Comparison of Yoga Asana along with Aerobic Exercise and Aerobic Exercise alone for Dysmenorrhea among College Students with Polycystic Ovarian Syndrome

Supriya Purushothaman¹, Senthil Kumar N², Karthika Ramalingam³, Kumaresan⁴, Anitha⁵, Muthukumaran⁶, Jagatheesan Alagesan⁷

¹Undergraduate, ²Assistant professor, ³Tutor, ⁴Professor, ⁵Assistant Professor, ⁶Professor, ⁷Professor, Saveetha college of physiotherapy, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil Nadu, India.

How to cite this article: Supriya Purushothaman, Senthil Kumar N, Karthika Ramalingam et al. Comparison of Yoga Asana along with Aerobic Exercise and Aerobic Exercise alone for Dysmenorrhea among College Students with Polycystic Ovarian Syndrome. Indian Journal of Physiotherapy and Occupational Therapy / Volume 18, Year 2024.

Abstract

Background: Dysmenorrhea is a distressing sensory and emotional experience that occurs usually in the region of the lower abdomen. Polycystic ovarian syndrome (PCOS) is the syndrome in which the ovaries create excessive production of androgens that are typically present in women at a minimal level. This study compares the effect of yoga on PCOS with dysmenorrhea in women of reproductive age using the McGill pain questionnaire and WaLIDD score.

Purpose: The purpose of the study is to determine the effectiveness of aerobic exercise and yoga asana for dysmenorrhea among college students with polycystic ovarian syndrome.

Materials and Methods: This experimental study has been conducted from December 2022 to May 2023 which included 150 girls (18 to 25 years old) who were screened for PCOS and 98 girls who willingly filled out a Google form to the female college students, Based on the inclusion criteria, 50 people took part and were separated into two groups: one group is given aerobic exercise with yoga, while the other group is given only an aerobic exercise. The treatment is for 60 minutes and 5 days per week is given and continued for 12 weeks. The pre-test and post-test were taken. The values were tabulated and statically evaluated.

Result: the results revealed that the addition of yoga along with aerobic exercise results in 70-80% of the women being beneficial for managing the dysmenorrhea and PCOS which are statistically significant with a p value of 0.0001.

Conclusion: The study shows that yoga asana with aerobic exercise for PCOS students is more beneficial in lowering the risk of dysmenorrhea than aerobic exercise alone.

Key words: PCOS, dysmenorrhea, female college students, aerobic exercise, yoga asana.

Introduction

One of the most prevalent causes of pelvic discomfort and menstrual problems is dysmenorrhea, which is defined as the occurrence of unpleasant uterine cramps during menstruation. The international association for the study of pain
defines it as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage.” This type of pain normally occurs in the lower abdomen, but if it is chronic, the pelvis is prominently involved. Dysmenorrhea has been divided into two categories: primary and secondary. Primary dysmenorrhea does not involve or are related with underlying causes, however secondary dysmenorrhea can be identified by some particular underlying reasons. Typically, it results in disorders in the reproductive system.

The occurrence of dysmenorrhea is ranging from 40 to 90 percent among the college population and the prevalence of chronic pelvic pain is also reported which ranges from 17% to 80%. There are several other factors also linked in these studies with dysmenorrhea, such as a high body mass index (BMI), smoking, Menarche at a young age, the menstrual flow that lasts a long time, and psychological distress or disturbances. But the true prevalence of primary dysmenorrhea are still unknown. In India it has been established 33.5 percent of women suffer from dysmenorrhea, especially adolescent girls. The conditions which cause Endometriosis, uterine fibroids, and uterine adenomyosis are secondary dysmenorrhea situations where intrauterine devices, certain malignancies, and uncommon illnesses including uterine infections may also be impacted. Prostaglandins and leukotrienes are released as a result of the accumulation of omega-6 fatty acids during menstruation, and it is induced by prostaglandins. So, the blood supply to the uterus is constricted which can result in pain and gastrointestinal symptoms. To prevent ovulation, certain birth control pill varieties can alleviate the manifestation of dysmenorrhea.

Dysmenorrhea is not a life-threatening condition, it can significantly affect a woman’s daily life. She might miss work or school, but also be unable to take part in sports or other activities, which might add to her emotional distress. This is especially true for young women in their teens and early 20s.

According to data from a massive survey carried out throughout India in 2020, approximately 16% of Indian women between the ages of 20 and 29 had polycystic ovarian syndrome. Medical experts know that genetic and environmental factors play a role in the development of PCOS. Because the symptoms frequently run in families, and it is believed to be partially genetically driven. And also, this condition has been associated with insulin resistance and obesity, despite the reality of the cause is unknown. Excess insulin causes the ovaries to produce androgens, which can lead to anovulation with higher-than-normal levels of androgens and possibly lower-than-normal levels of oestrogen. Androgen levels that are too high can affect the interference of brain signals that cause ovulation to occur. And other symptoms include abnormal hair growth, acne, pelvic pain, and acanthosis in Nigerians, Enlarged ovaries with small cysts, etc.

