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A STUDY OF THE IMPACT OF YOGIC ASANAS IN MANAGEMENT OF MESTRUAL DISCOMFORT IN PCOD

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Introduction to PCOD

Polycystic Ovarian Disease (PCOD) stands out as one of the most widespread endocrine disorders affecting women during their reproductive years across the globe. This complex condition is marked by a notable hormonal imbalance within the body, leading to irregular ovulation cycles and the formation of multiple cysts on the ovaries. As a result, the normal functioning of the ovaries is disrupted, giving rise to an array of reproductive, metabolic, and psychological challenges.

In recent decades, the incidence of PCOD has escalated, becoming a pressing public health issue, particularly among younger women. Contributing factors such as sedentary lifestyles, poor nutritional habits, heightened stress levels, and insufficient physical activity are believed to play a significant role in this rise. Consequently, women diagnosed with PCOD often endure a range of distressing symptoms including irregular menstrual cycles, unexplained weight gain, acne, excessive hair growth in unwanted areas, and fertility complications that can impede their ability to conceive.

Moreover, the implications of PCOD extend beyond the physical realm, significantly affecting emotional and mental well-being. Many women report experiencing heightened levels of anxiety and depression, leading to a diminished quality of life. In light of these multifaceted challenges, there is an increasing exploration of treatment options within modern medicine. Alongside conventional therapies, there is a growing interest in integrating complementary approaches, such as yoga, which holistically address both the physiological and psychological facets of health, providing women with additional tools to manage their condition effectively.

Menstrual Health and Disorders

Menstrual health serves as a vital barometer for a woman's overall reproductive and hormonal well-being. A typical menstrual cycle can vary significantly, usually falling between 21 to 35 days, and is orchestrated by a complex array of hormones, predominantly estrogen and progesterone. This natural rhythm is essential for various physiological functions, including preparation for potential pregnancy.

Despite the normal range, a significant number of women encounter various menstrual disorders that can disrupt this natural process. These disorders include:

Dysmenorrhea: This condition is characterized by severe and often debilitating menstrual pain that can radiate to the lower back and thighs, causing discomfort that interferes with daily life.

Amenorrhea: The absence of menstruation, either primary (when a young woman has not started menstruating by age 15) or secondary (when a woman who has had normal cycles stops menstruating for three months or more), can signal underlying hormonal imbalances or health issues.

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Oligomenorrhea: This refers to infrequent menstrual periods, defined as cycles occurring more than 35 days apart, which can indicate potential hormonal disruptions or other medical conditions.

Menorrhagia: This condition involves abnormally heavy or prolonged menstrual bleeding, which can lead to significant physical discomfort and can often result in anemia or fatigue due to blood loss.

The impact of these menstrual disorders extends far beyond physical symptoms; they can severely hinder daily activities, academic performance, and overall quality of life. Among these issues, menstrual discomfort—especially in the form of pain and fatigue—is one of the most prevalent complaints, causing emotional and physical strain.

The underlying causes of menstrual disorders are multifaceted and may include hormonal imbalances, significant stress levels, nutritional deficiencies, and health conditions such as Polycystic Ovary Syndrome (PCOS). Effectively tackling these challenges necessitates a comprehensive approach that encompasses lifestyle modifications, stress management techniques, and regular physical activity. Implementing these strategies can help restore menstrual health and enhance overall well-being.

Concept of Menstrual Discomfort

Menstrual discomfort, commonly known as dysmenorrhea, encompasses a wide array of symptoms that many individuals experience during their menstrual cycle. These symptoms can vary significantly in both intensity and duration, often affecting daily activities and overall quality of life. The most common manifestations of menstrual discomfort include:

Lower Abdominal Cramps: These are sharp or throbbing pains in the lower abdomen, typically originating from the contractions of the uterus as it sheds its lining.

Back Pain: This discomfort can range from a dull, persistent ache to sharp pains in the lower back, often exacerbated by certain positions or activities.

Nausea: Some may experience feelings of queasiness or an upset stomach, which can accompany the physical discomfort of cramps.

Fatigue: Many individuals feel unusually tired or lethargic during their menstrual cycle, which can be a result of hormonal fluctuations and physical discomfort.

Headache: Hormonal changes can trigger tension headaches or migraines in some individuals, adding to the overall discomfort experienced during this time.

Mood Swings: Emotional fluctuations, including irritability, sadness, or anxiety, can occur due to hormonal changes and physical discomfort, affecting relationships and daily interactions.

