



EFFECT OF HOLISTIC YOGA ON ANXIETY SYMPTOMS IN COLLEGE GOING FEMALES WITH PCOS IN GUJARAT: A QUASI-EXPERIMENTAL ONE-WAY STUDY.

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ABSTRACT :

BACKGROUND:

To find the effects of holistic yoga on college going girls with anxiety and PCOS. The purpose of the study was to measure the level of depression among females suffering from polycystic ovarian syndrome and to find out the effect of yoga on the level of depression among females suffering from polycystic ovarian syndrome.

METHODOLOGY:

There will be an interactive introductory lecture about the topic and all girls of the college will attend this lecture. 40 girls with PCOS will be selected for the holistic yoga session. The yoga performed will be basically the asanas and meditation and lecturers on holistic yoga lifestyle and stress management. All these asanas will be performed with 6 repetitions with 10 seconds of hold and 15 seconds of resting period. This yoga asanas will be performed daily till 1

hour for 6 weeks.

RESULT:

Changes in the anxiety level after the holistic yoga program were seen and also significant changes in weight, waist and hip circumference have been seen in the college going girls in Gujarat with PCOS.

CONCLUSIONS:

6 Weeks Holistic Yoga Program in college going girls with PCOS was seen as more effective than the other regular exercise to reduce weight, waist and hip circumference with anxiety symptoms respectively.

KEYWORDS:

Yoga; Polycystic ovarian syndrome; Anxiety symptoms

INTRODUCTION

Polycystic ovary syndrome (PCOS) is an abnormal hormonal change in ovaries. It mostly affects the ovaries which produces estrogen and progesterone hormone but sometimes ovaries produce male hormone androgen which results in the excess hair growth, acne, obesity, irregular menstrual cycle, anxiety, depression, stress is also seen in female with PCOS.¹

The prevalence of PCOS in women is most common in age between 15-30 years. PCOS is the most common endocrine disorder of reproductive women with the prevalence of 5-15%. of women are affected with it.¹

The common treatment protocol for PCOS are pills for regular menstrual cycle, statins to control the hormonal changes, different exercises like Zumba, aerobics and yoga.²

Side-effects of some medications are also seen such as nausea, stomach pain, diarrhea. Lack of vitamin B12 also causes mood swings and memory loss. So proper diet should be taken.³

Yoga, a form of holistic mind-body medicine, developed thousands of years ago, is simple and can be performed by all. There is evidence that Yoga reduces anxiety symptoms.⁴

Yoga is a great stress buster. Yoga eases any stress through breathing techniques that bring complete relaxation in the body. Relaxation can work to offset the effects of hormonal imbalance and take care of any negative emotions, irritability and frequent mood swings.⁵

Yoga strengthens the muscles, improves hormonal levels. Yoga along with a healthy diet helps to lose weight.⁵

However, till date, So Many studies and research has been done with yoga and PCOS but with anxiety symptoms only one study was done in south Indian school going girls. The present study will be assessing the effect of yoga on anxiety level in adolescent girls with PCOS.⁶

Depression is a common mood disorder that negatively affects a person's thinking, feeling and behavior. It leads variety of emotional and physical problems.⁷

Depression is more than sadness. People suffering from depression experience lack of interest in daily activities, weight loss or gain, lack of sleep or excessive sleep, lack of energy, excessive guilt and re current thoughts of suicide.⁷

Women experience depression twice as compared to men. Some factors such as biological, life cycle, hormonal and other factors unique in women and it may link to their higher level of depression rate.⁷

Mood is affected by the various PCOS symptoms. According to Farrell and Antoni (2010) women with PCOS experience mood dysfunction and psychiatric problems to a greater degree than women without PCOS.⁷

Many studies show that the level of depression is higher in PCOS than healthy women. PCOS is a common health problem among women. This problem is caused by hormonal imbalance. PCOS Caused by small cysts in the ovary which affect the hormones and dispute the normal menstrual cycle .Around 5-10% women are diagnosed with

