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Indian Journal of Obstetrics and Gynecology Research

Journal homepage: www.ijogr.org

Original Research Article

Mindful breathing and positive affirmations intervention for women with polycystic ovary syndrome

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Abstract

Background: Polycystic ovary syndrome (PCOS) is a pervasive but often overlooked health concern, gaining increased attention due to its association with various serious health issues.
Objective: The study aimed to evaluate an intervention designed to improve the quality of life and reduce body image concerns among women with PCOS.
Materials and Methods: This research utilized a pre-test and post-test design with experimental and control groups. The intervention focused on improving quality of life and reducing body image concerns through mindful breathing and positive affirmations. The study involved 20 women with PCOS, randomly assigned to either an experimental group that received the intervention or a control group that did not. Evaluations were conducted before and after the 6-week intervention period.
Results: Pre- and post-test comparisons revealed significant improvements in physical health, psychological state, social relationships, and body image perceptions in the experimental group. The experimental group's mean scores differed significantly from the control group's, affirming the intervention's positive effects.
Conclusion: Mindful breathing and positive affirmations significantly enhance the quality of life and reduce body image concerns in women with PCOS, supporting the inclusion of non-pharmacological interventions in PCOS treatment protocols.

Keywords: Polycystic ovary syndrome (PCOS), Mindful breathing, Positive affirmations, Quality of life, Body image concern.

Received: 28-08-2024; **Accepted:** 04-11-2024; **Available Online**: 28-05-2025

1. Introduction

Polycystic ovary syndrome (PCOS) is a prevalent endocrine disorder affecting women in their reproductive years, with an estimated global prevalence of 4% to 20%.[1] This condition has various clinical impacts, including reproductive and metabolic issues, psychological effects, and an increased risk of certain cancers. Women with PCOS often experience a reduced quality of life and mental health challenges due to physical symptoms such as infertility and irregular menstrual cycles. Additionally, alterations in physical appearance like obesity, hair loss, and acne, as well as changes in sexual behavior and increased levels of anxiety and depression, further diminish their quality of life and mental well-being.[2] The societal expectations associated with gender roles can exacerbate the negative impact of poor body image, stemming from obesity, acne, and hirsutism. Consequently, these women require comprehensive support from healthcare systems to address the various dimensions of their condition.[3]

One of the significant clinical outcomes of PCOS in women includes various physical and psychological concerns. These concerns, manifesting as cognitive processes, often involve repetitive thoughts and images, themes of anxiety, possible stressful situations, and potentially severe outcomes. Treatments for these worries related to PCOS can be categorized into complementary and pharmaceutical approaches. Non-pharmaceutical methods to mitigate these worries include relaxation techniques, adopting mindfulness, engaging in enjoyable activities, and learning to manage these concerns.

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https://doi.org/10.18231/j.ijogr.2025.044

Despite the efficacy of existing interventions, such as hormone treatments for the physical manifestations of PCOS, significant gaps remain in managing its psychological effects. Traditional psychological interventions like Cognitive behavioral therapy (CBT) are well-documented; however, less attention has been given to non-pharmacological, personalized interventions that could significantly improve mental health outcomes. Furthermore, while these interventions, such as mindful breathing and positive affirmations, are noted for their benefits, their specific application and efficacy in women with PCOS require further exploration, especially in non-clinical settings.

Furthermore, this study aims to outline the nuanced impacts of different intervention components, such as the comparative effectiveness of mindful breathing and positive affirmations. By examining these techniques both in isolation and in combination, we seek to understand their individual and synergistic effects on quality of life and body image among females with PCOS. This detailed analysis will not only contribute to a better understanding of how non-pharmacological interventions can be tailored to individual needs but also pave the way for developing more effective, scalable, and personalized healthcare solutions. These insights are essential for creating effective interventions not only in controlled research environments but also practical & beneficial in everyday clinical practice. In conclusion, addressing the psychological impacts of Polycystic ovary syndrome (PCOS) is crucial for enhancing the overall well-being of affected women. This study not only aims to bridge significant gaps in current PCOS treatments by focusing on mental health but also seeks to innovate with non-pharmacological interventions tailored to this condition. The anticipated development of effective strategies, particularly through mindful breathing and positive affirmations, promises substantial improvement in the quality of life and body image concerns for this substantial yet often underserved population. By honing in on these specific outcomes, the study underscores the potential of targeted interventions to transform the management of PCOS, making a meaningful difference in the lives of many women.

