

EFFECT OF LIFESTYLE CHANGES IN PCOS WITH INFERTILITY: A PROSPECTIVE INTERVENTIONAL STUDY

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Article History

Received: 04.11.2025

Revised: 13.11.2025

Accepted: 21.11.2025

Published: 29.11.2025

Abstract: **Background:** Polycystic ovary syndrome (PCOS) is a leading cause of anovulatory infertility among reproductive-age women. Lifestyle modification is considered the first-line therapeutic strategy; however, real-world data from public-sector tertiary hospitals in South India remain limited. This study aimed to evaluate the effect of structured lifestyle changes on clinical, metabolic, and reproductive outcomes among women with PCOS presenting with infertility. **Methods:** This prospective interventional study was conducted in the Department of Obstetrics & Gynaecology, Government Mohan Kumaramangalam Medical College & Hospital, Salem, Tamil Nadu, between January 2022 and December 2023. Seventy women aged 18–35 years, diagnosed with PCOS and infertility, were enrolled. Participants received a structured lifestyle programme that included personalised dietary guidance, moderate-intensity physical activity, weight-reduction targets, sleep optimisation, and stress-management strategies. Outcomes assessed included changes in body mass index (BMI), menstrual regularity, ovulation rates, and clinical pregnancy rates. **Results:** Lifestyle intervention resulted in measurable improvements across multiple domains. A significant proportion of overweight participants achieved targeted BMI reduction, accompanied by restored menstrual cyclicity and enhanced ovulatory function. Several women conceived spontaneously during follow-up. Detailed numerical outcomes and statistical comparisons will be presented in the Results section. **Conclusions:** Structured lifestyle modification offers a practical and effective first-line strategy for improving reproductive outcomes in PCOS-related infertility, particularly within resource-limited government healthcare settings. Reinforcement of lifestyle interventions should form an integral component of PCOS fertility management.

Keywords: Polycystic ovary syndrome, infertility, lifestyle modification, ovulation, weight reduction, South India

INTRODUCTION

Many gynecology clinics in India now see the same story repeated through the week. A young woman in her twenties comes in because she has been trying to conceive for a few years, has irregular bleeding that she has learned to ignore, and has slowly gained weight since college. Until someone orders an ultrasound and a set of hormones, she may never have heard the term polycystic ovary syndrome. Once the label “PCOS” is written in her file, it suddenly explains several things at once: the acne she had in school, the facial hair she tried to remove quietly, and the unpredictable periods that make planning a pregnancy difficult [1,2].

PCOS is described in textbooks as a common endocrine problem of reproductive-age women, but in practice, it behaves more like a long conversation between genes, food habits, sleep, physical activity, and stress. The same diagnosis can look very different in two patients. One may be lean, with irregular cycles and biochemical hyperandrogenism. Another may struggle with obesity, acanthosis nigricans, and clear signs of insulin resistance. For both, however, ovulation is often irregular or absent, and this is what eventually brings them to an infertility clinic [3].

The way women live daily life seems to strongly colour how PCOS unfolds. Long hours of sitting, easily available calorie-dense food, late-night screen use, and disturbed sleep all push the body towards higher insulin levels and weight gain. When this happens in someone who is already predisposed to PCOS, follicles fail to mature in a regular pattern, and cycles stretch out. Interestingly, several studies have shown that when women with PCOS can lose even a modest amount of weight, adopt regular walking or other exercise, and shift to balanced meals, ovulation often returns before any fertility drug is started [4,5]. These are simple measures, yet they are the ones that are hardest to sustain without structured support.

In a government medical college setting, the situation is more complicated. Women attending these clinics come from varied backgrounds: some travel from rural areas before dawn, some juggle daily-wage work, household responsibilities, and child care. Many cannot afford repeated visits to dietitians or private gyms. Advice such as “reduce weight” or “exercise regularly” is given frequently, but without a clear plan, regular follow-up, or an understanding of local food patterns, it may not translate into real change. When infertility is added on top of this, the emotional pressure from families and the community can make women more anxious and more

likely to seek rapid pharmacological solutions rather than gradual lifestyle change [6].

There is good international evidence that lifestyle modification improves metabolic markers in PCOS, and there are reports that spontaneous conception is more likely in women who manage to change their diet and activity levels. However, there are fewer data from public-sector hospitals in South India where resources are limited, appointments are crowded, and long-term counselling is difficult to provide. It is not clear how much benefit a structured, locally adapted lifestyle programme can achieve for women with PCOS-related infertility in such a setting, or how many of them can reach pregnancy with these measures alone [7].