Menstrual discomfort can be categorized into two primary types:

Primary Dysmenorrhea: This form occurs in the absence of any underlying medical conditions and is primarily attributed to the production of prostaglandins, which lead to uterine contractions and the resultant cramping.

Secondary Dysmenorrhea: This type is associated with various underlying medical issues, such as polycystic ovary syndrome (PCOS), endometriosis, or uterine fibroids. These conditions can exacerbate the intensity of menstrual discomfort and may require specific medical intervention.

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In individuals with PCOS, menstrual discomfort tends to be more pronounced due to irregularities in hormone levels, leading to severe cramping and discomfort. This not only impacts physical health but also poses challenges to mental and emotional well-being, as persistent pain can contribute to feelings of anxiety and depression.

Effectively managing menstrual discomfort is crucial for enhancing overall well-being. As awareness of holistic health approaches grows, non-pharmacological interventions such as yoga are gaining recognition for their benefits. Incorporating activities that promote relaxation and flexibility can play a significant role in alleviating symptoms and improving quality of life during menstruation.

Causes and Symptoms of PCOD

Polycystic Ovarian Disease (PCOD) is a complex condition that emerges from a combination of genetic, hormonal, and environmental factors, leading to a range of symptoms that can significantly impact a person's quality of life.

CAUSES

1. Hormonal Imbalance: One of the primary causes of PCOD is a disruption in hormonal levels, particularly the overproduction of androgens, which are male hormones typically present in small amounts in women. This imbalance affects various bodily functions and can lead to several related symptoms.

2.Insulin Resistance: Many individuals with PCOD experience insulin resistance, where the cells in the body cannot effectively use insulin. This condition not only contributes to weight gain but can also lead to higher insulin levels, further exacerbating hormonal imbalances.

3. Genetic Predisposition: A family history of PCOD or related metabolic disorders can increase the likelihood of developing this condition. Genetic factors play a significant role in how the body regulates hormones and metabolism.

4. Sedentary Lifestyle: A lack of physical activity can contribute to weight gain and exacerbate insulin resistance, which in turn impacts hormonal regulation and can exacerbate PCOD symptoms.

5. Stress and Poor Sleep Patterns: Chronic stress and insufficient sleep can affect hormonal balance and exacerbate the symptoms of PCOD. Elevated stress hormones, like cortisol, can influence insulin sensitivity and overall hormonal health.

SYMPTOMS

1. Irregular or Absent Menstrual Cycles: Women with PCOD often experience irregular periods or may have an absence of menstruation altogether, which is a significant indicator of disrupted ovarian function.

2. Excessive Hair Growth (Hirsutism): Many individuals may notice increased hair growth in areas typically seen in men, such as the face, chest, and back, due to elevated androgen levels.

3. Acne and Oily Skin : The hormonal fluctuations associated with PCOD can lead to skin problems, including acne and excessively oily skin, making these symptoms common complaints among those affected.

4. Weight Gain: A tendency to gain weight, particularly around the abdomen, is often noted, which can lead to a cycle that further complicates insulin resistance and hormonal issues.

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5. Hair Thinning: Some may experience thinning hair or male-pattern baldness, which can be distressing and is another effect of hormonal imbalances.

6. Difficulty in Conceiving: The hormonal disruptions and irregular ovulation associated with PCOD can lead to challenges when trying to conceive, making it an important consideration for those planning to start a family.

The mechanism behind PCOD involves a significant disruption of normal ovulation accompanied by elevated androgen levels, both of which interfere with the normal functioning of the ovaries.

Early diagnosis and proactive management of PCOD are essential in mitigating potential long-term complications such as type 2 diabetes, cardiovascular disease, and infertility, allowing those affected to maintain a healthier lifestyle and reproductive health.

Importance of Yogic Asanas

Yogic asanas, or postures, hold significant importance in promoting physical health and maintaining hormonal equilibrium within the body. Certain specific asanas are designed to target the pelvic region, which in turn enhances blood circulation to reproductive organs, fostering better reproductive health.