2. Objectives of the Study

1. To examine the effects of PCOS on body image concerns & quality of life among women: Initiate the study by understanding the severity of PCOS effects on body image & quality of life through a baseline assessment of the target population. This initial evaluation will inform the subsequent intervention design by highlighting critical areas of need.
2. To implement a tailored intervention program using mindful breathing and positive affirmations: Drawn from baseline data and existing literature, this objective involves administering a customized intervention incorporating mindful breathing and positive affirmations. The program is designed to address the unique psychological needs identified among women with PCOS, aiming to enhance their mental well-being and body image.
3. To assess the efficacy of the intervention: Examine the intervention's impact by assessing its acceptance and effectiveness among participants. This will involve analyzing participant feedback and measuring changes in body image concerns and quality of life to refine and optimize the intervention approach.
4. To disseminate findings and promote best practices: Share research outcomes with healthcare providers, policymakers, and patient advocacy groups to facilitate the broader application of successful interventions, potentially enhancing the treatment and support available to women with PCOS.

3. Research Question

Does the implementation of mindful breathing and positive affirmations significantly improve the quality of life and body image in women with PCOS?

4. Hypothesis

H1. No Significant differences will be observed between Pre-test and Post-test within the control group.
H2. Significant differences will be observed between Pre-test and Post-test within the experimental group.
H3. Significant differences will be observed between the Experimental group and the Control group.

5. Materials and Methods

5.1. Sample

The study's total sample size comprised 20 women, with 10 participants in the control group and 10 in the experimental group, all clinically diagnosed with Polycystic Ovary Syndrome (PCOS). These participants are between the ages of 20 and 45 years.

5.2. Inclusion criteria

1. Women clinically diagnosed with polycystic ovary disorder (PCOS) for at least 1 year.
2. Age range: 20-45 years.
3. Literate women.
4. Both married and unmarried women with Indian nationality.

5.3. Exclusion criteria

1. Women with a history of severe psychiatric disorders.
2. Pregnant women.
3. Women living outside Delhi NCR.

5.4. Tools used

5.5. Demographic information form

This form collects a range of demographic data including the participant's name, consent status, evaluation date, informant

details, nationality, age, weight, occupation, marital status, educational background, whether they have been clinically diagnosed with PCOS, age at onset of PCOS, nature of health issues, fertility intentions (trying to conceive, unable to conceive), any other chronic illnesses, and contact information (WhatsApp number or email) for future communication if needed.

5.6. Body image scale (BIS)

The BIS consists of 28 items designed for individuals to evaluate their own body image. Each item is evaluated on a five-point Likert scale ranging from strongly agree to strongly disagree. The aggregate of all item scores gives a total score, with the highest possible being 140. Higher scores reflect greater body image dissatisfaction. For college students, the scale includes additional subscales: an 11-item Weight Perception (WP) subscale, a 4-item Wish for Fit Body (WFB) subscale, a 4-item Satisfaction with Body (SWB) subscale, a 6-item Body Part Dissatisfaction (BPD) subscale, and a 3-item Health Consciousness (HC) subscale. Scores for these subscales are computed by summing the scores of the relevant items.

5.7. WHOQoL-brief

This instrument is a short version of the WHO quality of life questionnaire[4] comprising 26 items that measure the perceived quality of life and health. It evaluates the quality of life across four domains: physical, psychological, social, and environmental. Domain scores are calculated by averaging the scores from the items within each domain. Raw scores are then transformed into scaled scores following the provided manual guidelines, with higher scores indicating better quality of life.

5.8. Recruitment of participants

Participants for the study were recruited through collaboration with Ishika Mother & Child care center and Jyoti Clinic and nursing home. The center's gynecologist granted permission to use the WHOQoL-Brief and the Body Image Scale (BIS) to assess women diagnosed with Polycystic ovary syndrome (PCOS). Further, the assessed individuals were then categorized into two groups: the experimental group (N=10) and the control group (N=10). Women who demonstrated lower scores on the quality-of-life scale and higher levels of body image concerns according to the BIS scores were selected for the study. 35 women were approached and explained about the study. Out of 35 women, 9 refused to participate in the study and 6 agreed but failed to continue after a few sessions and dropped out in the middle.