PCOS.⁷

Women are suffered from PCOS because of excessive level of stress and strain, perennial tension, following modern faculty lifestyle and some psychological problems like anxiety and depression.⁷

Irregular Periods, Ovarian cyst, pimples, excessive hair fall, abdominal bloating, mood swings, miscarriage, Irritability, hair growth on the face, weight gain, muscles enlargement, imbalance level of sugar in blood, PCOS can also cause type 2 diabetes and heart attack. The aim of the study was to measure the level of depression among females suffering from polycystic ovarian syndrome and to find out the effect of yoga on level of depression among females suffering from polycystic ovarian syndrome.⁷

REVIEW OF LITERATURE

1. **Moran. Effect of suryanamaskar with yoga nidra practices on selected psychological variables among obese women. (2011)⁸** :- They conducted a study on Lifestyle changes in women with polycystic ovary syndrome (PCOS) affects 4% to 18% of reproductive-aged women and is associated with reproductive, metabolic and psychological dysfunction. Obesity worsens the presentation of PCOS, and weight management (weight loss, maintenance or prevention of excess weight gain) is proposed as an initial treatment strategy, best achieved through lifestyle changes incorporating diet, exercise and behavioral interventions.
2. **Panjwani U. Effect of sahaja yogic practice on the psychological changes among the adolescent girls. (1995)⁹** :- They studied the Effect of Sahaja yoga practice on stress management in patients of epilepsy. The study was carried out on 32 patients of epilepsy who were randomly divided into 3 groups: group 1 subjects practiced Sahaja yoga meditation for 6 months, group 2 subjects practiced postural exercises mimicking Sahaja yoga and group 3 served as the epileptic control group.
3. **DiBenedetto M. Effect of varied Yogic practices on selected physiological and psychological variables among adolescents girls. (2000)¹⁰** :- They examined if a tailored yoga program could improve age-related changes in hip extension, stride length, and associated indices of gait function in healthy elders, changes that have been linked to increased risk for falls, dependency, and mortality in geriatric populations. A 3-dimensional quantitative gait evaluation, including kinetic measurements, was performed pre and post intervention. Home practice on alternate days. Findings of this exploratory study suggest that yoga practice may improve hip extension, increase stride length, and decrease anterior pelvic tilt in healthy elders, and that yoga programs tailored to elderly adults may offer a cost-effective means of preventing or reducing age-related changes in these indices of gait function.