Benefits of Yogic Asanas

1. **Regulates Hormonal Secretion**: The practice of yogic asanas aids in balancing hormone levels, which is crucial for overall well-being.
2. **Improves Ovarian Function**:Regular practice can enhance the function of the ovaries, contributing to healthier menstrual cycles and fertility.
3. **Reduces Stress and Anxiety**: Engaging in these postures can help alleviate stress and anxiety, leading to improved mental clarity and emotional stability.
4. **Enhances Flexibility and Strength**: The physical demands of these asanas promote greater flexibility and muscular strength, which are essential for overall body health.
5. **Improves Circulation**: Increased blood flow throughout the body, particularly to the pelvic area, supports organ health and promotes vitality.

Certain asanas, such as:

1. **Baddha Konasana (Bound Angle Pose)**:This posture opens the hips and promotes relaxation, making it particularly beneficial for women.
2. **Bhujangasana (Cobra Pose)**: Known for its energizing effects, this asana strengthens the spine and stimulates the abdominal organs, enhancing reproductive health.
3. **Setu Bandhasana (Bridge Pose**): This pose not only opens the chest and heart but also improves circulation to the pelvic region.
4. **Paschimottanasana (Seated Forward Bend)**: A calming pose that encourages introspection and helps reduce stress, it also aids in improving digestion and hormonal balance.

Regularly practicing these asanas can significantly alleviate menstrual discomfort and restore hormonal balance naturally, making them a highly beneficial addition to the wellness routines of women facing conditions like PCOD (Polycystic Ovary Syndrome). By integrating these postures into daily life, women can nurture their bodies, support reproductive health, and foster a profound sense of well-being.

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Role of Yoga in PCOD

Yoga has emerged as a valuable non-pharmacological approach for managing the symptoms associated with Polycystic Ovary Disorder (PCOD). This holistic practice not only promotes physical fitness but also plays a crucial role in regulating endocrine function, enhancing insulin sensitivity, and alleviating stress, which are all vital factors for individuals affected by PCOD.

In a noteworthy study conducted by Nidhi et al. (2013), it was found that engaging in yoga led to significant improvements in hormonal balance among women diagnosed with PCOD. Participants reported a reduction in common PCOD symptoms when compared to those who relied solely on conventional exercise routines. Furthermore, yoga fosters an increase in parasympathetic activity, which is beneficial for reproductive health, helping to create a more favorable physiological environment for those managing this condition. Through its unique combination of physical postures, breathing techniques, and mindfulness, yoga offers a holistic pathway for improving well-being and managing the challenges posed by PCOD.

RESEARCH DESIGN

The present study employed a Multiple-Baseline Single-Case Experimental Design (MB-SCED) across participants to evaluate the effectiveness of an 8-week structured yoga therapy intervention on clinical, anthropometric and psychosocial parameters of Polycystic Ovarian Disease (PCOD).

Rationale for Selecting Single-Case Experimental Design

A Single-Case Experimental Design was deemed most appropriate for this study due to the following reasons:

Small Sample Size: With only two participants available for intensive 8-week supervised intervention, group designs lacked statistical power. SCED provides rigorous experimental control through intra-subject and inter-subject replication rather than group means (Kazdin, 2019).

- **Ethical Appropriateness**: A reversal/withdrawal design was considered unethical for PCOD, as withdrawing a potentially beneficial therapy could worsen menstrual irregularities. The multiple-baseline design demonstrates effect without withdrawal of treatment.
- **Heterogeneity of PCOD**: PCOD presents with varied phenotypes. SCED permits in-depth, idiographic analysis of individual response trajectories, which is clinically more meaningful than averaging effects across heterogeneous participants.
- **Pilot Nature:** The study aimed to establish feasibility, estimate effect sizes, and generate hypotheses for a future randomized controlled trial. SCED is recommended by What Works Clearinghouse as Level 1 evidence for pilot intervention research.

Design Structure

The study consisted of three phases for each of the two participants:

Phase	Description	P1 Duration	P2 Duration
Phase A: Baseline	No intervention. Repeated measurement to establish pre-intervention stability	Weeks 1-2	Weeks 1-2
Phase B: Intervention	8-week structured yoga therapy, 5 days/week, 60 min/day	Weeks 3-10	Weeks 3-10
Follow-up	Post-intervention assessment to check retention	Week 12	Week 12

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Key Feature - Staggered Baselines: The baseline phase was staggered by 2 weeks between P1 and P2. This design element controls for threats to internal validity such as history and maturation. Experimental control is demonstrated if changes in dependent variables occur only when and after yoga is introduced for each participant, and at different points in time.