5.9. Informed consent

Prior to data collection, all the participants were clearly and accurately explained about the goals, scope, and procedures involved in the study to ensure transparency and comprehension. Detailed information about the study's methods, potential risks and benefits, and the voluntary nature of participation was presented. Informed consent forms were distributed, allowing ample time for participants to ask questions and receive additional clarifications.

5.10. Ethical considerations

It was ensured to all participants in person that their involvement in the research would not compromise their privacy, and confidentiality would be maintained throughout the study. To protect the privacy of the respondents, interviews were conducted individually without the presence of others. The personal information of a particular respondent was not discussed with any other respondents and was kept confidential.

5.11. Data collection

Data collection was conducted at Jyoti Clinic and nursing home and Ishika Mother & Child Care Center, in settings that ensured privacy and comfort for the participants. Optimal times and locations were selected to enable participants to freely discuss and provide comprehensive information. Ample time was provided for the women to fill out the WHOQoL-Brief and Body Image Scale (BIS). A research assistant was on hand to respond to any queries, ensuring their assistance did not influence the responses.

5.12. The procedure of the study

A total of 20 women aged between 20 and 45 years, diagnosed with Polycystic ovary syndrome (PCOS) and exhibiting poor quality of life along with heightened levels of body image concerns, were screened for participation in this pilot study. A pre-test assessment was carried out to check the eligibility. Those who did not meet the criteria or declined to participate were excluded.

The eligible participants were then divided into two groups: an experimental group and a control group, each comprising N=10 individuals in each group. Only the experimental group received the intervention, while the control group did not receive any intervention.

An integrated module incorporating mindful breathing and positive affirmations was developed, and a pilot study is being conducted to evaluate its effectiveness, the duration needed for the sessions, and the effectiveness of the intervention module.

The experimental group underwent the intervention for 6 weeks, involving weekly meetings conducted twice a week. Initial sessions focused on establishing rapport and providing education about the intervention program, followed by instruction and practice in mindful breathing meditation and positive affirmations. Each session was originally planned for 1 hour; however, due to dropout rates, the session duration was reduced to 20 minutes. Participants were instructed to practice mindful breathing for 15 minutes every morning and to engage in positive affirmations daily. Regular telephone

reminders were provided to encourage adherence to the practice regimen.

Following the 6-week intervention period, the women who participated in the study were reassessed using the same questionnaires as in the pre-assessment. Post-assessments were conducted for participants in both the experimental and control groups. Later, a follow-up was conducted.

5.13. Statistical methods

Data were analyzed using SPSS 21.0, with descriptive statistics summarizing the mean, standard deviation (SD), minimum, and maximum values for demographic variables, QOL domains, and BIS domains (N=20). Paired samples t-tests assessed significant changes in domain scores from pre-test to post-test within the experimental group and control group, highlighting the intervention's effectiveness. Independent samples t-tests were used to compare post-test scores between the experimental and control groups, identifying significant differences across the studied domains.

6. Results

6.1. Descriptive statistics for baseline demographic information and domain scores

This study involved 20 participants diagnosed with Polycystic ovary syndrome (PCOS), with ages ranging from 22 to 38 years (M = 28.75, SD = 4.92). Participants' weight varied from 51.4 kg to 104 kg (M = 75.39, SD = 13.13), and the duration of their PCOS diagnosis ranged from 1 to 16 years (M = 5.4, SD = 4.19).

Table 1 presents a detailed overview of the participants' demographic information and domain-specific scores at baseline. The pre-test scores for the various Quality of Life (QOL) domains are as follows: Physical Health scores ranged from 19 to 69 (M = 43.1, SD = 9.66); Psychological Health scores varied from 19 to 56 (M = 38.55, SD = 9.37); Social Relationships scores ranged from 19 to 94 (M = 58.85, SD = 19.27); and environmental domain scores ranged from 25 to 75 (M = 53.95, SD = 15.01).