4. **Reshma Mohamed Ansari. Kapalbhathi Pranayama: An answer to modern day polycystic ovarian syndrome and coexisting metabolic syndrome.(2016)¹¹** :- They examined the role of Kapalbhathi pranayama, the modern-day yoga practice to cure the polycystic ovarian syndrome and coexisting metabolic syndrome in women of age group 18-40 years. Yogic exercises are noted to reduce oxidative stress and hence aid in antioxidant defense mechanisms. Pranayama techniques such as Kapalabhati improve autonomic function by balancing the sympathetic and parasympathetic activity which is beneficial in stress-related disorders. Kapalabhati reduces oxidative stress which affects lipid peroxidation.
5. **Valarmathi Selvaraj. Impact of yoga and exercises on polycystic ovarian syndrome risk among adolescents school girls.(2016)¹²** :- The Experimental research was conducted among adolescent girls belonging to two Government run schools in Tiruvallur district of Tamil Nadu state, India, from 6 June to 9 December 2016. A standard risk assessment questionnaire was adopted for risk assessment after making few modifications. The experimental group received lifestyle modifications (yoga for two months and walking exercise for two months), with no such intervention provided for the control group. The impact of these interventions was assessed in terms of risk minimization and a P value less than .05 was considered statistically significant.
6. **Vishesha Patel. Regular mindful yoga practice as a method to improve androgen levels in women with polycystic ovary syndrome: A randomized controlled trial.(2020)¹³** :- 31 women with PCOS between the ages of 23 and 42 years and living in Erie County, Pennsylvania, were recruited for this randomized, controlled study arm, 22 women completed the 3-month intervention period, 13 in the mindful yoga group and 9 in the control group. The improvements observed suggest that regular mindful yoga practice can be a useful complementary therapeutic option for women with PCOS, particularly for improving serum androgen levels, a hallmark feature of PCOS.
7. **Kamini Balasaheb Bhingardive. Clinical efficacy of vamana karma with ikshvakubeeja yoga followed by shatapusphadi ghanavati in the management of artavakshaya to polycystic ovarian syndrome.(2017)¹⁴** :- 15 patients of PCOS were clinically diagnosed and treated by Vamana Karma (therapeutic vomiting) procedure with Ikshvaku seed formulation. After completion of Vamana Karma (therapeutic vomiting) and Shatapusphadi Ghanavati 2 Vati (each 500 mg) twice in a day with lukewarm water was given for 45 days. Vamana Karma (therapeutic vomiting) followed by Shatapusphadi Ghanavati is very effective in the management of obese PCOS patients and increasing chances of conception.
8. **M. Ezhil Ratnakumari. Study to evaluate the changes in polycystic ovarian morphology after naturopathic and yogic interventions.(2018)¹⁵** :- 50 PCOS patients of age between 18 and 35 years who satisfied the Rotterdam criteria were recruited for the study. This study revealed Y&N (Yoga and Naturopathy) lifestyle could be the first-line interventions for PCOS. Small changes in lifestyle in accordance with Y & N are known to improve symptoms and psychological well-being of PCOS patients. This study performed to assess morphological changes in the polycystic ovaries in relation to reduction of symptoms has substantiated the approach of Y&N interventions in PCOS.
9. **Anitha. Effect of yoga on level of depression among females suffering from polycystic ovarian syndrome (PCOS).(2017)¹⁶** :- They determined the prevalence of depression among women with PCOS compared to normal healthy women. They selected 50 cases of PCOS as per the Rotterdam criteria from the Gynecology OPD, Government Chengalpattu Medical College. The depression related information was gathered by Beck's Depression Inventory. The data was compared with that of 50 age matched normal healthy individuals. The finding shows that depression scores were significantly increased in the PCOS group as compared to the

control group. The study showed increased prevalence of mild to moderate depression in PCOS patients compared to the normal subjects.

10. **Arnulfo Ramos-Jiménez. Cardiovascular and metabolic effects of intensive hatha yoga training in middle-aged and older women from Northern Mexico.(2009)¹⁷** :- An 11-week IHY (Intervention Hatha Yoga) program consisting of 5 sessions/week for 90 min (55 sessions) was found to be capable of improving cardiovascular fitness. Despite the relatively low intensity of the yoga practice, this program increased both VO₂max and HDL-C. The data also suggested that HY asanas, practiced as a systematic physical activity and conducted by an expert instructor in untrained and aging individuals, can improve health and serve as the basis for a physically active lifestyle.
11. **Nidhi, R., Padmalatha, V., Nagarathna, R., and Ram, A. Effect of Holistic yoga program on anxiety symptoms in adolescent girls with polycystic ovarian syndrome: A randomized control trial.(2012)¹**:- They investigated the Effects of a Holistic Yoga Program on Endocrine Parameters in Adolescents with Polycystic Ovarian Syndrome. International Journal of Gynecology and Obstetrics, ninety (90) adolescent (15-18 years) girls from a residential college in Andhra Pradesh who satisfied the Rotterdam criteria were randomized into two groups. The yoga group practiced a holistic yoga module, while the control group practiced a matching set of physical exercises (1 hour/day, for 12 weeks). Anti-müllerian hormone (AMH- primary outcome), luteinizing hormone (LH), follicle- stimulating hormone (FSH), testosterone, prolactin, body-mass index (BMI), hirsutism, and menstrual frequency were measured at inclusion and after 12 weeks. Mann-Whitney test on difference score shows that changes in AMH (Y=-2.51, C=-0.49, p=0.006), LH, and LH/FSH ratio (LH: Y=-4.09, C=3.00, p=0.005; LH/FSH: Y=-1.17, C=0.49, p=0.015) were significantly different between the two intervention groups. Also, changes in testosterone (Y=-6.01, C=2.61, p=0.014) and Modified Ferriman and Gallway (mFG) score (Y=-1.14, C=+0.06, p=0.002) were significantly different between the two groups. On the other hand, changes in FSH and prolactin post intervention were not significantly different between the two groups. Also, body weight and BMI showed non significantly different changes between the two groups, while changes in menstrual frequency were significantly different between the two groups (Y=0.89, C=0.49, p=0.049). A holistic yoga program for 12 weeks is significantly better than physical exercise in reducing AMH, LH, and testosterone, mFG score for hirsutism, and improving menstrual frequency with non-significant changes in body weight, FSH, and prolactin in adolescent PCOS.