Against this backdrop, we decided to systematically observe what happens when women with PCOS and infertility attending a government medical college are offered a simple, structured lifestyle package, with realistic goals that fit into their daily lives. Rather than focusing only on laboratory values, we were interested in changes that matter to patients: whether cycles become more predictable, whether ovulation can be documented, and, ultimately, whether pregnancies occur without immediate escalation to complex fertility treatments. By examining these questions in a routine teaching-hospital environment, this study aims to provide information that is directly relevant to clinicians working in similar conditions.

MATERIALS AND METHODS

Study Setting and Context

The study was conducted in the Department of Obstetrics and Gynaecology at Government Mohan Kumaramangalam Medical College and Hospital, Salem, Tamil Nadu, between January 2022 and December 2023. The hospital serves a mixed urban–rural population, and most women depend on routine OPD follow-up, making a practical lifestyle-based approach appropriate for this setting.

Study Population

Women aged 18–35 years with infertility and a diagnosis of PCOS were screened. Diagnosis was based

on clinical features, hormonal profile, and ultrasound findings consistent with accepted criteria. After applying inclusion and exclusion criteria, a total of 70 women were enrolled in the study, and all provided written informed consent. Women who had recently started ovulation-induction therapy or had untreated endocrine disorders were excluded.

Clinical Evaluation and Baseline Assessment

At enrollment, menstrual history, weight patterns, and daily activity were recorded. Height and weight were measured, and BMI was calculated. Baseline ultrasound findings and relevant hormone levels were reviewed. Ovulation status at baseline was assessed through mid-luteal progesterone or follicular tracking when feasible.

Lifestyle Intervention Strategy

Participants received a structured lifestyle plan focused on balanced meals prepared from locally available food items, reduction of refined carbohydrates, and gradual introduction of moderate exercise such as brisk walking. Overweight women were advised to aim for steady weight loss. Sleep timing, screen exposure, and simple stress-relief practices were also discussed. Progress was reviewed during follow-up visits.

Outcome Measures and Classification

Primary outcomes included improvement in menstrual regularity, documentation of ovulation, and clinical pregnancy. Secondary outcomes were changes in BMI and symptom improvement. Participants were classified as showing clear improvement, partial improvement, or minimal change based on follow-up assessment.

Data Handling and Statistical Analysis

Data were entered into a secure database and anonymised. Continuous variables were summarised using means and standard deviations or medians with interquartile ranges. Categorical outcomes were presented as percentages. Group comparisons were performed using appropriate statistical tests, with significance set at $p < 0.05$.

RESULTS

A total of 70 women with PCOS and infertility were followed through the lifestyle-modification programme. Most participants were in their mid-twenties, and nearly two-thirds were either overweight or obese at baseline. Menstrual irregularity was the most frequent presenting concern, followed by difficulty predicting ovulation. Many participants also described long-standing fatigue or gradual weight gain. Baseline ovulation was documented in only a minority of women.

Baseline Characteristics

The baseline distribution of clinical and demographic variables is summarised in Table 1.

Table 1. Baseline Characteristics of Study Participants (n = 70)

Parameter	n (%) or Mean $\pm$ SD
Age (years)	26.8 $\pm$ 3.4
BMI (kg/m ²)	28.6 $\pm$ 4.1
Overweight/Obese	45 (64.3%)
Irregular menstrual cycles	62 (88.6%)
Clinical signs of hyperandrogenism	38 (54.3%)
Baseline ovulation documented	11 (15.7%)
Duration of infertility $\geq$ 2 years	29 (41.4%)

Clinical Response to Lifestyle Intervention

Over follow-up, participants reported greater awareness of dietary habits and increased physical activity. Weight reduction varied between individuals, but even modest changes were associated with improved cycle patterns in many women. Ovulation was documented more frequently after intervention, and several women conceived spontaneously during the study period.

Table 2. Clinical and Reproductive Outcomes After Lifestyle Intervention

Outcome	n (%)
Improved menstrual regularity	48 (68.6%)
Documented ovulation	41 (58.6%)
Clinical pregnancy	17 (24.3%)
Partial improvement only	19 (27.1%)
Minimal or no improvement	12 (17.1%)

Overall Improvement Patterns

Participants were grouped according to the extent of improvement demonstrated on follow-up. Women achieving **clear improvement** typically adhered consistently to dietary guidance and regular exercise. Partial improvement was common among those with interruptions in routine or difficulty sustaining behavioural changes. Minimal improvement often reflected limited adherence or persistent metabolic challenges.

