However, low seed consumption among survey

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

participants points to the need for greater awareness and incorporation of seed-based interventions in lifestyle modification protocols.(4)(5)(6)(7)

According to Dairy products consumption -

Survey Findings As per the data obtained from a dietary and lifestyle survey conducted among females aged 18 to 45 years, approximately 30% of participants reported consuming dairy products, particularly curd, 2–3 times daily. Another 30% indicated they consume curd 1–2 times per week.[Refer fig no.21]

Modern Scientific Perspective In modern nutritional science, the consumption of dairy has been both positively and negatively associated with PCOD. Some studies have suggested that dairy intake, especially full-fat and fermented products like curd, may influence levels of insulin-like growth factor 1 (IGF-1), which is linked to increased androgen production and ovarian dysfunction in PCOD patients (8). Additionally, high saturated fat content in dairy may exacerbate insulin resistance, a core metabolic issue in PCOD (9). However, other research posits that moderate intake of low-fat dairy might help improve metabolic profiles in certain individuals, indicating a need for individualized dietary planning.Ayurvedic Perspective curd is classified as *Snigdha* (unctuous), *Guru* (heavy), and *Amla* (sour), which, when consumed excessively or at inappropriate times (e.g., at night), is considered to aggravate *Kapha* and *Pitta* doshas. This leads to *Medo Dhatu Dushti* (vitiation of fat tissue) and *Srotorodha* (obstruction in bodily channels), contributing to hormonal imbalances and the development of disorders such as PCOD (Acharya Charaka, Charaka Samhita, Sutrasthana)(10)

Consumptions of Butter,Cheese,cream and bakery Products-

Based on the survey data, approximately 40% of participants reported consuming high-fat processed foods such as cheese, mayonnaise, butter, and cream 1–2 times per week, while 20% consumed them 4–6 times weekly, and 30% included them regularly in their diet. These food items, typically rich in saturated fats and preservatives, are known in modern nutritional science to exacerbate insulin resistance, contribute to adiposity—especially central obesity—and promote systemic inflammation, all of which are implicated in the pathophysiology of Polycystic Ovarian Disorder (PCOD). The regular intake of such energy-dense, nutrient-poor

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

foods may disrupt endocrine function, leading to hyperinsulinemia and altered ovarian steroidogenesis.[Refer fig no.22 &23]

From an Ayurvedic standpoint, these foods are classified as *Snigdha* (unctuous), *Guru* (heavy), and *Abhishyandi* (channel-clogging), qualities that aggravate *Kapha dosha* and contribute to *Meda dhatu vriddhi* (excess fat tissue). This ultimately leads to *Agnimandya* (diminished digestive fire) and the accumulation of *Ama* (toxins), further obstructing the *Artavavaha srotas* (channels related to menstruation). These factors collectively aggravate reproductive and metabolic imbalances, contributing to the manifestation of PCOD.

Corelation between Spicy food Consumption and pcod-

Survey analysis revealed that nearly 30% of respondents reported a regular preference for spicy foods (see Fig. 24 & 26). From a biomedical perspective, frequent intake of spicy or pungent foods has been associated with gastrointestinal disturbances, elevated stress responses, and disruption of hormonal balance—factors implicated in the progression of Polycystic Ovarian Disease (PCOD) . Additionally, spicy foods may exacerbate systemic inflammation and negatively influence gut microbiota composition, thereby affecting insulin resistance and metabolic homeostasis, both critical in PCOD pathophysiology .

From the Ayurvedic standpoint, excessive consumption of *Tikshna rasa* (pungent taste) can aggravate *Pitta* and *Vata doshas*, disturb *Agni* (digestive fire), and contribute to the accumulation of *Āma* (toxins). These factors are understood to vitiate *Rasa* and *Artava dhatus* (nutritive plasma and reproductive tissue), leading to conditions classified under *Yoni Vyapad* (gynecological disorders), including PCOD (12). The classical Ayurvedic literature cautions against the chronic use of pungent and heating substances due to their potential to destabilize hormonal rhythms. Thus, the survey's findings suggest a meaningful dietary pattern that may contribute to PCOD manifestations when viewed through both modern and traditional medical lenses

According to consumptions of different food combinations –Survey findings revealed that a significant proportion of participants engaged in incompatible food combinations, such as the consumption of hot and cold foods together (40%), intake of fruits immediately after meals (30%), and fruit-milk combinations (20%). From a modern scientific perspective, such

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

combinations can impair digestion and gastrointestinal function, potentially contributing to metabolic disturbances observed in PCOD (11). Ayurveda categorizes these practices under *Viruddha Āhāra* (incompatible diet), which is known to disturb *Agni* (digestive fire), promote *Āma* (toxic accumulation), and aggravate *Kapha* and *Vāta* doshas. This can obstruct *Artavavaha Srotas* (reproductive channels), leading to menstrual irregularities and cyst formation—hallmarks of PCOD (12)."