NEED OF STUDY

Many studies and research have been done with yoga and PCOS but with anxiety symptoms only one study was done in south Indian school going girls, so we want to do this study in Gujarat, in college going girls how yoga is effective and beneficial for the treatment of PCOS with anxiety symptoms.

OBJECTIVE OF THE STUDY

- To assess the reduction of anxiety symptoms due to PCOS by holistic yoga.
- To assess the effects of holistic yoga on PCOS in college going girls.

HYPOTHESIS

- **NULL HYPOTHESIS** – Holistic Yoga treatment for anxiety and PCOS will be not effective on adolescent girls.
- **RESEARCH HYPOTHESIS** – Holistic Yoga treatment for anxiety and PCOS will be effective on adolescent girls.

METHODOLOGY

METHODOLOGY

The study was carried out on college going girls aged 18 to 30 years in Gujarat, India. Those girls who have satisfied the criteria of PCOS with some features included in it.

INCLUSION CRITERIA

- 1.) Age group of 18 to 30 years of girl.
- 2.) PCOS for more than 6 months.
- 3.) Cystic Ovaries
- 4.) Girls with irregular menstruation

EXCLUSION CRITERIA

- 1.) Girls taking oral contraceptives
- 2.) Hormonal treatment
- 3.) Insulin intake
- 4.) Thyroid abnormalities
- 5.) Smoking

6.) Alcohol

7.) Regular exercising girls

All 40 Girls who were selected for the study purpose were gathered through the online zoom yoga sessions of 1hour/every day for 6 weeks and the examination with quasi experimental one way study was performed and checked through pre-intervention to post-intervention in their weight, height, waist and hip circumference and BMI also with decreased anxiety symptoms were examined after 6 weeks of program.

There was an interactive introductory lecture about the topic and all girls of the college attended this lecture. 40 girls with PCOS were selected for the holistic yoga session after signing the consent form. The yoga performed was basically the asanas, meditation and lectures on holistic yoga lifestyle and stress management.

YOGA EXERCISES FOR TREATMENT OF PCOS.⁵

Asanas for PCOS are:

- 1.) Badhakonasana (Butterfly pose)
- 2.) SuptaBaddhaKonasana (Reclined bound angle)
- 3.) Bharadvajasana (Bharadvajasana twist's)
- 4.) ChakkiChalanasana (Mill churning pose)
- 5.) Shavasana (Corpse pose)
- 6.) Padmasana
- 7.) A few rounds of Surya namskar (Sun Salutation)

All these asanas were performed with 6 repetitions with 10 seconds of hold and 15 seconds of resting period. This yoga asanas were performed daily till 1 hour for 6 weeks. Practicing these Asanas would become a reason to boost the health of uterus and ovaries and improve functioning of the endocrine glands. Yoga is safe and effective for treatment of PCOS.



