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EXPLORING THE RELATIONSHIP BETWEEN PCOS AND PHYSICAL FITNESS IN WOMEN

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Abstract: Objective: To associate the level of Physical fitness level in women with and without Polycystic Ovary Syndrome (PCOS). **Methodology:** This Analytical cross-sectional study was conducted in 113 females who were divided into two groups PCOS and NON-PCOS. Data were collected through quota sampling technique. Females of age range (18-45 years) were selected for the study. Outcome measure was valid and reliable GPPAQ (General Practice Physical Activity Questionnaire). SPSS version 22 was used for data analysis. Chi square test was used in analyzing the data. **Results:** Mean and standard deviation of age of females were 24.24 ± 4.207. Out of total sample size of 113 females, 92 females fill the questionnaire, 44 with PCOS and 48 with NonPCOS. Among our subjects, level of physical fitness was inactive (17.4%), moderately inactive (39.1%), moderately active (31.5%) and active (12%). P-value of >0.001 showed no association between level of physical fitness and PCOS. **Conclusion:** The study concludes that level of physical fitness not associated with PCOS.

Keywords: Physical fitness; polycystic ovaries syndrome; Women

Introduction

Polycystic Ovary Syndrome (PCOS) is one of the most prevalent and complicated endocrine disorder in females of reproductive age and is the major cause of an ovulatory infertility. PCOS influences 12-21% of females of reproductive age [1] Common symptoms include irregular menstrual cycles, ovarian cysts, and hirsutism PCOS impacts women of all races and ethnicities who are of childbearing age. PCOS is associated with a significant increase in risk factors such as cardiovascular disease, type 2 diabetes, and infertility. In PCOS condition, the level of male hormones i.e. androgen elevated that causes hirsutism and acne. There is an insulin resistance which leads to obesity and type 2 diabetes. This problem leads to an irregularity in the menstrual cycle that results in infertility. 20% of females often experienced sleep apnea. Depression and anxiety are common. Etiology of PCOS is unknown but diagnosis has traditionally been based on a history of oligomenorrhea and hyperandrogenism. Although etiology of PCOS is not completely understood, genetic and lifestyle factors are known to influence the etiology and insulin resistance plays a key role in the pathogenesis of PCOS. It is very essential to educate and advise on the situation. PCOS' explanation and debate should be culturally responsive, suitable thorough and individually customized. Diagnosing PCOS in teenagers is hard, timely screening and therapy is essential because insulin resistance/hyperinsulinemia is another significant element of the

syndrome, which increases the risk of type diabetes, dyslipidemia and cardiovascular sequelae. PCOS diagnosis should include a thorough family history in adolescents. The most recent criteria, published by oligo/anovulation, hyperandrogenism, and the presence of polycystic ovaries, in an effort to give an evidence-based definition to PCOS. PCOS and associated symptoms can be depression and anxiety risk factors. Professionals should be concerned with women's mental health with PCOS and consideration should be given to psychological treatment. Physical activity in females with PCOS is correlated with reduced depression .In handling PCOS, being more active can give mental health advantages. The AE-PCOS in 2006, tightened the parameters to include all three symptoms used in the Rotterdam criteria which include in the leadership plan of all adolescents with PCOS, healthy lifestyle interventions must be integrated because a big percentage of these teenagers are overweight/obese or at danger of overweight. In order to prevent weight gain and maintain health in PCOS, 60 minutes of moderate to vigorous physical activity should be encouraged at least 3 times a week. A low-carbohydrate diet and a hypocaloric diet enhanced weight and menstrual irregularities over 12 weeks without any difference in diet. Similarly, both low-glycemic and lowfat diets enhanced weight for 6 months without any difference in diets. [13] Therapeutic choices include intervention in the lifestyle, oral contraceptive pills and sensitizers to insulin. Long term monitoring is required to determine the efficacy of these methods in altering reproductive and metabolic outcomes' natural history causing undue damage.

The aim of this study is to understand the association of physical

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Fitness and PCOS and eventually make a regime specific to PCOS females.

Materials and Methods

It was an analytical cross-sectional study conducted within 6 months. Data were collected from 113 females from Fatima Memorial Hospital, King Edward Medical University in Lahore. The respondents were informed about the aims and objective of research and it was assured that their privacy and confidentiality the calculated sample size is =113 with 80% confidence interval, anticipated population proportion P=0.22 and absolute precision d=0.05 using the formula below:

$$n = \frac{Z_{1-\alpha/2}^2 P(1-p)}{d^2}$$

It was collected as 113 subjects who fulfill the inclusion and exclusion criteria were consented to fill a questionnaire. Total 92 questionnaires were filled. Quota sampling technique was followed to collect the data from subjects and the level of individual physical fitness was understood by scoring. Level of physical fitness was categorized into inactive, moderately inactive, moderately active and active and then it was compared with PCOS and without PCOS.

Data Analysis

The data was statistically analyzed by Statistical Package for Social Sciences (SPSS). Confidence interval (1-a) =80, anticipated population proportion (p=0.22), absolute precision required (d=0.05), sample size (n=113). The data collected by questionnaire (GPPAQ) General Practice Physical Activity Questionnaire was analyzed by Chi-square to assess difference of level of Physical fitness in women with PCOS and without PCOS.

