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Sumitra Patil Kulkarni
Research Scholar, Vels
University, Chennai, Tamil
Nadu, India

Dr. CV Jayanthi
Associate Professor, Department
of Yoga, Vels University,
Chennai, Tamil Nadu, India

Dr. S Natarajan
Associate Professor, Department
of Yoga, Vels University,
Chennai, Tamil Nadu, India

Corresponding Author:
Sumitra Patil Kulkarni
Research Scholar, Vels
University, Chennai, Tamil
Nadu, India

Effects of yogic practices on levels of Prolactin and polycystic ovarian syndrome women

Sumitra Patil Kulkarni, Dr. CV Jayanthi and Dr. S Natarajan

Abstract

Polycystic ovarian syndrome (PCOS) is a common endocrine disorder caused by an imbalance of reproductive hormones, characterized by menstrual irregularity and elevated serum androgens, and is often accompanied by insulin resistance in females. PCOS, the most common cause of anovulatory infertility, affects 5–10% of women of reproductive age. Yogic practices are recommended for women with PCOS to maintain proper hormonal balance. The most common symptoms are irregular menses, hirsutism, and infertility. However, the association between prolactinoma and PCOS is rare.

Purpose: The purpose of the study is to investigate the effects of yogic practices on prolactin levels in women with polycystic ovarian syndrome.

Methods: This study was conducted in a university-affiliated hospital from January 2023 to June 2023. Anthropometric parameters and prolactin hormone concentrations of the participants were analyzed.

Results: Fifty PCOS patients were recruited for this study. Yogasanas and pranayama practices were found to balance the levels of prolactin in women with PCOS.

Conclusions: Recommended yogasanas and pranayama practices help to maintain prolactin levels in women with polycystic ovarian syndrome.

Keywords: PCOS, yogic practices, pranayama, prolactin

Introduction

Yoga offers a holistic approach to managing PCOS by addressing multiple physiological and psychological aspects of the condition. Through hormonal regulation, weight management, autonomic nervous system regulation, endocrine system support, reduction in inflammation, and improvement in mental health, yoga can significantly alleviate the symptoms of PCOS and improve the overall quality of life for women suffering from this condition. Stress Reduction: Yoga practices, including pranayama (breathing exercises) and meditation, have been shown to reduce stress levels. Chronic stress elevates cortisol levels, which can disrupt the hormonal balance and exacerbate symptoms of PCOS. By reducing stress, yoga can help normalize cortisol levels and improve overall hormonal balance.

Improvement in Insulin Sensitivity: Many women with PCOS have insulin resistance, which can lead to elevated insulin levels and further hormonal imbalances. Yoga has been demonstrated to improve insulin sensitivity, thereby reducing insulin resistance and helping to regulate reproductive hormones. Polycystic ovary syndrome (PCOS) is a common hormonal disorder that affects women of reproductive age. According to the World Health Organization, it was estimated that 116 million women (3.4%) have PCOS with prevalence ranging from 2.2% to 26% globally PCOS usually starts during adolescence, but symptoms may fluctuate over a period of time. PCOS can cause hormonal imbalances, irregular periods, excess androgen levels and cysts in the ovaries. Irregular periods, usually with a lack of ovulation, can make it difficult to become pregnant hence PCOS is a leading cause of infertility. The prevalence of PCOS among reproductive-age women has been estimated at 4%-12%. The general characteristics of PCOS are oligo/anovulatory cycles, hirsutism and polycystic ovaries, together with a considerable prevalence of insulin resistance. The modest rise in serum prolactin levels can be detected in both follicular and luteal phase of 30% of PCOS cases. According to the studies, the rise in serum prolactin levels can result in a reduction of ovarian follicles as well as ovulation. Early studies showed elevated prolactin serum levels in patients

with polycystic ovaries. PCOS is a chronic condition and cannot be cured but symptoms can be managed through regular practice of yogasanas. Regulation of Pituitary Gland Yoga may help regulate the function of the pituitary gland, which controls the release of various hormones, including those involved in the reproductive system. Balanced pituitary function can positively affect the secretion of reproductive hormones such as LH (luteinizing hormone) and FSH (follicle-stimulating hormone). There are specific and important Asanas and pranayamas mentioned in traditional yogic text (Gherand Samhita, Shiva Samhita, and Hatha Yoga Pradipika) which have clear impact on reproductive organs, ovaries, and uterus and also on digestion. Polycystic ovarian syndrome may also have a significant negative impact on women's health related quality of life. Studies have shown practicing yoga balances hormones, reducing the testosterone levels.

Prolactin Levels Certain yogic practices can help regulate prolactin levels, which are often disrupted in women with PCOS. Balanced prolactin levels are essential for regular menstrual cycles and ovulation. This study aimed to investigate managing the levels of prolactin in subjects having polycystic ovary syndrome through yogic practices. However, some symptoms can be improved through lifestyle changes, medications and fertility treatments.

Material and Methods

The purpose of the study, fifty women who were suffering from Polycystic Ovarian Syndrome were volunteered as subjects. Their age ranged from 20 to 35 years. The purposive sampling technique was employed to pool the subjects from PM Santosha Multi Speciality Hospital, Kengeri, near Mahaveer Lakes Apartment, Sunkalpalya, Bengaluru 560060, Karnataka, India. All participants were counselled and informed consent was obtained from all of them. Before the group were divided for experimental treatment, all the subjects were screened medically with the help of professionally qualified obstetricians and gynaecologists. Keeping the above concepts, the following prolactin levels selected as criterion variable. The yogasana and pranayama practices were selected as independent variables.