6.1 Badhakonasana.



6.2 SuptaBadhaKonasana



6.3 Bhadravajanasana

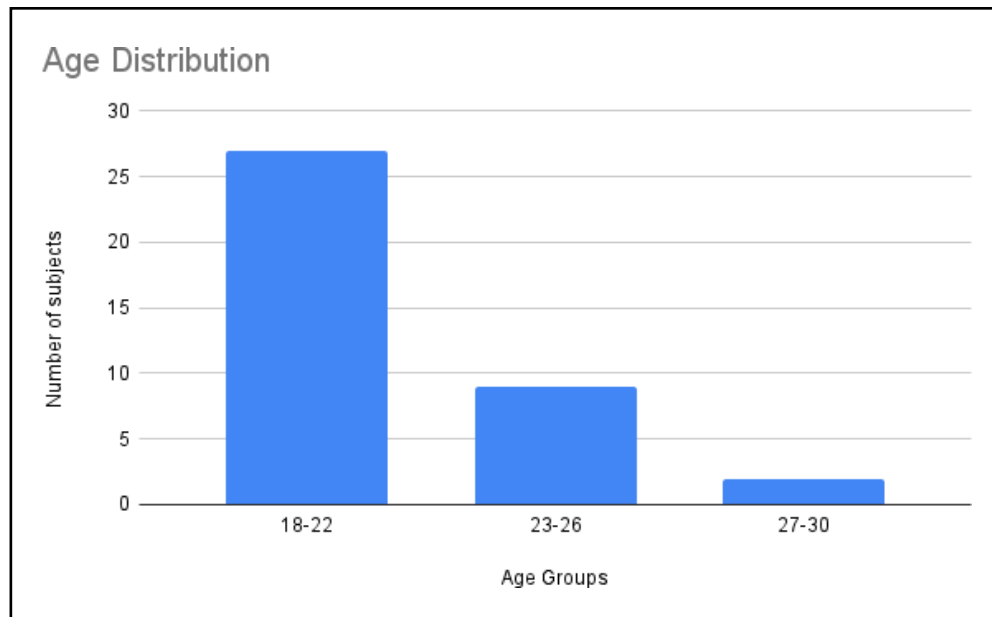


6.4 Chakkichalanasana

RESULT

1. Age Distribution

This research was performed on 40 females with PCOS between the age of 18 to 30. There were 27 females between the ages of 18 to 22, 9 females between the ages of 23 to 26 and 2 females between the ages of 27 to 30.

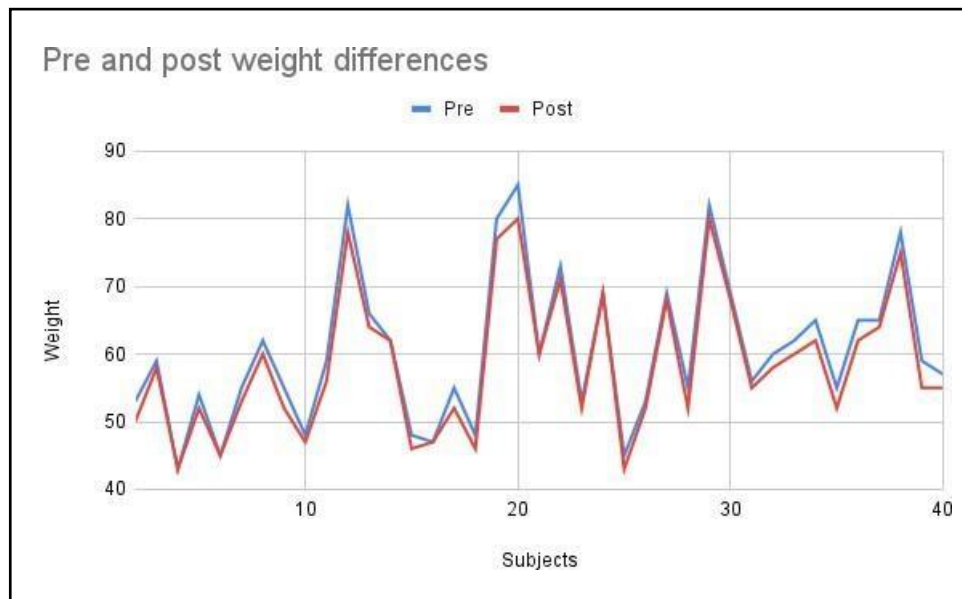
**GRAPH: - 7.1.1 AGE DISTRIBUTION CHART**

