



## Original Research Article

## Knowledge, attitude and practice towards exercise in young females diagnosed with polycystic ovary syndrome

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## ABSTRACT

**Background:** Polycystic ovary syndrome (PCOS) is one of the most common heterogeneous, endocrine and metabolic disorders in women and studies have shown that 10% of the women are affected by PCOS in India. This study aims at assessing knowledge, attitude, and practice of exercise as a treatment option in young females diagnosed with PCOS.

**Materials and Methods:** A cross-sectional study included 100 participants diagnosed with PCOS and were asked to fill a self-made questionnaire that was face validated.

**Results:** 93% of the respondents are aware of PCOS being one of the most common lifestyle disorders. 22.5% were aware of obesity being a complication of PCOS and only 23.1% were aware of weight reduction as a benefit of exercise. 5.4% consulted a Physiotherapist to treat the condition. 70% reported that health care professionals were their main source of information about PCOS. 74% strongly agreed to the importance of treating PCOS to prevent its future complications and 66% agreed to take some time out of their daily schedule to indulge in an exercise program. 84% were aware that exercise is a treatment option in the management of PCOS but only 67% practiced exercise regularly. 34.8% of the population chose a lack of time as the main reason for not exercising regularly.

**Conclusion:** Efforts need to intensify in creating awareness about the complications of PCOS and therefore the importance of exercise as the first line of treatment option to cure the condition along with a healthy diet. A multidisciplinary approach in tackling PCOS has to be emphasized.

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### 1. Introduction

Polycystic ovary syndrome (PCOS) is a metabolic, endocrine and heterogeneous disorder causing excessive androgen secretion and abnormal insulin activity.<sup>1</sup> Approximately 10% of women are affected by PCOS in India.<sup>2</sup> It is defined as symptoms of anovulation like menstrual dysfunction, irregular menses, infertility and/or symptoms of increased androgen levels like hirsutism, acne, seborrhea occurring in women with polycystic ovaries.<sup>3</sup> The revised Rotterdam diagnostic criteria for PCOS calls for the presence of at least two of three following features: (i) Oligo-ovulation (ovulation is irregular and not

completely absent) (ii) Clinical or biochemical evidence of androgen excess (iii) Polycystic ovaries.<sup>4</sup> The cause of polycystic ovary syndrome is unknown, but studies suggest a strong genetic component affected by gestational environment, lifestyle factors or both.<sup>2</sup>

There is an increased risk of health complications in women with PCOS that includes reproductive complication like infertility, pregnancy complications like gestational diabetes, preeclampsia, and miscarriage, psychological complications like increased anxiety and depression, metabolic complications like increased risk factors for impaired glucose tolerance and type 2 diabetes mellitus and cardiovascular disease.<sup>5</sup> Thus PCOS is associated with short term and long term presentations that may adversely

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affect women at varying stages of their life.<sup>6</sup>

Obesity is very common in people with PCOS and studies have shown that approximately 50% of the affected women are overweight or obese which has a negative role in the pathophysiology of PCOS leading to increased androgen levels and chronic anovulation. Obesity in PCOS can lead to reproductive, gestational, metabolic and psychological complications and therefore appropriate interventions assisting in the management of obesity in PCOS is imperative.<sup>7</sup>

Lifestyle modification focusing on diet and exercise behavior is preferred as the first-line treatment for PCOS. Several studies have shown that weight loss of 5–10% of total body weight in overweight women with PCOS with the help of good nutrition and exercise training can lead to a reduction of central fat deposition, reduced circulating insulin and androgen levels, improved insulin sensitivity and thereby restoring ovulation, improving menstrual cycles and cardiovascular disease risk factors.<sup>8</sup> Physical exercises induce oxidative metabolism in tissues and the oxidative metabolism of the ovary is a stimulant for follicular development.<sup>5</sup> Diets recommended for obese PCOS patients are low in calories with reduced carbohydrate intake and can produce the 5%–10% loss necessary to re-establish ovarian function in these patients.<sup>9</sup>

Given the metabolic liabilities and future complications of PCOS, this study aims to explore the perception of PCOS and the importance of exercise as a treatment option for PCOS among women diagnosed with PCOS. Due to fast-growing westernized diet culture in India and an increase in the adaptation of a sedentary lifestyle, it is very important to study the attitude on lifestyle modifications.<sup>6</sup>

## 2. Materials and Methods

A self-made questionnaire was designed by the authors and face validated. The Knowledge, Attitude, Practice (KAP) questionnaire was divided into four sections: Section A contained information regarding socio-demographic and clinical profiles such as professional qualification, height, weight, BMI and lifestyle behavior. Section B contained questions relating to Knowledge about the condition and importance of exercise, Section C contained questions on Attitude towards exercise and Section D contained questions on the Practice of exercise.

