

RESEARCH ARTICLE

Effect of yoga nidra on resting cardiovascular parameters in polycystic ovarian syndrome women

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ABSTRACT


Background: Yoga nidra is a systematic method of inducing complete physical, mental, and emotional relaxation, and in this state, the relaxation is achieved by turning inward, away from outer experiences. It has been used in patients of menstrual abnormalities, post-traumatic stress disorder, diabetes, anxiety, and depression but little is known about its effect on polycystic ovarian syndrome (PCOS). **Aims and Objective:** The aim and objective of this study are to assess the 12 weeks of yoga nidra intervention on resting cardiovascular parameters among PCOS patients. **Materials & Methods:** The present study includes 40 PCOS women with the age between 18 and 35 years. Yoga nidra intervention was given by yoga and naturopathy physician to the patients in the lying position daily once for the period of 40 min. Resting cardiovascular parameters such as systolic blood pressure (SBP), diastolic blood pressure (DBP), and heart rate (HR) were recorded in the standard manner before after the intervention. **Results:** There was a significant ($P < 0.01$) reduction in resting cardiovascular parameters such as HR (from 79.46 ± 6.80 to 72.84 ± 7.24 bpm), SBP (from 128.70 ± 8.46 to 122.0 ± 9.26 mmHg), and DBP (from 78.42 ± 6.42 to 72.0 ± 8.72 mmHg). **Conclusion:** The present study showed favorable changes in blood pressure, HR, and other anthropometric parameters in PCOS after 12 weeks of yoga nidra intervention. Still, further studies are needed to carry out with proper sample size and better study design to validate these effects.

KEY WORDS: Yoga Nidra; Cardiovascular System; Stress; Polycystic Ovarian Syndrome

INTRODUCTION

Polycystic ovarian syndrome (PCOS) is defined as a state of anovulation due to chronic hyperandrogenic condition, and it is a common endocrine disorder which affects 10% of women in the reproductive age.^[1] The exact pathophysiology of PCOS is complex and remains largely unclear. Genetic and

environmental contributors to hormonal disturbances combine with other factors, including obesity, ovarian dysfunction, and hypothalamic-pituitary abnormalities to contribute to the etiology. PCOS in women increases the possibility for impaired glucose tolerance and type 2 diabetes which would be the major risk factors for cardiovascular disease.^[2-4] It has been associated with other cardiometabolic risk factors such as obesity, hypertension, dyslipidemia, inflammation, endothelial dysfunction, and subclinical atherosclerosis.^[5-7] Psychosomatic disorders are higher among the PCOS women due to their psychological distress, body dissatisfaction, irregular menses, and infertility.^[8-10] In above-mentioned risk factors, psychological distress is a potentially changeable risk factor that can be managed with regular yoga practice. Various forms of yoga techniques have been shown to reduce

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psychological distress and improve the quality of life for various patient populations.^[11-13] According to the ancient Indian scriptures, sages are known to sleep using yoga nidra. Yoga nidra is derived from two Sanskrit words, “Yoga” (“yuj” = yoke) meaning union or one-pointed awareness and “nidra” means sleep. It is a systematic method of inducing complete physical, mental, and emotional relaxation, and in this state, the relaxation is achieved by turning inward, away from outer experiences.^[14]

Yoga nidra has been used in patients of menstrual abnormalities,^[15] post-traumatic stress disorder,^[16] diabetes,^[17] anxiety, and depression,^[18] but little is known about its effect on PCOS. Hence, in this present study, 12 weeks of yoga nidra intervention were given to women with PCOS to find their resting cardiovascular changes.

The main objective of choosing yoga nidra in PCOS individuals as primarily it is not physically demanding as PCOS individuals are more prone to be obese and the psychosocial status of the individuals as well.

MATERIALS AND METHODS

The present study includes 40 PCOS women with the age between 18 and 35 years, who visited the outpatient department in Government Yoga and Naturopathy Medical College Hospital. After explaining the details of the current study, informed consent was obtained from the participants. The patients who fulfilled the Rotterdam criterion (2/3 of the features) for PCOS were included in the study.^[19] The exclusion criteria were having followed a hormonal treatment or used oral contraceptives or insulin-sensitizing agents in the recent past, hyperprolactinemia, thyroid abnormalities, non-classic adrenal hyperplasia, and any form of prior yoga practice. The study was approved by the Institutional Ethical Committee of Government Yoga and Naturopathy Medical College and Hospital. An anthropometric measurement such as height was done using stadiometer, and weight was measured using digital weighing machine. After 15 min of supine rest, heart rate (HR) was assessed by radial artery palpation method and blood pressure was recorded by sphygmomanometer. Three reading was obtained in 5 min interval, and average was calculated for the final analysis. Yoga nidra intervention was given by yoga and naturopathy physician to the patients in the lying position daily once for the period of 40 min. This intervention was continued for 12 weeks, and all the recordings were done before and after 12 weeks of yoga nidra practice.