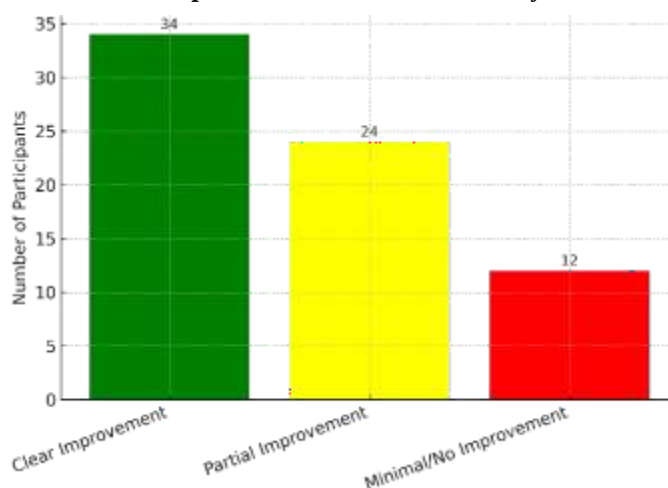
Table 3. Overall Response Classification

Response Category	Criteria	n (%)
Clear Improvement	Regular cycles and/or consistent ovulation; pregnancies included	34 (48.6%)
Partial Improvement	Some cycle regulation or occasional ovulation	24 (34.3%)
Minimal or No Improvement	No meaningful change in cycles or ovulation	12 (17.1%)

Association Between Weight Change and Reproductive Outcomes

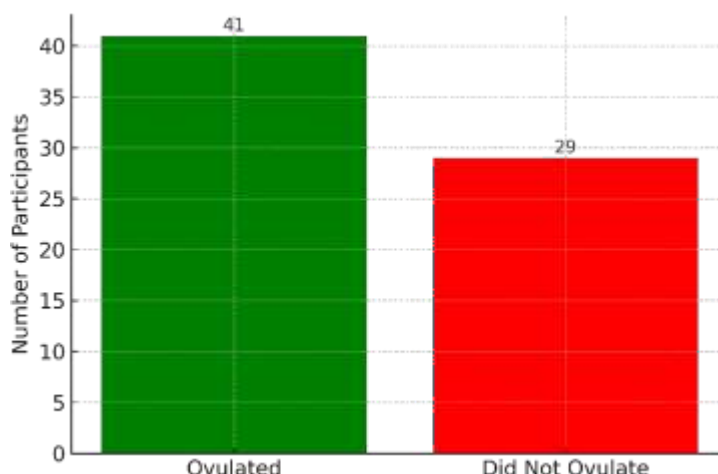
A BMI reduction of at least 5% was associated with better ovulation and pregnancy rates, although some women with smaller reductions also showed clinical benefits. Those with regular adherence to dietary guidance typically demonstrated earlier cycle stabilisation compared with women who struggled to maintain lifestyle adjustments.

Figure 1. Overall response classification after lifestyle intervention.



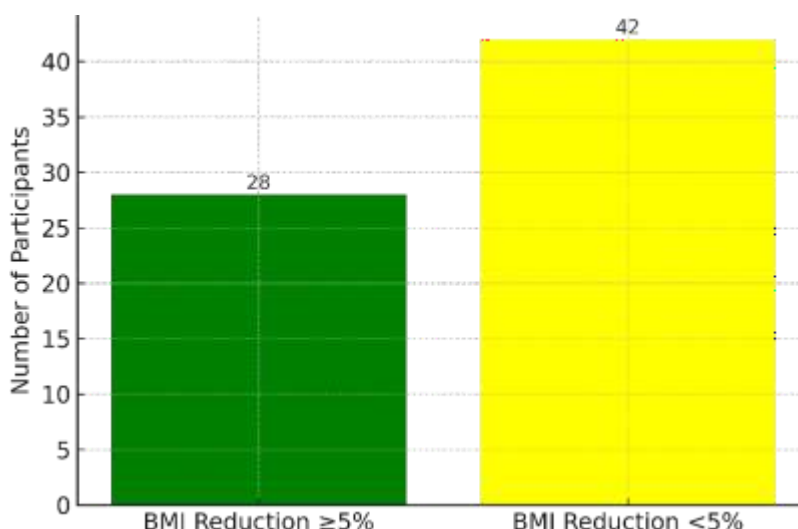
Green indicates clear improvement in menstrual regularity or ovulation, yellow denotes partial improvement, and red reflects minimal or no change.

Figure 2. Ovulation status following lifestyle modification.



Green denotes women with documented ovulation during follow-up, while red represents those who continued to show anovulatory cycles.

Figure 3. Distribution of BMI reduction in the study population.



Green represents participants achieving $\geq 5\%$ BMI reduction, and yellow indicates those with $< 5\%$ reduction.