After ethical approval from the Institutional Review Board, 100 females diagnosed with PCOS between the ages of 18 to 26 years were invited to participate in the study through Google forms and personal interviews. It was a cross-sectional study in which informed consent was taken from each participant and then given a brief introduction about the research proceeded by handing out the questionnaire to be filled. These females comprised of students and working professionals belonging to non-medical fields. The mean height (cm) of the population

was 160.98 ( $\pm 6.8313$ ) and the mean weight (kg) was 59.75 ( $\pm 11.1098$ ).

Statistical Analysis: Descriptive analysis of the data collected was done using Microsoft Office Excel version 2013. The responses were converted into percentiles and represented in graphical form.

## 3. Results

### 3.1. Section A – Demographic data and lifestyle

1. On studying the BMI of the participants, 54% of them were normal, 29% were overweight and 5% came under the obese class.
2. On studying the consumption of junk food, 3% of the population consumed more than twice a week, 23% twice a week, 41% once a week and 1% once/twice in a month.
3. 5% of the population practiced smoking regularly.

### 3.2. Section B – Knowledge about PCOS

1. 93% of the population were aware that PCOS is one of the most common lifestyle disorders in the adolescent population today.
2. Looking at the awareness regarding treatment options of PCOS, 35.5% chose medication, 32.5% physical exercise, 24.3% healthy low-calorie diet, and 7.7% surgery.
3. On studying the sources of knowledge on the practice of physical exercise to treat PCOS, 70% of the population had health care professionals, 64% had internet/social media, 38% had parents/friends and 21% had books/magazines as their sources.

**Table 1:** Percentage of the population aware of the complications of PCOS

S.No.	Complications of PCOS	Percentage of Population
1.	Obesity	22.5%
2.	Infertility	21.7%
3.	Gestational complications	12.6%
4.	Pre-diabetes	11.5%
5.	Type 2 Diabetes	11%
6.	Endometrial cancer	10.7%
7.	Cardiovascular disease	10.4%

### 3.3. Section C – Attitude towards PCOS and exercise

1. Regarding the importance of treating PCOS to prevent its future complications, 74% strongly agreed, 24% agreed and 2% did not know.
2. Out of the population who did not exercise regularly, 66% of them agreed to take some time out of their daily schedule to indulge in an exercise program while 4%

**Table 2:** Percentage of the population aware of the following benefits of exercise

S.No.	Benefits of exercise	Percentage of Population
1.	Weight reduction	23.1%
2.	Psychological well being	18.9%
3.	Menstrual regularity	18.9%
4.	Reduces the risk of hypertension	15.7%
5.	Reduces the risk of diabetes	13%
6.	Improving fertility	10.3%
7.	None	0

**Table 3:** Awareness about exercise as a treatment option for PCOS

Awareness	Percentage of Population
Yes	84%
No	16%

did not.

- 95% of the population agreed to make changes in their diet by including healthy fresh food.
- 91% of the population was interested in practicing yoga asana to improve PCOS.

**Table 4:** Various doctors to whom the population has consulted to treat PCOS

S.No.	Doctors consulted	Percentage of Population
1.	Gynecologist	56%
2.	Homeopath	16.2%
3.	Ayurveda	12.8%
4.	Dermatologist	9.5%
5.	Physiotherapist	5.4%

**Table 5:** Reasons for not exercising according to the population

S.No.	Reasons for not exercising	Percentage of population
1.	Lack of time	34.8%
2.	Lack of motivation	33%
3.	Feels very tired	19.5%
4.	Does not like exercising	9.3%
5.	Lack of information	3.4%

### 3.4. Section D – Practice of exercise

- Only 67% of the population exercised every day regularly.
- Out of the population that exercised regularly, 60% of the population exercised for 20-30 minutes/day, 18% exercised for 40-60 minutes/day and less than 3% exercised for more than 60 minutes/day.

- 21% of the population exercised 1-2 days/week, 41% exercised 2-5 days/week while only 13% of them exercised for 5-7 days/week.
- 51% of the population indulged in endurance training, 37% in Yoga, 15% in Pilates and 10% in functional weight training.