Regarding the Body image scale (BIS), the pre-test scores were as follows: Weight perception scores ranged from 22 to 50 (M = 39.9, SD = 6.94); Wish for fit body scores ranged from 11 to 20 (M = 16.15, SD = 1.98); Satisfaction with body scores ranged from 5 to 17 (M = 12.35, SD = 3.48); Body part dissatisfaction scores varied from 8 to 23 (M = 16.95, SD = 4.45); and health consciousness scores ranged from 3 to 12 (M = 8.95, SD = 2.09).

Overall, **Table 1** summarizes the key statistical measures for the demographic and domain-specific data, providing a comprehensive understanding of the participants' profiles and their scores across various QOL and BIS domains.

6.2. Hypothesis testing

H1. No significant differences will be observed between pre-test and post-test within the control group.

A paired samples t-test was conducted to evaluate the changes between pre-test and post-test scores within the control group across various domains. The results, shown in **Table 2**, indicate that no significant improvements were observed in any domain.

For physical health, the difference between pre-test (M = -3, SD = 5.83) and post-test scores was not significant, (t (9) = -1.63), (p = .138). Psychological Health also showed no significant difference between pre-test (M = 0.1, SD = 8.17) and post-test scores, (t (9) = 0.04), (p = .97). Similarly, for social relationships, there was no significant difference between pre-test (M = 1.4, SD = 7.17) and post-test scores, (t (9) = 0.62), (p = .552).

The environment domain also showed no significant difference between pre-test (M = 3.7, SD = 9.92) and post-test scores, (t (9) = 1.18), (p = .269). Weight Perception did not show significant changes between pre-test (M = 0.4, SD = 4.03) and post-test scores, (t (9) = 0.31), (p = .761). Additionally, no significant differences were found in the Wish for Fit body domain, with pre-test (M = -0.6, SD = 1.17) and post-test scores, (t (9) = -1.62), (p = .14).

Satisfaction with Body did not show significant changes, with pre-test (M = -1.1, SD = 2.38) and post-test scores, (t (9) = -1.46), (p = .178), and the same was observed for Body Part Dissatisfaction, (t (9) = -1.46), (p = .178). Lastly, health consciousness also showed no significant difference between pre-test (M = 0, SD = 1.05) and post-test scores, (t (9) = 0), (p = 1).

These findings indicate that no significant differences were observed between pre-test and post-test scores in any of the domains within the control group, suggesting that the control group did not experience substantial changes during the study period.

H2. Significant differences will be observed between Pre-test and Post-test within the experimental group.

A paired samples t-test was conducted to assess the impact of the intervention on various areas. The results showed significant improvements in several domains as shown in **Table 3**.

In the physical health area, there was a significant difference between the pre-test (average score of -23) and post-test scores, with a t-value of -5.35 and a p-value of less than .001. The same was true for Psychological Health, where the pre-test average was -30.8, resulting in a t-value of -10.77 and a p-value of less than .001. For social relationships, the pre-test average was -14.4, showing a significant difference with a t-value of -3.15 and a p-value of .012.

In the environment area, the pre-test average was -20.3, which also showed a significant change with a t-value of -3.87 and a p-value of .004. Regarding Weight Perception, there was a significant improvement from a pre-test average of 13.9, with a t-value of 7.93 and a p-value of less than .001.

The wish for fit body area showed improvement, with a pre-test average of 5.4, resulting in a t-value of 6.02 and a p-value of less than .001. Similarly, Satisfaction with Body had a pre-test average of 5.2, with a t-value of 5.53 and a p-value of less than .001. Lastly, Body Part Dissatisfaction had a pre-test average of 7.7, with a t-value of 5.67 and a p-value of less than .001.

However, health consciousness did not show a significant difference, with a pre-test average of 1.5, a t-value of 1.65, and a p-value of .134.

These results support the idea that there were significant differences between pre-test and post-test scores within the experimental group, highlighting the effectiveness of the intervention in most areas.

H3. Significant differences will be observed between the Experimental group and the control group.

A comparison was conducted between the experimental group and the control group across various domains related to physical and psychological well-being. **Table 4** presents the mean scores and standard deviations (SD) for each domain calculated for both groups.

