Comparing The Effectiveness Of Structured Home Based 3's Exercise Program Versus Dietary Management In Woman With Polycystic Ovarian Syndrome (PCOS)-An Online Approach

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Abstract :

Background: Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder characterized by obesity, insulin resistance, menstrual irregularities, and reduced quality of life. Lifestyle modification, including exercise and dietary management, is considered the primary treatment approach.

Objective: To compare the effectiveness of a 12-week Home-Based 3'S Exercise Program (Squats, Stepper, and Skipping) with Dietary Management in women with PCOS an online based approach.

Methods: A comparative study was conducted among 30 women aged 18–40 years with clinically diagnosed PCOS. Participants were allocated into two groups: Group A (Home-Based 3'S Exercise Program; n = 15) and Group B (Dietary Management; n = 15). Both interventions were carried out for 12 weeks. Outcome measures included the Body Mass Index (BMI), and Waist-to-Hip Ratio (WHR). Data were analyzed using paired and independent *t*-tests.

Results: Both groups showed significant improvements in BMI, body weight, waist circumference, and WHR following the intervention. However, the Home-Based 3'S Exercise Program demonstrated significantly greater improvements in waist circumference and WHR compared with Dietary Management.

Conclusion: Both interventions were effective in improving anthropometric outcomes in women with PCOS. However, the Home-Based 3'S Exercise Program was more effective in reducing central obesity and may be recommended as a simple, accessible, and cost-effective non-pharmacological intervention.

Keywords: Polycystic Ovary Syndrome, Home-Based Exercise, 3'S Exercise, Dietary Management, Body Mass Index, Waist-to-Hip Ratio.

INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is one of the most prevalent endocrine disorders affecting women of reproductive age, with an estimated global prevalence of 4–20% and 4–6% in India. It is characterized by reproductive, metabolic, and psychological abnormalities, including menstrual irregularities, hyperandrogenism, insulin resistance, obesity, dyslipidemia, and infertility, which collectively impair health-related quality of life. According to the Rotterdam Criteria (2003), PCOS is diagnosed when at least two of the following are present: oligo/anovulation, clinical or biochemical hyperandrogenism, and polycystic ovarian morphology. Lifestyle modification is considered the first-line management strategy, with regular physical activity and dietary intervention playing key roles in improving metabolic, hormonal, and

reproductive outcomes. Aerobic exercise has been shown to enhance insulin sensitivity, reduce body weight, improve menstrual regularity, and alleviate psychological distress, while dietary management contributes to weight control, improved glycemic regulation, and hormonal balance. Home-based interventions are increasingly recommended because they are accessible, cost-effective, and promote long-term adherence. However, evidence directly comparing structured home-based exercise protocols with dietary management alone remains limited. Therefore, the present study aimed to compare the effectiveness of a home-based 3'S exercise protocol (Squats, Stepper, and Skipping) and dietary management in reducing symptoms and improving health outcomes among women with PCOS.

NEED OF THE STUDY

Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder associated with obesity, insulin resistance, menstrual irregularities, and reduced quality of life. Although lifestyle modification is the recommended first-line treatment, long-term adherence to diet and exercise remains challenging. Home-based exercise programs offer a practical, accessible, and cost-effective alternative to supervised interventions. However, limited evidence exists comparing structured home-based exercise with dietary management alone. Therefore, this study aims to evaluate the effectiveness of a home-based 3'S exercise protocol (Squats, Stepper, and Skipping) versus dietary management in improving anthropometric, metabolic, reproductive, and quality-of-life outcomes among women with PCOS

POPULATION AND SAMPLE

This 12-week home-based comparative study was conducted among 30 women clinically diagnosed with Polycystic Ovary Syndrome (PCOS), who were recruited using a convenient sampling technique. The participants were allocated into two groups: Group A (n = 15) and Group B (n = 15). Women aged 18–40 years who met the Rotterdam diagnostic criteria for PCOS (presence of at least two of the following: oligo/anovulation, clinical or biochemical hyperandrogenism, or polycystic ovarian morphology on ultrasonography), had a body mass index (BMI) within the normal to overweight range, experienced irregular menstrual cycles, were not receiving hormonal medication, and were willing to participate in the 12-week home-based intervention were included in the study. Women with other gynecological disorders, those who had undergone recent surgery or sustained injuries limiting physical activity, and those unwilling to participate in the study were excluded.

METHODOLOGY

Participants who met the inclusion criteria were recruited after obtaining written informed consent. All participants were informed about the study objectives and intervention procedures before enrolment. A total of 30 women with clinically diagnosed PCOS were allocated into two groups: Experimental Group A (n = 15) and Experimental Group B (n = 15). Baseline measurement obtained Body Mass Index (BMI), and Waist-to-Hip Ratio (WHR). Following the 12-week intervention period, all outcome measures were reassessed.