Variables

1.Independent Variable: 8-week standardized yoga therapy module for PCOD comprising asanas, pranayama, and yoga nidra.
2.Dependent Variables:

- Primary: Menstrual cycle regularity
- Secondary: BMI, waist-hip ratio, perceived stress (PSS-10).

Strengths of Design for 2 Participants

1.Internal Validity: Controls for maturation, testing, and history through staggered introduction of intervention.
2.Clinical Relevance: Provides detailed response pattern of each case, useful for individualized yoga prescription.
3.Efficiency: Allows conclusion of causality with n=2, which is not possible with group designs.

SAMPLE COLLECTION

Population:

The population for the present study comprised women aged 20-30 years diagnosed with Polycystic Ovarian Disease (PCOD) residing in Visakhapatnam District, Andhra Pradesh.

Sampling Method

Purposive sampling with criterion-based selection was used. This non-probability sampling technique was chosen because:
1.The study required participants with confirmed PCOD diagnosis meeting specific clinical criteria.
2.The intensive nature of the 8-week supervised intervention and repeated measurements necessitated highly motivated participants with assured compliance.
3. As an exploratory pilot using Single-Case Experimental Design, the emphasis was on in-depth analysis rather than statistical generalization.

Sample Source

Participants were recruited from:

1.Primary source: Gynecology Outpatient Department of [Name of Hospital], Visakhapatnam

2.Screening period: January 2026 to march 2026

3.Method: Medical records of patients diagnosed with PCOD in the preceding 6 months were reviewed with permission from the treating gynecologist and institutional ethics committee.

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Sample Size

Two participants were selected for the study. The small sample size is justified under Single-Case Experimental Design guidelines, which establish experimental control through intra-subject and inter-subject replication rather than group means. According to What Works Clearinghouse SCED standards (Kratochwill et al., 2013), evidence from two cases with staggered baselines is considered to "meet standards with reservations" and is appropriate for pilot testing.

One additional participant meeting identical criteria was screened and kept as a backup to account for possible attrition.

Sample Characteristics:

To maintain confidentiality, participants are denoted as P1 and P2. Both participants were from similar socioeconomic backgrounds and had PCOD duration >3 years. Detailed participant profiles are presented in Table 4.1 in Chapter 4.

VARIABLES OF THE STUDY

In the present study, variables were classified as independent, dependent, and extraneous variables. The relationship between these variables was examined using a Multiple-Baseline Single-Case Experimental Design.

Independent Variable

The independent variable in this study was the Structured Yoga Therapy Intervention for PCOD.

Operational Definition: A standardized 8-week yoga module specifically designed for Polycystic Ovarian Disease, administered 5 days per week for 60 minutes per session under direct supervision of a certified yoga therapist.

Components of the intervention:

1.Asanas: PCOD-specific postures including Baddha Konasana, Supta Baddha Konasana, Bhujangasana, Dhanurasana, and Setu Bandhasana to stimulate pelvic circulation and ovarian function.
2.Pranayama: Nadi Shodhana, Bhramari, and Kapalabhati to regulate hypothalamo-pituitary-ovarian axis and reduce stress.
3.Relaxation: Yoga Nidra for 10 minutes to reduce cortisol and improve insulin sensitivity.
4.Dosage: Frequency 5 days/week, Intensity: moderate, Time: 60 min/session, Type: Hatha yoga-based, Duration: 8 weeks.

The intervention protocol is detailed in Appendix-IV. Treatment fidelity was ensured through a written manual, therapist training, and attendance logs.

Dependent Variables

Dependent variables were selected to assess clinical, biochemical, anthropometric, and psychosocial outcomes of PCOD. They were measured repeatedly across baseline and intervention phases.

Yoga Intervention Compliance Log

- **Description:** Daily attendance register maintained by yoga therapist.
- **Components:** Date, duration, asanas completed, adverse events, remarks.
- **Target**: ≥80% attendance i.e., 32/40 sessions required for inclusion in analysis.

Techniques for Data Collection

- **Interview Technique:** Used for Demographic Data Sheet and history taking during screening.

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- **Self-Report Technique:** For Menstrual Diary, PSS-10, PCOSQ. Participants trained on Day 1 to ensure accurate reporting.
- **Observation Technique:** For mFG scoring and assessment of yoga performance.
- **Daily Monitoring:** WhatsApp reminder sent daily for diary filling during baseline and intervention phases to minimize missing data.

3.6.3 Components of Yoga Module for PCOD

The session was divided into 5 sections following the Pancha Kosha concept. Total duration: 60 minutes.