2.Weight Distribution

From the total of 40 subjects, we saw the minor weight change in 34 females while 6 females didnot lose any weight.The pre mean was 60.45 and post mean after yoga and asanas was 58.474 with 1.975 difference among them and P-Value was less than 0.01.

Weight Mean		Difference	P-Value
Pre	Post		
60.45	58.475	1.975	<0.01

Table : 7.1 Mean Weight Distribution



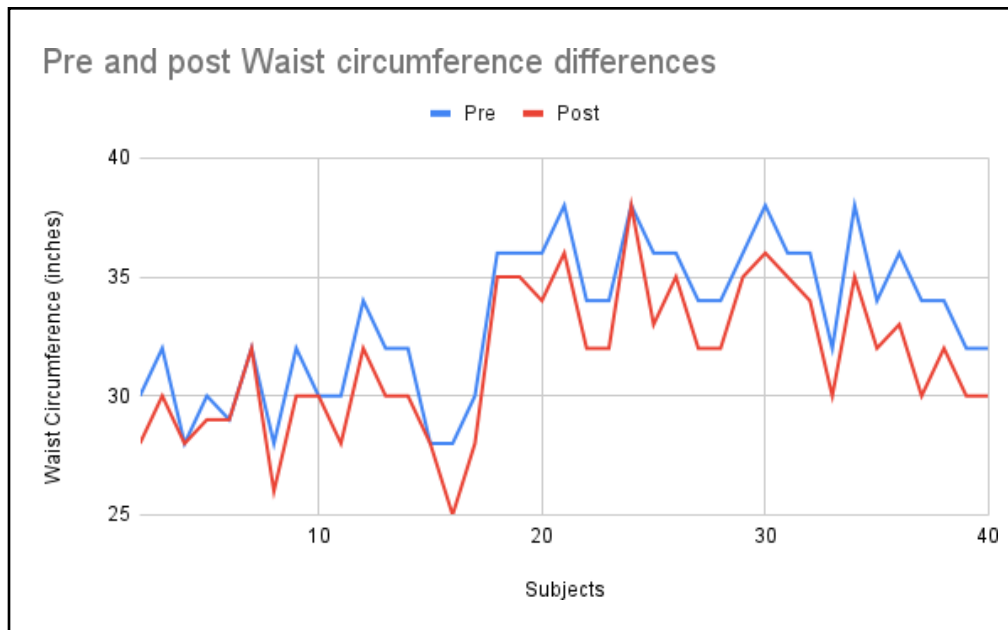
GRAPH: - 7.2.2 WEIGHT DISTRIBUTION CHART

3.Waist Circumference Distribution

From the total of 40 subjects, we saw minor Waist Circumference loss in 34 females while 6 females did not lose any waist. These females were different from the ones who have lost some weight in the previous graph. The pre mean was 33.225 and post mean was 31.525 with 1.7 difference while P-Value was less than 0.01.