EXPERIMENTAL GROUP A (3'S HOME-BASED EXERCISE PROGRAM)

Participants in Experimental Group A underwent a structured home-based 3'S exercise program comprising Squats, Stepper exercises, and Skipping for 12 weeks. The exercise sessions were performed for 45–60 minutes per day, 5–6 days per week, and included a 5–10-minute warm-up, 10 minutes of skipping, 10 minutes of squats (3 sets of 10 repetitions), 10 minutes of stepper or stair-step exercises, followed by a 10–15-minute cool-down. Before commencing the intervention, participants received standardized instructions regarding exercise technique, posture, breathing patterns, and safety precautions. The program was delivered through online supervised sessions, and participants were monitored regularly through virtual follow-up to ensure compliance and correct exercise performance.

EXPERIMENTAL GROUP B (DIETARY MANAGEMENT)

Participants in Experimental Group B underwent a structured dietary management program for 12 weeks. The intervention emphasized a balanced diet with high protein, low fat, and low-glycemic-index foods while limiting processed and high-sugar foods. Participants received education on healthy food choices, meal timing, calorie control, portion sizes, and adequate hydration. Adherence was monitored through a dedicated WhatsApp group, where participants submitted daily food records and meal photographs. Regular feedback, counselling, and dietary guidance were provided throughout the study to improve compliance and maintain consistency with the prescribed nutritional plan.

OUTCOME MEASURES AND TOOLS USED

The primary outcome measures were Body Mass Index (BMI), Waist-to-Hip Ratio (WHR). Baseline measurements were obtained before the intervention and reassessed after the completion of the 12-week intervention period.

Body Mass Index (BMI): BMI was used to assess changes in body weight relative to height and was calculated using the standard formula: weight (kg)/height (m^2).

Waist-to-Hip Ratio (WHR): WHR was measured to evaluate central obesity by dividing waist circumference by hip circumference using a non-stretchable measuring tape.

STATISTICAL ANALYSIS

Data were entered into Microsoft excel and analysed using IBM SPSS Statistics version XX. Descriptive statistics were expressed as mean ± standard deviation (SD). Within-group comparisons between pre- and post-intervention measurements were performed using the paired *t*-test, while between-group comparisons were analyzed using the independent *t*-test. Statistical significance was set at $p < 0.05$.

RESULTS

Total of thirty women participants diagnosed with PCOS completed the 12-week intervention, with 15 participants in the Home-Based 3'S Exercise Group and 15 in the Dietary Management Group. Both groups demonstrated significant improvements in anthropometric outcomes following the intervention. Within-group analysis revealed significant reductions in body weight, body mass index (BMI), waist circumference, and waist-to-hip ratio (WHR) in both groups ($p < 0.05$). The exercise group exhibited greater reductions in body weight, BMI, waist circumference, and WHR than the dietary management group. Between-group analysis showed no significant differences in body weight or BMI reduction ($p > 0.05$). However, participants in the exercise group achieved significantly greater reductions in waist circumference and WHR compared with the dietary management group ($p < 0.05$), indicating superior improvement in central obesity. These findings suggest that while both interventions were effective, the Home-Based 3'S Exercise Program produced greater benefits in reducing abdominal adiposity among women with PCOS.

DISCUSSION

The present study compared the effectiveness of a 12-week Home-Based 3'S Exercise Program with a structured dietary management program in women with PCOS. Both interventions significantly improved anthropometric parameters, demonstrating the importance of lifestyle modification in the management of PCOS. However, the exercise group showed significantly greater improvements in waist circumference and waist-to-hip ratio, indicating a superior effect on reducing central obesity.

The findings are consistent with previous studies reporting that aerobic exercise improves body composition, insulin sensitivity, and metabolic health in women with PCOS. Kelly dos Santos et al. reported that regular aerobic exercise significantly reduced BMI and improved body composition, supporting exercise

as an effective first-line non-pharmacological intervention. Similarly, Veena Kirthika et al. demonstrated that a 12-week aerobic exercise program improved hormonal profile, insulin resistance, and quality of life in women with PCOS. Previous randomized controlled trials have also shown that exercise combined with lifestyle modification produces greater improvements in metabolic and reproductive outcomes than conventional management alone.

Dietary management also produced significant reductions in body weight and BMI, supporting findings reported by Apoorva Jain et al., who emphasized the importance of balanced nutrition, calorie restriction, and low-glycemic-index diets in improving metabolic health and insulin resistance in women with PCOS. Nevertheless, the greater reduction in waist circumference and WHR observed in the exercise group may be attributed to increased energy expenditure, enhanced skeletal muscle glucose utilization, improved insulin sensitivity, and greater mobilization of visceral adipose tissue.