Section	Practices	Duration	Rationale for PCOD
1. Opening Prayer & Loosening	Omkaram 3 times. Sukshma Vyayama: neck, shoulder, wrist, ankle rotation, butterfly, cat-cow stretch	5 min	Centers mind, warms up joints, prevents injury

RESULTS AND ANALYSIS

4.1.1. Pre- Test Analysis

Pre-test analysis was conducted to establish baseline status of the two participants prior to introduction of the yoga therapy intervention. This section presents demographic characteristics and baseline levels of dependent variables. Establishing baseline stability was critical in Multiple-Baseline Single-Case Experimental Design to attribute subsequent changes to the intervention rather than to extraneous factors.

Table 4.1: Demographic and Clinical Characteristics at Baseline

Variable	Participant 1 (P1)	Participant 2 (P2)
Age (years)	27	25
Age at Menarche (years)	13	12
Duration of PCOD (years)	4	6
Marital Status	Unmarried	Unmarried
Education	MBA	MBBS
Occupation	Student	Student
Family History of PCOD	No	No
Previous Treatment	Allopathy - 1 year ago	Allopathy – 1 year ago
Medication Status	None for last 3 months	None for last 3 months

Interpretation: Both participants were in the reproductive age group with PCOD duration >3 years. Neither participant have familial predisposition. Neither participant was on hormonal therapy during the 3 months preceding enrollment, satisfying inclusion criteria.

4.1.2 Baseline Menstrual Cycle Status

Table 4.2: Pre-Intervention Menstrual Pattern

Participant	Last 3 Menstrual Cycles	Mean Cycle Length	Classification
P1	55 days, 52 days, 48 days	51.7 days	Oligomenorrhea
P2	45 days, 42 days, 48 days	45.0 days	Oligomenorrhea

Interpretation: Both participants presented with oligomenorrhea at baseline. P1 had longer, more irregular cycles with mean 51.7 days. P2 had relatively shorter cycles with mean 45.0 days. Both met Rotterdam criterion for menstrual irregularity (>35 days or <8 cycles/year).

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Table 4.3: Pre-Test Anthropometric and Clinical Parameters

Variable	P1 Baseline Mean (SD)	P2 Baseline Mean (SD)	Normal/Target
Weight (kg)	65	67	
BMI (kg/m²)	27.5	28.25	18.5-24.9
Waist Circumference (cm)	87.5	89	<80
Hip Circumference (cm)	101.4	102.2	
Waist-Hip Ratio	0.86	0.87	<0.85

Baseline Psychosocial Parameter

Participant	PSS-10 Score	Interpretation
P1	26	High Perceived Stress (27-40)
P2	28	High Perceived Stress (27-40)

Interpretation: Both participants reported high levels of perceived stress at baseline. PSS-10 scores >26 indicate high stress category.

Summary of Baseline Status

At pre-test, both participants exhibited the classic PCOD triad:

1. **Menstrual dysfunction:** P1 - oligomenorrhea, P2 – oligomenorrhea
2. **Metabolic dysfunction:** Overweight BMI with central obesity in both
3. **Psychosocial dysfunction:** High perceived stress levels in both

This baseline profile confirms that both participants met inclusion criteria and presented with moderate-to-severe PCOD phenotype before yoga intervention.

POST-TEST ANALYSIS

Menstrual Cycle Pattern

Pre and Post Intervention Menstrual Status

Participant	Pre-Intervention Mean	Post-Intervention Cycles	Post Mean	Change Observed
P1	51.7 days	During 8 weeks: 42 days, 38 days	40.0 days	Cycle shortened by 11.7 days (-22.6%)
P2	45.0 days	Menstruation resumed in Week 4 of yoga. Cycles: 32 days, 30 days	31.0 days	Cycle normalized to 21-35 days. Reduced by 14.0 days (-31.1%)