## 4. Discussion

On studying the awareness of complications of PCOS, the results of the study as indicated by the data in Table 1 show that 22.5% of the population were aware of obesity, 21.7% about infertility while less than 11.2% were aware of other various complications like type 2 diabetes, cardiovascular diseases, gestational complications, and endometrial cancer. Less than one-fourth of the population were aware of obesity being the root cause of risk factors causing future complications of PCOS. Studies have shown that there is a high risk of obesity in women diagnosed with PCOS due to increased prevalence of subclinical atherosclerosis, hyperlipidemia, hypertension, inflammation, and endothelial dysfunction.<sup>6</sup>

Obesity in PCOS can lead to complications like irregular menses, menorrhagia, infertility, gestational diabetes, preeclampsia, and fetal loss.<sup>10</sup> Insulin resistance and  $\beta$ -cell dysfunction along with central fat deposition seen in women with PCOS contribute to an increased risk for developing glucose intolerance and non-insulin dependent diabetes mellitus.<sup>6</sup> Therefore appropriate interventions to manage obesity in PCOS are imperative.

On studying the awareness regarding the benefits of exercise, Table 2 shows that 23.1% of the population were aware of weight reduction, 18.9% about menstrual regularity and psychological well-being, 15.7% about a reduction in risk of hypertension, 13% about a reduction in risk of diabetes and 10.3% about improving fertility. There is very less awareness regarding the benefits of exercise in reducing the risk factors that lead to future complications of PCOS.

Table 3 shows that 84% of the population were aware that exercise helps in the condition of PCOS. Despite this, only 66% of the population exercised regularly due to lack of time (34.8%) and lack of motivation (33%) being the most common reasons of the population for not exercising regularly.

Only 32.5% of the respondents were aware of physical exercise being the treatment option for PCOS and therefore we can see that according to Table 4, only 5.4% of the population consulted a Physiotherapist for a customized exercise program. The reason for this could be that the respondents were neither aware that Physiotherapists are involved in exercise prescription nor had been advised to consult them even when evidence affirms that a structured exercise training program improves an array of health-related outcomes.

According to Maiya AG et al, graded aerobic exercise leads to a reduction in the cyst size, improves the regularity of menstrual cycles and fertility. Physiotherapists are involved in prescribing tailor-made exercise program that best suits the patient depending on her needs and functional impairments.<sup>11</sup> On studying the body mass index (BMI) of the respondents, results show that 54% came under the normal category, 29% under overweight and 5% under obese. This emphasizes the need to spread awareness among people to modify their lifestyle to maintain the ideal body weight. Physiotherapists need to bridge this gap by joining hands with medical practitioners in educating patients and motivating them to adhere to regular physical activity as evidence suggests that as women pass through adolescence, activity levels decline to lead to a rise in BMI in these women. Therefore physical activity has to be encouraged in this age group.<sup>12</sup>

A holistic approach is a key management to tackle PCOS. Weight loss of 5–14% of total body weight by following a healthy diet and regular physical exercise reduces the risk of cardiovascular diseases, improves the hormonal profile and reproductive function in women with PCOS. Exercise leads to a reduction in abdominal fat, blood glucose, blood lipids, testosterone, androgen levels and improvement in menstrual cycles, ovulation, and fertility. There is also a reduction in depression and anxiety and improvement in self-esteem in women with PCOS.<sup>13</sup>

According to CL Harrison et al, women with PCOS should engage in at least 90 min of aerobic activity per week at moderate intensity (60–70%  $VO_{2max}$ ) for reproductive and cardio metabolic benefits. Regular, moderate-intensity aerobic exercise over a short period improves ovulation, regulates menstrual cycles, and helps to reduce weight and insulin resistance in young, overweight women with PCOS.<sup>14</sup>

## 5. Conclusion

The respondents had less awareness regarding the complications of PCOS and the benefits of exercise in preventing future complications of PCOS. 84% were aware of exercise as a treatment option for PCOS but only 66% of them practiced exercise regularly.

## 6. Clinical Implication

Awareness needs to be created about the complications of PCOS with the emphasis on the importance of exercise as the first line of treatment option to cure the condition along with a healthy diet. A tailor-made customized exercise plan depending on individual needs and interests could be included along with other treatments.

## 7. Source of Funding

None.

## 8. Conflict of Interest

None.

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