The home-based design of the 3'S exercise protocol may have further enhanced adherence because of its simplicity, low cost, minimal equipment requirements, and convenience. These findings suggest that although both dietary management and structured exercise are effective lifestyle interventions, the Home-Based 3'S Exercise Program provides additional benefits in reducing central obesity and improving metabolic risk among women with PCOS. Therefore, incorporating structured home-based exercise into routine PCOS management may improve long-term clinical outcomes and quality of life.

CONCLUSION

The findings of the present study indicate that both the Home-Based 3'S Exercise Program and Dietary Management were effective lifestyle interventions for women with Polycystic Ovary Syndrome (PCOS), producing significant improvements in body weight, Body Mass Index (BMI), and other anthropometric parameters after 12 weeks of intervention. However, participants who underwent the Home-Based 3'S Exercise Program demonstrated greater reductions in waist circumference and Waist-to-Hip Ratio (WHR), suggesting a superior effect in reducing central obesity and associated metabolic risk. These findings reinforce the importance of incorporating structured exercise into the routine management of PCOS, as it offers additional benefits beyond dietary modification alone. Furthermore, the simplicity, affordability, and home-based nature of the 3'S Exercise Program make it a feasible and sustainable intervention for women with PCOS. Although dietary management remains an integral component of lifestyle modification, the present study suggests that the Home-Based 3'S Exercise Program may be more effective in improving central obesity. Further research involving larger sample sizes, longer intervention periods, and evaluation of hormonal, reproductive, and quality-of-life outcomes is recommended to strengthen the evidence.

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TABLES

Table 1: Complete Descriptive Profile for Group A (3'S Exercise, n=15)

metric	pre-mean	pre-sd	post-mean	post-sd	range (min/max)	mean delta (δ)
weight (kg)	64.60	14.63	60.47	12.96	41.0 - 85.0	-4.13
bmi (kg/m²)	26.37	6.74	24.69	6.05	15.6 - 35.6	-1.69
waist (in)	33.47	4.69	30.00	3.84	25.0 - 41.0	-3.47
hip (in)	39.00	4.72	38.13	4.00	33.0 - 50.0	-0.87
whr	0.857	0.054	0.786	0.044	0.72 - 0.91	-0.071

Table 2: Complete Descriptive Profile for Group B (Dietary Management, n=15)

metric	pre-mean	pre-sd	post-mean	post-sd	range (min/max)	mean delta (δ)
weight (kg)	69.87	12.70	66.87	11.81	48.0 - 95.0	-3.00
bmi (kg/m²)	28.85	4.80	27.62	4.49	21.4 - 40.1	-1.23
waist (in)	34.40	4.07	32.53	3.00	26.0 - 40.0	-1.87
hip (in)	40.00	3.93	38.80	3.38	32.0 - 48.0	-1.20
whr	0.864	0.035	0.833	0.031	0.79 - 0.92	-0.031

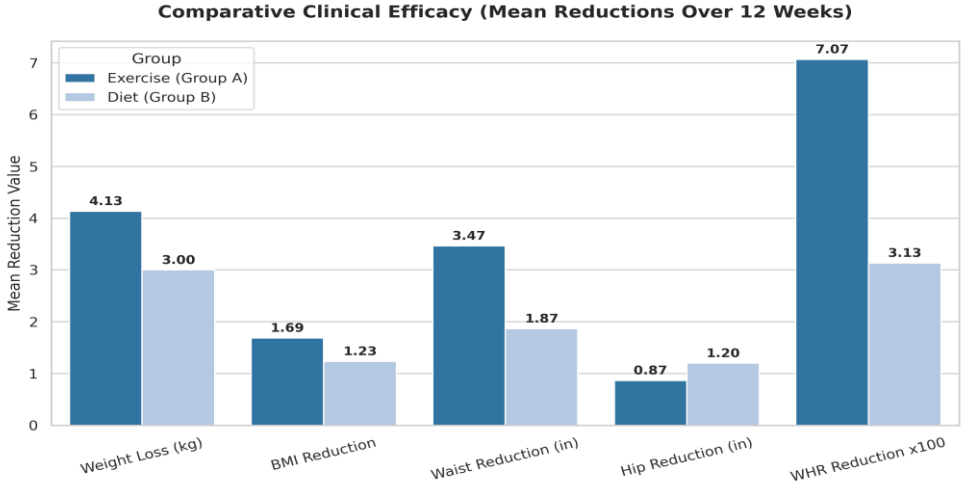

Table 3: Longitudinal Within-Group Paired t-test Matrix

observed metric	group a (exercise) t-stat	group a p-value	group b (diet) t-stat	group b p-value
weight	9.057	< 0.001 (***)	8.216	< 0.001 (***)
bmi	8.915	< 0.001 (***)	8.394	< 0.001 (***)
waist	11.309	< 0.001 (***)	4.404	< 0.001 (***)
hip	2.982	0.0099	6.000	< 0.001 (***)
whr	7.787	< 0.001 (***)	4.793	< 0.001 (***)