Sleep pattern and pcod-According to the survey findings, a significant proportion of participants reported irregular sleep patterns, with the majority indicating they routinely sleep after 12:00 AM. 50% of participants reported experiencing difficulties in sleep, which may play a significant role in the development and exacerbation of Polycystic Ovarian Disease (PCOD).Disruption in circadian rhythm and inadequate sleep duration have been identified in modern research as key contributors to hormonal imbalances, insulin resistance, and increased cortisol levels—all of which play crucial roles in the pathogenesis of Polycystic Ovarian Disease (PCOD) (19)(20). Sleep deprivation is also associated with increased appetite-regulating hormones such as ghrelin, potentially contributing to weight gain and metabolic dysfunctions commonly seen in PCOD cases (13).

In Ayurveda, disturbed sleep or *Nidra vighata* is considered a major lifestyle imbalance that aggravates *Vata dosha* and weakens *Ojas* (vital energy), leading to hormonal dysregulation. *Ratri jagarana* (late-night waking) and poor sleep hygiene are classified as *Nidra-nasha hetus* (causative factors for sleep disorders), which may result in *Agni mandya* (weakened digestion) and accumulation of *Ama* (toxins). These imbalances can impair *Artava dhatu* (reproductive tissue), contributing to gynecological disorders such as *Yoni vyapad*, including PCOD (14)(15).

Stress and pcod-Survey findings revealed that 70% of participants engaged in emotional eating due to stress, with 40% identifying family and academic pressure as primary stressors. Chronic stress is a recognized contributor to Polycystic Ovarian Disease (PCOD) in modern medicine, as it elevates cortisol levels, disrupts the hypothalamic-pituitary-ovarian (HPO) axis, and worsens insulin resistance, which collectively impair ovarian function (16). Emotional eating, often triggered by stress, can lead to poor dietary choices and excessive calorie intake, further exacerbating metabolic and hormonal imbalances associated with PCOD (17).

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

In Ayurveda, stress is linked with *Manasika doshas* (mental energies) such as *Rajas* and *Tamas*, which aggravate *Vata dosha* and disturb *Manovaha srotas* (mental channels), leading to hormonal imbalances and disorders like *Artava dushti* (menstrual irregularity) and *Yoni vyapad* (gynecological disorders), including PCOD (18)

6. Conclusion

Polycystic Ovarian Disease (PCOD), now widely considered under the umbrella of PCOS (Polycystic Ovary Syndrome), is a multifactorial disorder influenced by genetic, hormonal, environmental, and lifestyle components. Irregular meal patterns, frequent consumption of processed foods, and a high intake of fatty dairy products significantly impair insulin sensitivity and disturb glucose metabolism, which are central elements in the development of PCOD. These dietary habits contribute to hyperinsulinemia, which in turn stimulates ovarian androgen production, leading to hallmark symptoms such as acne, hirsutism, and irregular menstruation.

The survey also highlighted weight gain, particularly central obesity, in most participants. This pattern of fat distribution is known to elevate androgen levels and exacerbate both metabolic and reproductive symptoms.

Further, emotional eating, excessive portion sizes, and sustained psychological stress were observed as key contributors to elevated cortisol levels, which disrupt the hypothalamic-pituitary-ovarian (HPO) axis and further imbalance reproductive hormones.

A sedentary lifestyle combined with lack of physical activity not only reduces insulin sensitivity but also contributes to systemic low-grade inflammation, another underlying factor in PCOD.Additionally, poor sleep hygiene negatively influences the regulation of hunger-related hormones such as leptin and ghrelin, further disturbing metabolic balance and leading to increased appetite, weight gain, and hormonal disruption.

According to Ayurveda, PCOD is mainly caused by an imbalance of *Vata* and *Kapha doshas*, along with *Ama* formation due to weak digestion or *Agnimandya*. The survey findings and showing that most participants followed irregular eating habits and consumed incompatible, heavy, oily, and spicy foods. These dietary patterns block the body's channels (*srotas*) and disturb *Meda Dhatu*, leading to weight gain and hormonal issues.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 14, Iss 5, 2025

High stress, emotional instability, and skipping meals disturb *Vata dosha* , causing anxiety, irregular periods, and hormonal imbalance. At the same time, lack of physical activity, poor sleep, and low water intake aggravate *Kapha dosha*, which slows metabolism, increases body weight, and creates a sense of heaviness or dullness.

Improper lifestyle habits weaken *Rasa* and *Artava Dhatus* (plasma and reproductive tissues), eventually causing gynecological disorders like PCOD, known as *Yoni Vyapad* in Ayurveda.

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