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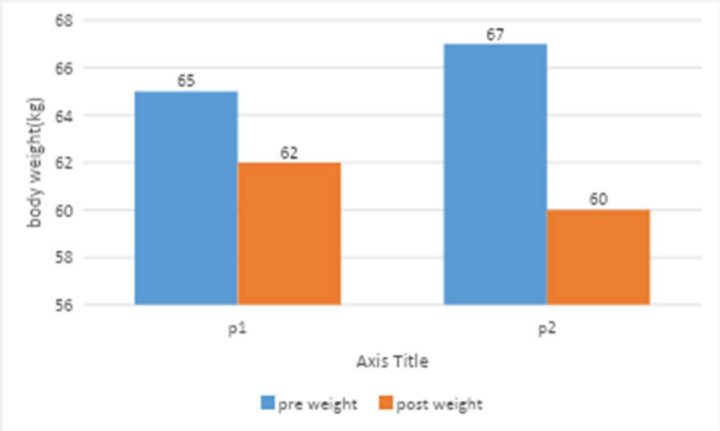
Key Clinical Finding for P2: Menstruation occurred 1 month after starting yoga therapy, with subsequent cycle length falling within normal range of 21-35 days. This indicates restoration of regular menstrual function.

Key Finding for P1: Cycle length reduced from 51.7 to 40.0 days, showing improvement but not reaching normal range within 8 weeks.

4.2.2 Anthropometric Variables and Psychosocial parameter

Table 4.6: Pre-Post Changes Across All Variables

Variable	P1 Pre	P1 Post	P1 % Change	P2 Pre	P2 Post	P2 % Change
Cycle Length (days)	51.7	40.0	-22.6%	45.0	31.0	-31.1%
Weight (kg)	65	62	-4.6%	67	60	-10.44%
BMI (kg/m²)	27.5	26.4	-4%	28.25	25.2	-10.79%
WC (cm)	87.5	83.2	-4.94%	89	80.5	-9.55%
WHR	0.86	0.84	-2.32%	0.87	0.84	-3.44%
PSS-10	26	16	-38.5%	28	15	-46.4%



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4.3 COMPARISON OF RESULTS

Table 4.7: Response Pattern

Domain	P1 Response	P2 Response
Menstrual Latency	Gradual shortening from Week 1	Normal cycle in Week 4 of yoga
Clinical Normalization	Not achieved: 40 days still >35	Achieved: 31 days within normal
Weight/Stress	-4.6% weight, -38.5% stress	-10.44% weight, -46.4% stress

Interpretation: Both showed similar metabolic and stress improvements. P2 showed faster and complete menstrual response, achieving normal cycles within 1 month of yoga. P1 showed slower, partial response. This suggests individual variation in HPO-axis responsiveness.

4.4 STATISTICAL INTERPRETATION

Table 4.8: Percentage Improvement

Variable	P1 % Change	P2 % Change	Mean % Change
Cycle Length	-22.6%	-31.1%	-26.85%
Weight	-4.6%	-10.44%	-7.52%
PSS-10	-38.5%	-46.4%	-42.45%

Clinical Significance:

1. P2: Achieved all 3 targets - normal cycles, >5% weight loss, stress reduction to moderate level.
2. P1: Achieved 2/3 targets - weight loss, stress reduction. Menstrual improvement present but incomplete.

Suggestions for Clinical Practice

1. Yoga therapy may be incorporated as a complementary lifestyle intervention for PCOD patients, particularly those with high stress and overweight, under supervision of qualified yoga therapist.
2. A minimum duration of 12 weeks should be advised for menstrual benefits, with counseling that response may vary based on baseline severity.
3. Emphasis should be placed on Pranayama and Dhyana components for stress management, along with Asana for weight reduction.
4. Patients should be screened for Prakriti and baseline cycle length to set realistic expectations and individualize duration.
5. Integration with dietary modification (Pathya Ahara) and conventional medical care is recommended for optimal outcomes.

Suggestions for Future Research

1. Conduct randomized controlled trials with adequate sample size (n>30 per group) comparing yoga vs standard lifestyle intervention vs standard care.
2. Extend intervention duration to 12-16 weeks with 3-month follow-up to assess sustainability.
3. Include biochemical outcomes: LH:FSH ratio, total/free testosterone, fasting insulin, HOMA-IR, and SHBG to understand mechanisms.
4. Use transvaginal ultrasound to document changes in ovarian volume, follicle count, and endometrial thickness.

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5. Employ Multiple-Baseline Single-Case Design with staggered start across 3-4 participants to strengthen causal inference in resource-limited settings.
6. Stratify participants by PCOD phenotype (A, B, C, D) and BMI category to identify who benefits most.
7. Assess quality of life using PCOSQ and menstrual distress using Moos Menstrual Distress Questionnaire for comprehensive evaluation.
8. Conduct qualitative studies to explore participant experience, adherence barriers, and perceived mechanisms of change.

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