In the domain of physical health, the experimental group demonstrated a significantly higher mean score (M = 65.20, SD = 10.59) compared to the Control Group (M = 47.00, SD = 7.07), with a mean difference of -18.20 (t = -4.52, p < .001). Similarly, in the domain of Psychological Health, the Experimental Group exhibited a notably higher mean score (M = 68.90, SD = 12.18) than the Control Group (M = 38.90, SD = 8.76), with a mean difference of -30.00 (t = -6.32, p < .001).

No significant difference was found between the groups in the social relationships domain, where both the experimental group (M = 65.00, SD = 14.29) and the control Group (M = 65.70, SD = 11.84) showed similar mean scores (t = 0.12, p = .906). However, in the Environmental domain, the experimental group (M = 73.10, SD = 11.09) scored significantly higher than the control group (M = 51.40, SD = 9.20), with a mean difference of -21.70 (t = -4.76, p < .001).

Furthermore, significant differences were observed in several other domains. For instance, in the domain of weight perception, the experimental group (M = 26.10, SD = 8.10) reported significantly lower scores compared to the control group (M = 39.40, SD = 6.47), with a mean difference of 13.30 (t = 4.06, p = .001). Similarly, in the domains of wish for Fit Body (Experimental Group: M = 10.80, SD = 3.65; Control Group: M = 16.70, SD = 1.89, t = 4.54, p < .001), Satisfaction with Body (Experimental Group: M = 8.10, SD = 2.38; Control Group: M = 12.50, SD = 2.01, t = 4.47, p < .001), and Body Part Dissatisfaction (Experimental Group: M = 9.70, SD = 2.00; Control Group: M = 17.60, SD = 4.03, t = 5.55, p < .001), the Experimental Group displayed significantly lower scores than the Control Group, indicating better outcomes in these areas. However, no significant difference was found between the groups in the Health Consciousness domain (Experimental Group: M = 7.80, SD = 0.92; Control Group: M = 8.60, SD = 1.17, t = -0.74, p = .469).

These findings suggest that the experimental group generally exhibited better outcomes across various domains compared to the Control Group. Therefore, the hypothesis has been accepted.

Table 1: Descriptive statistics for demographic information, quality of life (QOL), and body image scale (BIS) domains (n=20) initial scores

Variable	N	Minimum	Maximum	Mean	SD
Age	20	22	38	28.75	4.92
Weight	20	51.4	104	75.39	13.13
Years Diagnosed with PCOS	20	1	16	5.40	4.19
Physical Health	20	19	69	43.10	9.66
Psychological Health	20	19	56	38.55	9.37
Social Relationships	20	19	94	58.85	19.27
Environment	20	25	75	53.95	15.01
Weight Perception	20	22	50	39.90	6.94
Wish for Fit Body	20	11	20	16.15	1.98
Satisfaction with Body	20	5	17	12.35	3.48
Body Part Dissatisfaction	20	8	23	16.95	4.45
Health Consciousness	20	3	12	8.95	2.09

Note: *N* = total no. of participants; *SD* = Standard deviation

Table 2: Paired samples test for pre-test and post-test scores within the control group

Pair	Domain	M	N	SD	t	p
1	Physical Health	3	10	5.83	1.63	.138
2	Psychological Health	0.1	10	8.17	0.04	.970
3	Social Relationships	1.4	10	7.17	0.62	.552
4	Environment	3.7	10	9.92	1.18	.269
5	Weight Perception	0.4	10	4.03	0.31	.761
6	Wish for Fit Body	0.6	10	1.17	1.62	.140
7	Satisfaction with Body	1.1	10	2.38	1.46	.178
8	Body Part Dissatisfaction	1.1	10	2.38	1.46	.178
9	Health Consciousness	0	10	1.05	0	1

Note: *M* = Mean difference; *N= No. of participants; SD* = Standard deviation*; t* = t-value*; p* = p-value (two-tailed)

Table 3: Paired samples test for pre-test and post-test scores within the experimental group

Pair	Domain	M	N	SD	t	p
1	Physical Health	23	10	13.61	5.35	.001
2	Psychological Health	30.8	10	9.04	10.77	.001
3	Social Relationships	14.4	10	14.46	3.15	.012
4	Environment	20.3	10	16.58	3.87	.004
5	Weight Perception	13.9	10	5.55	7.93	.001
6	Wish for Fit Body	5.40	10	2.84	6.02	.001
7	Satisfaction with Body	5.20	10	2.97	5.53	.001
8	Body Part Dissatisfaction	7.70	10	4.30	5.67	.001
9	Health Consciousness	1.50	10	2.88	1.65	.134