Results

The study was conducted to compare the level of physical

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Discussion

This study was conducted to analyze the association between level of physical fitness and PCOS women. The study concluded that there is no association between both physical fitness and PCOS.The strength pf the study was that it helps to find the relationship between PCOS and physical fitness and to provide with the starting point for future experimental researches in this topic that can lead us to significant results and eventually make a specific regime and specific type of exercise for women with PCOS to prevent its adverse effects on mind and body. The research helps to improve our research strategies and consider other variables like diet and family history [Figures -3]. The limitation of the study were that sample was not completed. Age of females has effected this study because Elder women have gone through ultrasounds and know about their condition and on other hand young girls are less aware about

fitness in females with PCOS and without PCOS. Following Table 1 and Table 2 and graphs helps in concluding the results and determine the effect of physical fitness on PCOS The above Table 3 and Table 4 shows statistics of ages of females with PCOS and without PCOS that fill the questionnaire. The total number of females were n=88. The ages were between 18 to 45 years old. The mean age calculated was 24.25 with standard deviation of 4.3.

Chi-square test was applied to draw results. The above table show association between level of physical fitness and PCOS.

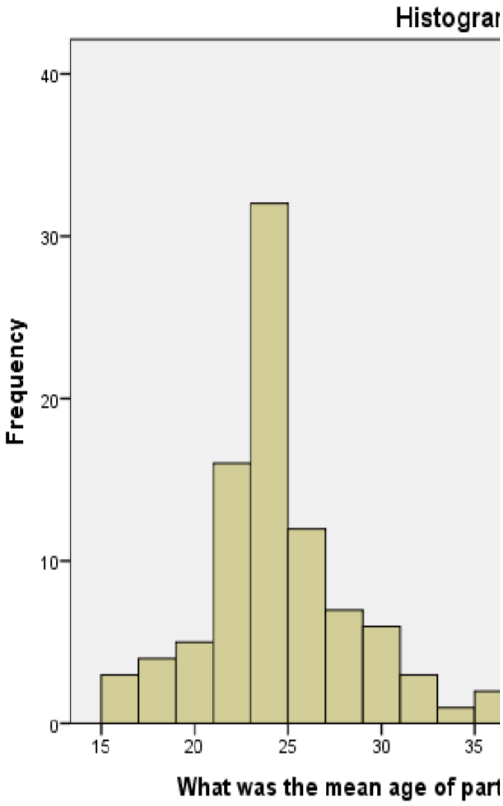

Figure 1: Histogram of age of s

Table 1: Frequency table of age of patients .

Sample size	Missing	Mean	Standard deviation
113	25	24.25	4.3

Table 2: Frequen cy table of PCOS and NON- PCOS

PCOS/Non PCOS	Frequency	Percent	Valid percent	Cumulative percent
Non PCOS	48	52.2	52.2	52.2
PCOS	44	47.8	47.8	100
Total	92	100	100	

their condition. The research does not consider the type of PCOS due to lack of medical

Table 3: Level of Physical fitness among subjects.

Level of physical fitness	**Frequency**	**Percent**	**Valid**	**umulative**
Inactive	15	17	17	17
Moderately inactive	34	38.6	38.6	55.7
Moderately active	28	31.8	31.8	87.5
Inactive	11	12.5	12.5	100
Total	88	100	100	

Table 4: Chi-square test to check the association.

Chi-square	**Value**	**dfAsymp.sig. (2- sided)**
N of valid cases	88	

Documentation according to past researches there are three types of PCOS.

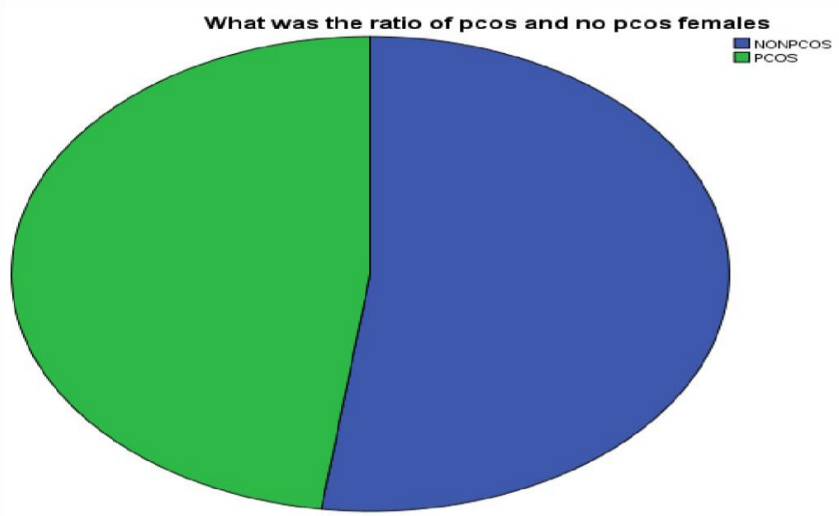

Figure 2: Pie chart of ratio of PCOS and NON PCOS females.