Statistical Analysis

Data were expressed as mean ± SD. Paired *t*-test was used to compare the mean difference in between the groups using R Statistical software. *P* < 0.05 is considered as statistically significant.

RESULTS

Table 1 shows the anthropometric parameters such as age (26.13 ± 5.30), height (155.6 ± 4.17), weight (74.59 ± 12.97), and BMI (30.75 ± 4.75) of the patients. In Table 2 there was a significant (*P* < 0.01) reduction in resting cardiovascular parameters such as HR (from 79.46 ± 6.80 to 72.84 ± 7.24 bpm), systolic blood pressure (SBP) (from 128.70 ± 8.46 to 122.0 ± 9.26 mmHg), and diastolic blood pressure (DBP) (from 78.42 ± 6.42 to 72.0 ± 8.72 mmHg). After 12 weeks of yoga nidra practice, there was significant (*P* < 0.01) decrease in weight (from 74.59 ± 12.97 to 70.25 ± 12.14 kg), BMI (from 30.75 ± 4.75 to 28.92 ± 4.44 kg/m²), and waist-hip ratio (from 0.84 ± 0.03 to 0.80 ± 0.02) in PCOS patients.

DISCUSSION

We found significant changes in the resting cardiovascular parameters such as SBP, DBP, and HR and anthropometric parameters such as weight and BMI among the PCOS patients after the 12-week yoga nidra intervention.

It has been shown that PCOS associates with a disturbed activity of the sympathetic nervous system.^[20] Previous studies also stated that increased sympathetic and decreased parasympathetic activity in women with PCOS using short-term HR variability.^[21] Increased sympathetic over activity for a period of time would produce cardiovascular mortality and morbidity in the future. Now, it has been emphasized that chronic stress is the main causative factors of PCOS. Stress induces augmented sympathetic firing and ultimately produces changes in the physiological responses such as HR

Table 1: Anthropometric parameters of the study participants

| Variables | Mean±SD |
|--------------------------|-------------|
| Age (years) | 26.13±5.30 |
| Height (cm) | 155.6±4.17 |
| Weight (kg) | 74.59±12.97 |
| BMI (kg/m ²) | 30.75±4.75 |

BMI: Body mass index, SD: Standard deviation

Table 2: Effect of yoga nidra practice on resting cardiovascular parameters

| Variables | Before | After | <i>P</i> value |
|--------------------------|-------------|-------------|----------------|
| Weight (kg) | 74.59±12.97 | 70.25±12.14 | 0.001 |
| BMI (kg/m ²) | 30.75±4.75 | 28.92±4.44 | 0.001 |
| Waist hip ratio | 0.84±0.03 | 0.80±0.02 | 0.02 |
| HR (bpm) | 79.46±6.80 | 72.84±7.24 | 0.03 |
| SBP (mmHg) | 128.70±8.46 | 122.0±9.26 | 0.0001 |
| DBP (mmHg) | 78.42±6.42 | 72.0±8.72 | 0.0001 |

SBP: Systolic blood pressure, DBP: Diastolic blood pressure, HR: Heart rate, BMI: Body mass index

and blood pressure which will end with an increased load on body homeostasis.^[22] The adverse relationship between stress and cardiovascular and endocrine function can be explained by changes in the sympathetic-parasympathetic responses, endothelial dysfunction, and hormonal changes induced by changes in the hypothalamic–pituitary–adrenal axis.^[23]

There is known fact that regularly practicing of any form of yoga reduces the cortisol hormone level^[24] and stress provocation threshold by balancing the sympathetic nerve activity ^[25] in the general population. Yoga nidra has been found to be associated with shift toward parasympathetic dominance among the practitioners after 30 min of yoga nidra intervention.^[26] In our study, yoga nidra used as a relaxation technique in yoga practice has the profound effect on cardiovascular parameters in PCOS patients might be due to stabilizing the hypothalamic–pituitary–adrenal axis and promoting autonomic balance.

Although the study found to be effective, the results or the impactness of yoga nidra could be more emphasized if done with larger sample size with better study design.

CONCLUSION

The present study showed favorable changes in blood pressure, HR, and other anthropometric parameters in PCOS after 12 weeks of yoga nidra intervention. Future studies could be carried out with proper sample size and better study design to validate these effects further.

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