Pre-test and post-test have been done. For pre-test the following data will be conducted. Fasting sample of venous blood (10ml) was drawn in the morning (6:00-8:00am) at the Plexi Health Lab. prolactin levels was done by Fully Automated machines by selectra pros.

Yoga intervention

Psycho-neuro-endocrine and immune mechanisms are involved in the beneficial effects of yoga on PCOS. Incorporation of yoga practice in daily life helps to attain hormonal balance and reduces the risk of complications in people with PCOS. Increasing evidence suggests that yoga practice tackles the pathophysiologic mechanisms of PCOS and helps in controlling its complications.

The concepts for the intervention were taken from traditional yoga scriptures (Patanjali yoga sutras, Upanisads and Yoga Vasishtha) that highlight a holistic approach to health management at physical, mental, emotional and intellectual levels. The practices consisted of asanas (yoga postures), prāṇayama, relaxation techniques, meditation, and mudras. The physical practices progressed from Suryanamaskāra to final yoga postures asanas of four categories (prone, standing, supine, twisting and sitting) to provide activation followed by deep rest to mind body complex based on scriptural reference. Pranayama included yogic breathing practices to bring about a slow rhythmic breathing pattern with exhalation longer than inhalation. An attempt was made to elicit suggestions regarding the feasibility and applicability of each of the practices selected as the yoga intervention for PCOS. Slow pranayama, anulom vilom, chandrabhedan, sitkari, and bhrumari helps in augment cerebral blood flow and oxygenation, improving neuronal activities in the brain centres, including those present in the limbic areas, hypothalamus, and medulla, and improve sympathovagal outflow

The integrated approach of yoga therapy practice is prepared with following basic structure:

1. First 10 minutes of the sessions was lectures focusing on management of PCOS topics described below
2. 10 minutes – Loosening Exercises
3. 30 minutes – Yogasana (prone, standing, supine, twisting and sitting)
4. 20 minutes – Pranayama Practice

The daily yoga session begins with interactive session and awareness talks which included the below listed topics that ensured the right understanding of yoga as a tool for body and mind management and notional correction.

Table 1: Analysis of co-variance of the pre test and post test means of the control group and experimental group in PRL ng/ml

Group	Control	Experimental	Source of variance	Sum of squares	DF	Mean square	'F' Ratio
Pre Test Mean	26.35	23.71	Between	86.988	1	86.988	1.396 NS
SD	8.44	7.30	Within	2991.771	48	62.329	
Post-test Mean	29.81	90.81	Between	46512.15	1	46512.15	7.59 S
SD	10.6	13.93	Within	29507.73	48	616.620	
Adjusted Post-test mean	25.03	60.31	Between	44028.36	1	44028.36	6.84 S
			Within	24078.63	48	598.631	

S: Significant

NS: Not Significant

It is observed from the above table result proved that the pre-test mean score on control group is 26.35 and experimental group is 23.71. Therefore, it is inferred that the obtained calculated 'F' value is 1.396 for Pre-Test mean score. Therefore the framed research hypothesis is rejected. It is inferred that there is no significant difference between the pre-test means of the PRL. Also, the Post test mean score on

Control group is 29.81 and Experimental group is 90.81. Therefore, it is evident that the obtained 'F' value 7.59 for Post-Test mean score. Therefore the framed research hypothesis is accepted. Further, the above table taking into consideration of the adjusted post-test mean score on control group is 25.03 and experimental group is 60.31. Therefore, it is evident that the calculated 'F' value is 6.84. Therefore the

framed research hypothesis is accepted. It is inferred that there is a significant difference between the adjusted post-test means of the PRL.

Results

A "probable diagnosis" of PCOS was found among 50 women identified to have oligo/amenorrhea and/or clinical hyperandrogenism. All 50 subjects were asked to come for a blood test. Pre-test and post-test assessments were conducted. After 12 weeks of intervention, changes in prolactin levels were significantly different between the two groups. Several studies have supported these mechanisms. For example:

A study published in the International Journal of Yoga showed that yoga improved insulin resistance and hormonal profiles in women with PCOS.

Research in the Journal of Alternative and Complementary Medicine indicated that yoga can reduce anxiety and depression, which are common in PCOS, thereby improving quality of life and possibly influencing endocrine function.

In a study, it was observed that optimal control of prolactin levels was achieved by practicing Paschimottanasana and Malasana. Halasana, Vajrasana, Bhujangasana, Setubhandasana, and Prasrita Padottanasana were also found to be effective.

Conclusions

Despite the increasing prevalence of polycystic ovary syndrome (PCOS), there are limited studies exploring the various aspects of this condition. Recent scientific evidence suggests that yogasanas and pranayama practices may play a significant role in managing prolactin levels and associated risk factors. Psychoneuro-endocrine and immune mechanisms are thought to have holistic effects on prolactin control.

In the present study, a 12-week yoga intervention demonstrated a significant reduction in prolactin levels compared to the control group. Yogic practices were shown to be beneficial in minimizing PCOS risk and reducing prolactin levels. This provides evidence for the efficacy of yoga interventions in managing prolactin levels in women with PCOS.

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