Waist Mean		Difference	P-Value
Pre	Post		
33.225	31.525	1.7	<0.01

Table : 7.2 Waist Mean Distribution



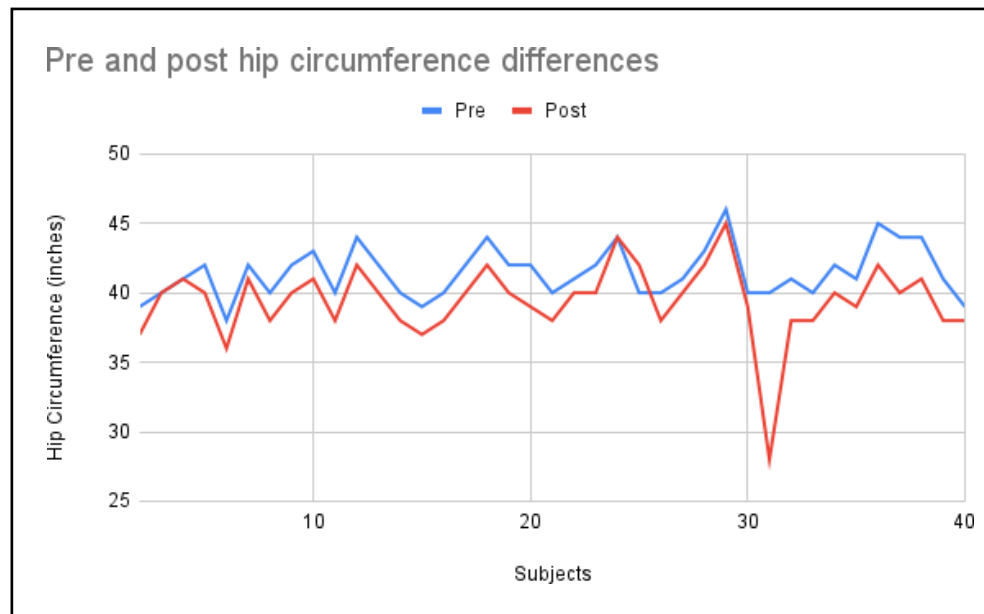
GRAPH: -7.3.3 WAIST CIRCUMFERENCE DISTRIBUTION CHART

4.Hip Circumference Distribution

From the total of 40 subjects, we saw minor hip circumference loss in 36 females while 4 females did not lose any inches as pre mean was 41.425 and post mean was 39.45 as difference was seen 1.975 among the females after holistic yoga program with P-Value less than 0.01.

Hip Mean		Difference	P-Value
Pre	Post		
41.425	39.45	1.975	<0.01

Table : 7.3 Hip Mean Distribution



GRAPH: - 7.4.4 HIP CIRCUMFERENCE DISTRIBUTION CHART

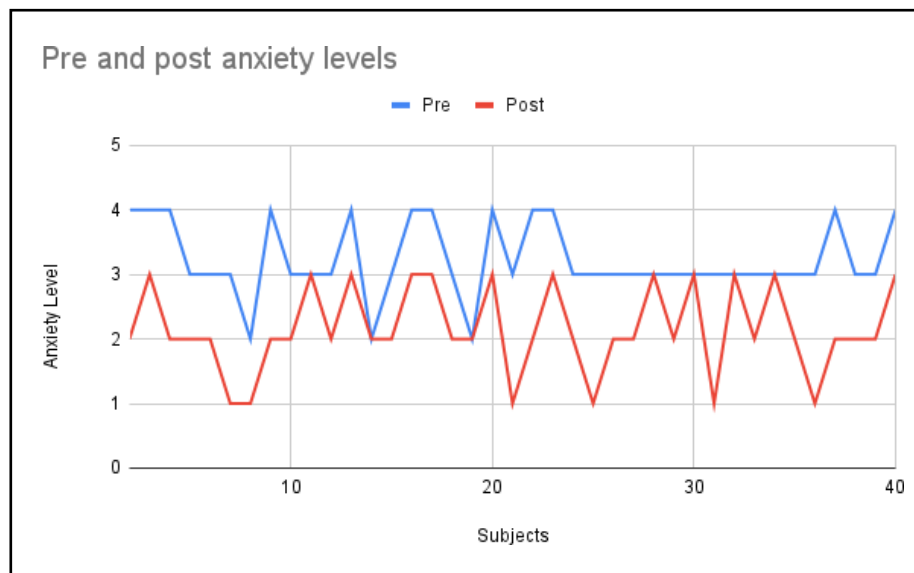
5. Anxiety Levels Distribution

From the total of 40 subjects, we noticed a drop in anxiety levels for 33 females while 7 females did not have any decrease as pre anxiety Mean was 3.225 and post was 2.125 with difference of