So the future moms of society are likely to be college students, who represent a homogeneous group population. Atypically, these students could seem healthy and not be aware that they have PCOS until after marriage when they get to know the difficulties of getting pregnant. Regular exercise in PCOS patients can improve metabolic and reproductive management in addition to weight loss. Studies suggested that to completely understand the process behind the association between dysmenorrhea and PCOS.

With the goal of bringing the body and mind into harmony, yoga is a psycho-physiological system of therapy that can improve one’s physical, mental, and spiritual health. Some of the yogic postures are all emphasized in this holistic lifestyle approaches.

Numerous studies have suggested that yoga can help to lessen premenstrual symptoms and dysmenorrhea. According to a study using a mixed-method approach, yoga may help lessen both the amount and the severity of pain experienced during menstruation. Certain studies indicating that it can help reduce premenstrual symptoms and period discomfort caused by dysmenorrhea. A recent study concluded that practicing yoga can also lessen premenstrual symptoms and discomfort. It also implies that, even though it may be able to treat severe menstrual disorders like PCOS, getting a regular period may be more helpful for those who are experiencing irregular menstruation. Additionally, experimental research is needed to verify the results of this study.
Aim

The aim of the study is to determine the effectiveness of aerobic exercise and yoga asana for dysmenorrhea among college students with polycystic ovarian syndrome.

Materials and Methods

Subjects: dysmenorrhea with PCOS students.

Sampling Technique: Convenient sampling.

Sample Size: 50 Samples.

Selection Criteria:

Inclusion Criteria:

1. Female population between the ages of 17-25.
2. Diagnosed with PCOS condition.
3. Irregular periods until 2 months.
4. Quality of menstruation
5. Presence or absence of dysmenorrhea
6. Any PMS Symptoms.

Exclusion Criteria:

1. Any endocrine disorders
2. Chronic disorders
3. Any major surgeries
4. H/o any cardiac or pulmonary diseases were excluded.

Outcome Measure:

McGill Pain Questionnaire (MPQ): Patients with a variety of diseases can self-report questionnaires. They have three elements: sensory intensity, the cognitive and emotional impact. It is made up of 78 words and scores range from 0 (no pain) to 78 (severe pain)

WALLID Score: The instrument which is used to diagnose dysmenorrhea includes information of three frequently used criteria: days of pain, workability, and anatomical region of pain location.

Procedure

The study has been conducted from December 2022 to May 2023, in Saveetha university, Thandalam, Chennai, INDIA. The study was explained to the female subjects. Based on that, 150 girls were screened and the 98 interested candidates voluntarily filled the given questionnaire for identifying the population with the condition of dysmenorrhea with PCOS.

Based on the inclusion criteria 50 candidates were selected and signed the consent form for the study. Once the consent was finalized the group of subjects was divided into two groups. Out of 50 subjects, each group had 25 people, group A underwent aerobic training for 60 minutes per day per week for 12 weeks, while group B underwent yoga asana with aerobic exercise for 60 min / day per week for 12 weeks. Pre-test and post-test values were measured using the McGill pain questionnaire and WaLIDD score. Yoga Sana with aerobic exercise group has been treated which includes Ardha kati chakra Sana -30 sec with 6 rounds, Kati chakra Sana -10 to 20 times in a cycle, Malasana - holds up to 30 sec, Vajrasana for 5 to 10 minutes, Baddhakonasana-20 secs, Vipara itakanni-5 mins, Bhujangasana -15 mins, Balasana 30 secs, Kapalabhati pranayama – 3 rounds with 5 forceful expirations and suptha baddha konasana -15 mins along with aerobic were marching, single step touch, knee lift, leg curl given for all about 60 mins. Another group receives aerobic exercise with the intensity of six episodes of 10 mins each, by a 15 mins active rest period totalling 20–60 minutes of aerobic (interval exercise at moderate to high intensity), done during maximum or submaximal activity. Exercises like Running, walking, jogging, Marching, single step touch, knee lift, leg curl, lunges side and back, were given. The post test was measured in the same manner as the pre-test measurements were taken.

Data Analysis

In this study, paired t tests were used for analysing pre and post-test values of individual groups. Whereas, unpaired t test was used for analysing post-test values of individual groups.
Indian Journal of Physiotherapy and Occupational Therapy / Volume 18 Special Issue 2024

Graph 1-a paired test for group A

Graph 1-b paired test for group B

Graph 2-a paired test for group A

Graph 2-b paired test for group B

Graph 3-a post values of both groups using McGill pain questionnaire.