Note: *M* = Mean difference; *N= No. of participants; SD* = Standard deviation*; t* = t-value*; p* = p-value (two-tailed)

Table 4: Independent sample t-test showing a comparison of domain scores between experimental and control groups

Domain	Experimental Group		Control Group				
	M	SD	M	SD	Mean Difference	t	p
Physical Health	10.59	65.2	47	7.07	18.2	4.52	.000
Psychological Health	12.18	68.9	38.9	8.76	30	6.32	.000
Social Relationships	14.29	65	65.7	11.84	0.7	0.12	.906
Environmental	11.09	73.1	51.4	9.20	21.7	4.76	.000
Weight Perception	8.10	26.1	39.4	6.47	13.3	4.06	.001
Wish for Fit Body	3.65	10.8	16.7	1.89	5.9	4.54	.000
Satisfaction with Body	2.38	8.1	12.5	2.01	4.4	4.47	.000
Body Part Dissatisfaction	2	9.7	17.6	4.03	7.9	5.55	.000
Health Consciousness	0.92	7.8	8.6	1.17	0.8	1.70	.107

Note: *M* = Mean*; SD* = Standard deviation*; t* = t-value*; p* = p-value (two-tailed)

7. Discussion

H1. No significant differences will be observed between pre-test and post-test within the control group.

In analyzing the results of this pilot study, it is essential to consider the findings related to the control group, which did not receive any intervention. The data indicated no significant differences across various domains following the intervention period. This outcome supports the hypothesis that there would be no notable changes in pre-test and post-test scores within the control group, suggesting that without targeted interventions, participants remained unchanged in their psychological and physical well-being.

The lack of significant findings across multiple areas highlights the ongoing challenges faced by individuals in the control group and underscores the importance of effective interventions for addressing the psychological and emotional impacts associated with Polycystic ovary syndrome (PCOS). Research has shown that chronic conditions like PCOS often require dedicated interventions to foster improvements in mental and physical health outcomes.[5] Mindfulness practices

and positive affirmations have demonstrated significant efficacy in enhancing self-esteem and body image[6,7] however, without these supportive measures, the control group did not experience any improvements.

Overall, the results from the control group affirm the hypothesis that no significant differences were observed between pre-test and post-test scores. This reinforces the necessity for targeted therapeutic strategies to effectively support the psychological and physical well-being of women with PCOS. The persistent challenges related to body dissatisfaction and psychological health emphasize the critical role of interventions aimed at improving body image and overall quality of life, indicating that without these measures, individuals remain vulnerable to the ongoing difficulties posed by their condition.[8,9]

H2. Significant differences will be observed between Pre-test and Post-test within the experimental group.

It is important to contextualize these findings within the broader literature on interventions aimed at improving psychological and physical well-being. This study aimed to evaluate the effectiveness of an intervention targeting body image and QOL domains, employing a pretest-posttest design to compare participants' symptoms before and after the intervention.

The findings revealed significant improvements in several domains, including physical health, psychological health, social relationships, weight perception, wish for fit body, satisfaction with body, and body part dissatisfaction. These results align with existing literature that supports the efficacy of mindfulness-based interventions and positive affirmations in enhancing overall well-being and body image. For instance, mindfulness practices have been shown to reduce stress and improve physical health outcomes,[6] while positive affirmations have been associated with improved self-esteem and body satisfaction.[10]

Specifically, the significant reduction in negative body image perceptions and the improvement in QOL domains from pre-test to post-test are consistent with studies highlighting the benefits of mindfulness and cognitive-behavioral techniques in addressing body image concerns.[11] The results suggest that the intervention effectively reduced anxiety and withdrawal symptoms related to body image, enhancing participants' psychological health and social interactions.