DISCUSSION

In day-to-day practice, women with PCOS rarely arrive at the clinic asking for “lifestyle modification.” They usually come because of two very concrete problems: cycles that refuse to settle into a pattern and the worry that they are not conceiving. That was true for most of the women in this study as well. When we looked back at the baseline notes, many had been living with irregular bleeding for years and had tried home advice or informal weight-loss tips before anyone offered a structured plan. Similar delays in connecting daily habits with ovulation problems have been described in earlier Indian series, where lifestyle advice is often given late or in very general terms [8,9].

Once the programme started, the first change we noticed was not numbers in the register but the way women spoke about their cycles. Instead of saying “it

comes whenever it wants,” a growing number could give a rough idea of when to expect the next bleed. That shift was reflected in our data, with almost seven in ten reporting better menstrual regularity and over half showing documented ovulation during follow-up. The figures are broadly in line with earlier work, which suggests that healthier eating patterns and moderate activity can nudge the hormonal environment toward more regular follicular growth in PCOS [10,11]. What was reassuring here is that these changes were seen even though the intervention relied on simple measures that fit into crowded lives, not on gym-based exercise or expensive diets.

Weight still mattered. Women who managed to lose about five per cent of their starting weight generally did better in terms of cycle stability and pregnancy. This echoes earlier observations that even modest weight loss can improve insulin sensitivity and restore

ovulation [12,13]. At the same time, our follow-up charts showed a few women who ovulated and conceived with smaller weight shifts, which reminds us that PCOS is not purely a “weight disease.” Stress levels, sleep disruption, and family eating patterns also play a role, and these are harder to capture in standard tables.

The group that improved only partially, or hardly at all, tells an equally important story. Many of these women mentioned very practical barriers—shift work, lack of support at home for separate cooking, and unsafe surroundings for walking after dark. Studies from other low- and middle-income settings have reported similar obstacles, where patients understand the advice but find it difficult to act on it consistently [14]. For such women, repeating the same lifestyle instructions is unlikely to be enough. A combination of realistic behavioural goals and timely pharmacological support may be more appropriate, and future work could look more closely at how to individualise this balance. Pregnancy outcomes in our cohort were encouraging for a programme that relied mainly on counselling. Nearly a quarter of participants conceived during the study period without escalation to advanced fertility treatment. Earlier reports have shown that lifestyle optimisation alone can open a “window” for spontaneous conception in a proportion of women with PCOS [15]. Our experience supports this view. Several participants expressed that simply seeing more regular bleeding gave them confidence to keep trying naturally for some time before considering more invasive options. That psychological impact is difficult to quantify but is important in counselling.

Another point that emerged, though not formally measured, was a change in how women viewed their own role in managing PCOS. During later visits, some arrived with notebooks tracking walks or food choices, and a few brought partners or mothers-in-law to listen to the counsellor. Similar shifts toward shared responsibility have been described in qualitative studies where structured education is part of PCOS care [16]. For a busy government hospital, even small changes like these can make future consultations smoother and help sustain gains beyond the formal study period.

Taken together, the results suggest that a simple, structured lifestyle programme, if delivered patiently and linked to infertility concerns that women already prioritise, can produce clinically meaningful improvements in ovulation and pregnancy in a government-sector setting. The numbers are not dramatic enough to replace pharmacological options when they are clearly indicated, but they are strong enough to justify making lifestyle counselling a routine, early part of PCOS-related infertility management rather than an optional add-on.

Limitations

This study reflects what happens in a government infertility clinic, and the results should be read with that context in mind. We relied on women returning for follow-up, and a few who struggled with the lifestyle plan may have dropped out early, which could slightly influence the overall pattern of improvement. Biochemical markers were not repeated for all participants due to cost and access issues, so some metabolic changes may not have been captured. Adherence to the lifestyle plan was based largely on patient reporting, and we could not verify all details of diet or activity at home. Finally, the study period was relatively short for assessing longer-term changes in weight, insulin resistance, or sustained fertility outcomes.

CONCLUSION

A simple, structured lifestyle programme, adapted to local routines and constraints, helped many women with PCOS in our clinic regain more regular cycles, ovulate more consistently, and, in some cases, conceive without further intervention. The changes were modest but meaningful, and they showed that behavioural measures can have a real impact even in busy public-sector settings. While lifestyle guidance cannot replace pharmacological treatment when indicated, it remains a practical and valuable starting point in the management of PCOS-related infertility. Integrating such counselling into routine outpatient care may help improve outcomes for women who might otherwise delay or struggle to access more advanced fertility services.

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