Figure 3: Level of Physical fitness among subjects.

A similar study was conducted titled as "The Effect of Exercise in PCOS Women Who Exercise Regularly". The cross-sectional study was conducted at the University of Medical Sciences Tehran, Tehran, and Islamic Republic of Iran from January 2005 to January 2006. The key findings of this research was the estimate of the level of PCOS in females who regularly exercise. This study has analyzed significant difference in mean BMI between PCOS and non-PCOS women. Patients who were obese have more difficulty losing weight through exercise than lean patients. This study has shown that exercise can help in losing weight but this does not show any association of physical activity with PCOS directly. The role of hormonal alteration and PCOS is still to be determined in the responsiveness of weight loss to exercise. Further studies were conducted to evaluate effects of exercise on hormonal levels one such study is as follow titled as "Exercise Decreases Plasma Total Homocysteine in Overweight Young Women with Polycystic Ovary Syndrome". The study examines the effects of exercise in young women with obese PCOS on total concentrations of homocysteine in plasma. There was a small decrease in overall plasma homocysteine concentration after 6 months of exercise. This study shows effects of exercise on hormonal levels but further research is needed to assess the mechanism by which exercise-induced decreases in homocysteine concentration can be translated into a clinically significant reduction in CVS which are adverse effects of PCOS. A study was conducted titled as "Role of exercise

training in polycystic ovary syndrome: A systematic review and met analysis". The aim to this study was to determine the impact of exercise training on reproductive health in women with PCOS. Reproductive outcomes were analyzed semi-quantitatively and a meta-analysis was conducted for reported cardio metabolic outcomes. Seven randomized controlled trials, one nonrandomized controlled trial and six uncontrolled trials were included. The impact of exercise interventions on reproductive function remains unclear. However, our meta-analysis suggests that exercise interventions may improve cardio metabolic profiles in women with PCOS. Some studies also throw light on growing trend of sedentary lifestyle in young females "Exercise and Sedentary Habits among Adolescents with PCOS". This study includes 81 girls (35 with PCOS and 46 controls). Girls with PCOS engaged in physical activities less than normal girls. Even when they did, the frequency and intensity of exercise was less. Girls in both groups were sedentary in excess of the 4 hours per day limit, which has been linked with obesity. The purpose of this study was the recording of physical activity and sedentary habits of adolescent girls with PCOS. In recent years, several studies have shown that aerobic endurance exercise leads to favorable changes in cardiorespiratory function, body composition and metabolism of women with PCOS. The study has shown association between level of physical fitness and PCOS and also put an emphasize on type of exercise but further specifications are needed like frequency, intensity, duration and speed. Healthy teenagers were involved in a sporting activity more often and more frequently than the PCOS group. Athletic and sedentary habits of adolescents with PCOS may interact with other factors leading to obesity Researches were also done to compare the effects of exercise and diet on PCOS "Effect of exercise and nutritional counseling in women with polycystic ovary syndrome" This pilot study assessed the effect of exercise and nutritional counseling in women with PCOS. The results show decrease in sum of 2 skinfolds and a greater increase in estimated VO_2 max occurred in the exercise group. Significant decrease in waist girth and insulin levels occurred in both groups. Hormonal changes were not statistically significant. These findings suggest exercise and nutritional counseling may benefit the metabolic and reproductive abnormalities associated with PCOS. This study shows effects of exercise and diet separately so this can help to deal with PCOS in multidisciplinary manner more properly if we know the exact amount of contribution of each variable. The study was conducted to show effects of exercise on insulin resistance that is seen in patients of PCOS and obese women with and without polycystic ovary syndrome". Results shows that within-group exercise-induces reduction in cardio metabolic risk factors including Insulin-Resistance (IR), triglycerides, Visceral Fat (VF) in PCOS were observed without significant weight loss so this study show that our main focus should not be weight loss but on metabolisms of body and if confirmed in future controlled trails, it is suggested that weight loss should not be the sole focus of exercise programs A similar study was conducted titled as "The effect of physical activity on reproductive health outcomes in young Women". This was a systematic review and meta-analysis. Data was collected from PubMed, EMBASE, MEDLINE, Cumulative Index to Nursing and Allied Health Literature, PsycINFO, Web of Science, Sport Discus, and Cochrane from studies published between January 2000 and May 2018.The study show that outcomes such as

ovulation rates, menstrual regularity, and conception rates, showed no differences between the Physical activity interventions and comparison groups.

Conclusion

The results of this study conclude that there is no significance in level of physical fitness and PCOS.

Recommendations

PCOS is a common and growing problem in females of reproductive age that can lead to obesity, insulin resistance and cardiovascular problems and infertility.

A physiotherapist can have an important role in lives of PCOS females to prevent adverse effects of PCOS and maintain healthy lifestyle.

Researches should be done in following topics:

- An Experimental study to develop specific regime for PCOS
- Research to study types of PCOS in detail and describe their specific causes and adverse effects

Limitations

Following are the limitation of my study:

- Difficulty in data collection, as many females were unaware of their condition.
- The study does not include females from different age groups.

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