1.1 and P-Value less than 0.01.

Anxiety Mean		Difference	P-Value
Pre	Post		
3.225	2.125	1.1	<0.01

Table 7.4 Anxiety Mean Distribution



GRAPH: - 7.5.5 ANXIETY LEVEL DISTRIBUTION CHART

DISCUSSION

Many women first experience symptoms of PCOS during anxiety-inducing change, severe stress, or trauma. Patients with PCOS have reported that they feel anxious about their bodies and health. A person's values and culture they live in, also impacts their anxiety level. Because of this behavior, there is a high risk for depression and anxiety in PCOS patients regardless of pregnancy issues, obesity, excess body and facial hair, or lack of control over their health and bodies. In addition, Obesity is a common finding in women with PCOS and between 40-80% women with this condition are reported overweight or obese. In women with PCOS, the metabolic and hormonal issues that are present such as insulin resistance and hyperandrogenism, can lead to weight gain. Obesity in turn can exacerbate the symptoms of PCOS such as further metabolic issues and reproductive abnormalities. In our study the the Anxiety symptoms are also reduced along with the wieght.

When Dr. V. Duraisami from TNPESU, Chennai, did research on the effects of Suryanamaskar with Yoga Nidra practices on selected Psychological variables among obese people, the results showed that these practices helped to reduce anxiety and to increase self-confiendence among the obese people. As compared to this study our research has different holistic yoga program to reduce weight,waist,hip and anxiety symptoms.

L.V.H. Arts, Science & Commerce College, Nashik, did research on the effect of Yoga on Level of depression among Females suffering from PCOS. The sample of the research consisted of 30 females with PCOS where they were provided 1 month Yoga training. The researchers concluded that Providing Yoga training to these females with PCOS has helped in opening the pelvic area leading to relaxation of mind and body.

This Quasi Experimental on-way research presents the effects of Yoga on 40 PCOS adult female patients from age 18 to 30, who are also obese. For six weeks, we provided 1 hour yoga session to these subjects which included BaddhaKonasana, SuptaBaddhaKonasana, Bharadvajasana, ChakkiChalanasana, Shavasana, Padmasana and a few rounds of Surya Namaskar. After the research period, we noticed slight drop in weight, waist and hip circumference and anxiety level. Our research concluded that holistic yoga helps with the anxiety symptoms in females with PCOS.

CONCLUSION

Six Week holistic yoga program in college going girls with PCOS in Gujarat has been significantly proven to reduce the weight, waist and hip circumference with anxiety symptoms. Thus, Yoga and asanas management may help reduce the progression of anxiety symptoms with PCOS.

SUMMARY

The study is to find the effect of holistic yoga on the college going girls with PCOS and anxiety symptoms in Gujarat. 40 girls were chosen with the 18-30 age group with weight, waist circumference and hip circumference and body mass index. Hamilton Anxiety rating scale was also taken for the rating of their Anxiety symptoms after holistic yoga asanas. This six-week holistic yoga program was useful in reducing the Anxiety symptoms with weight, waist and hip circumference.

Limitations

- Small sample size.
- Limited age group of 18-30 years.
- The self-selection and convenience sampling of participants to complete the study may also influence the result.

Future recommendation

- Future research should replicate these findings in other large samples, take larger age groups and investigate the relationship between Anxiety and Obesity.

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