Graph 3-b post values of both groups using WALLID score.

Results

According to the study review, the progression of aerobic exercise with yoga asana results in 80-90% of the people obtaining maximal voluntary contraction and also stretching from maximal or submaximal exercise testing, which is extremely effective in the treatment. However, aerobic training provides a lower base on perceived exertion or sub minimal voluntary contraction. So, statistical analysis of the quantitative data indicated statistically significant differences in the both groups. Comparing the pre and post-test value of experimental group, showing that pre-test value of McGill 60.16 was decreased 52.1 to in post-test and using the WaLIDD scale the pre-test value 9.96 also decreased into 5.28 at post, with a p value of 0.0001 (graph 1-a & graph 1-b). (graph 2-a & b) shows that the pre and post-test value for control group, the pre-test value of McGill of 61.1 is reduced into 46.2 and in WaLIDD scale pretest value 5.65 is
reduced into 5.36, with a p value of 0.0001. Compare
the control and experimental group of post-tests,
(graph 3-a and graph 3-b) shows that the McGill scale
value is 52.93 and the WaLIDD scale experimental
value 5.63 is reduced to 5.56. As the result, it can
be said that they are statistically significant with a P
value of 0.0001.

Discussion
This study examined the effects of aerobic
exercise, yoga asana with aerobic exercise in college
students with PCOS, and the intervention for each
group lasted for 12 weeks and 50 students were
divided into two groups: 25 underwent aerobic
exercise and another 25 underwent aerobic with yoga
asana. The result of the study, evaluated mean; p value
by the post values. These values were considered to
be extremely statically significant. These differences
indicated that yoga with aerobic exercise was highly
beneficial compared to aerobic exercise .

In the recent study, they looked into the causes
of significant pain in female PCOS students with
primary dysmenorrhea. According to another
research, PCOS is a predictive factor in endometrial
cancer for women who are treated with Progestin.
Some studies, said that coffee consumption was an
important risk factor for dysmenorrhea the finding
is consistent with the finding that women with long
menstrual cycles are at a higher risk of dysmenorrhea.9

The study by Muluneh et.al results that physical
activity was a protective factor for the development
of dysmenorrhea.10 review study by Geenen et.al who
discovered that several physical activities, including
Pilates, may be beneficial for managing pain and
QoL improvement in individuals with severe pain.11

Recent study on the treatment preferences of girls
with dysmenorrhea, the results showed that 12
percent of participants were from outside Japan
who were affected by PCOS.12 According to some
research, Fernández-Martínez et.al the prevalence
of dysmenorrhea declines with age, suggesting that
the incidence of primary dysmenorrhea peaks in late
adolescence by the 20s and then declines with age.13

Similarly, BMI with dysmenorrhea were observed
in a few studies. But results of the current study
show no link to BMI.14 One of the findings says that
age of menarche is a significant factor in which the

number of girls between the ages of 12 and 15 were
taken.15 According to Aganoff and Boyle’s study on
the impact of aerobic exercise on menstrual cycle
symptoms, regular aerobic exercise can improve both
mood and physical relaxation.16

Conclusion
To summarize, dysmenorrhea in PCOS is found
to be extremely common among female college
students. The findings suggest that yoga practices
can offer additional benefits and potentially enhance
the overall outcomes for women with PCOS and so,
study concluded that the effect of aerobic training
with yoga for PCOS students is more effective in
lowering the risk of dysmenorrhea than the aerobic
exercise training.

Ethical Clearance: Taken from the institutional
ethical committee.

(ApplicationNo.:03/088/2022/ISRB/SR/SCPT).

Conflict of interest: Nil.

Funding: self.

References
1. Kumar KH, Elavarasi P. Definition of pain and
classification of pain disorders. Journal of Advanced
Clinical and Research Insights. 2016 May 1;3(3):87-90.
2. Avasarala AK, Panchangam S. Dysmenorrhoea in
different settings: are the rural and urban adolescent
girls perceiving and managing the dysmenorrhoea
problem differently?. Indian journal of community
medicine: official publication of Indian Association of
3. Tonini G. Dysmenorrhea, endometriosis and
premenstrual syndrome. Minerva pediatrica. 2002
Dec;54(6):525-38.
Prevalence of dysmenorrhea and its effect on quality
of life among a group of female university students.
Upsala journal of medical sciences. 2010 May
1;115(2):138-45.
5. Ko HN, LeSS, Kim SD. Effects of yoga on dysmenorrhea:
a systematic review of randomized controlled trials.
6. McGovern CE, Cheung C. Yoga and quality of life
in women with primary dysmenorrhea: a systematic
review. Journal of midwifery & women's health. 2018
Jul;63(4):470-82.