The improvements in physical and psychological health are particularly noteworthy. These findings suggest that the intervention not only addressed body image concerns but also had a broader impact on participants' overall health. This aligns with research indicating that mindfulness and positive affirmations can improve mental health outcomes by fostering a more positive and accepting attitude toward oneself.[12] Also, Timely self-affirmations have been proven to enhance outcomes in education, health, and relationships, with effects that can last for months or even years. Like other interventions, self-affirmations can create enduring benefits by triggering a cycle of adaptive potential, where a positive feedback loop between the individual and their social environment promotes positive results over time.[13]

H3. Significant differences will be observed between the Experimental group and the control group.

The study's experimental-control group design demonstrated the efficacy of the intervention in significantly improving several domains related to physical and psychological well-being among women with PCOS. The experimental group showed significant improvements in physical health, psychological health, and environmental domains compared to the control group. The environmental context of health, although showing less dramatic improvements in this study, remains an important area for future research. Factors such as access to health care, safe living environments, and social determinants of health can significantly influence health outcomes.[14] While the present intervention focused on individual-level changes, addressing environmental factors may require a more comprehensive approach.

The notable differences found between the experimental and control groups in weight perception, desire for a fit body, satisfaction with body, and body part dissatisfaction highlight the intervention's success in enhancing body image. These findings support previous research indicating that mindfulness-based interventions can lead to significant improvements in body satisfaction and reductions in body dissatisfaction.[15] Moreover, the intervention's impact on physical and psychological health aligns with studies suggesting that such interventions can enhance overall well-being and quality of life.[16]

However, the lack of significant difference in the Social Relationships domain between the experimental and control groups suggests that while the intervention may improve individual perceptions and health outcomes, its impact on social interactions may require further investigation. This finding aligns with research suggesting that enhancements in social support and interaction may require more extended or diverse interventions.[17]

The consistent scores through the three-week follow-up period highlight the intervention's potential for lasting impact on the psychological states of women with PCOS. This is significant, as it demonstrates that the improvements in body image and quality of life are not merely temporary but can be sustained over a longer period. Research by Kazdin[18] supports the notion that psychological techniques can have enduring effects on behavior and emotional regulation. Furthermore, the study adds to the growing body of evidence supporting the use of mindfulness-based interventions for managing chronic health conditions. While mindfulness has

been widely studied in the context of mental health and general well-being, its application to specific conditions like PCOS is relatively novel. The positive outcomes observed in this study suggest that mindfulness and positive affirmations could be valuable tools in the broader toolkit for managing PCOS, complementing existing treatments such as medication and lifestyle changes.[19]

7.1. Implications for body image and quality of life

The sustained improvements in body image and quality of life domains suggest that interventions targeting mindfulness and positive affirmations can effectively address both the physical and psychological challenges associated with PCOS. These findings are consistent with studies showing that multi-component interventions can reduce psychological distress and improve overall well-being among individuals with chronic conditions.[20]

8. Conclusion

In summary, the findings from this pilot study offer compelling evidence that mindful breathing and positive affirmations are effective in enhancing body image and quality of life for women with PCOS. The significant improvements observed across various domains highlight the potential of such interventions to enhance psychological and physical well-being. These findings underscore the importance of comprehensive, evidence-based approaches to addressing the multifaceted nature of body image and quality of life issues in women with PCOS.

9. Future Directions

However, the study has some limitations like a small population size and short follow-up timeframe. Further studies should replicate these findings on a larger scale and with diverse groups of people while at the same time extending the follow-up period to clarify how long-term effects of the intervention are likely to be. Moreover, pinpointing such aspects would enable the development of individualized intervention plans that are more productive in addressing emotional complexities related to polycystic syndrome disease.

10. Authors' Contribution

Each author has made a significant contribution to the conceptualization or design of the work, analysis, and interpretation of data and has drafted the work and revised it.

11. Ethical Approval

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the ethics committee of the Faculty of Behavioral and Social Sciences, SGT University, Gurugram, Haryana, India with protocol code SGTU/FBSC/2023/30 on 7 Jan 2023.

12. Source of Funding

No funding received.

13. Conflict of Interests

None.

14. Clinical Trial Number

Not applicable.

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Cite this article: Yukti, Rathore B. Mindful breathing and positive affirmations intervention for women with polycystic ovary syndrome. *Indian J Obstet Gynecol Res*. 2025;12(2):249–257.