

Assessing the Factors Effecting Women with Polycystic Ovarian Syndrome

LAILA SHAHZAD¹, SABA ILYAS AHMED MALIK², HUMA TAHSEEN³, SHABANA KHOKHAR⁴, SAIMA QURBAN⁵, SAMAR HUSSAIN⁶

¹*Sustainable Development Study Centre, Government College University, Katchery Road, Lahore 54000, Pakistan.*

²*Consultant Gynecologist, Punjab Rangers Hospital & Assistant Professor, Rahbar Medical and Dental College, Lahore*

³*Consultant Gynecologist, Associate Professor, Azra Naheed Medical College, CMA hospital, Raiwind Road, Lahore*

⁴*Consultant Gynecologist, Punjab Rangers Hospital, Associate Professor, Rahbar Medical and Dental College, Lahore*

⁵*Consultant Gynecologist, Assistant Professor, Rashid Latif Medical College, Lahore*

⁶*Consultant Gynecologist, Assistant Professor, Rashid Latif Medical College, Lahore*

Correspondence to: Laila Shahzad, Email: lailashahzad@gcu.edu.pk, Cell: 03227878517

ABSTRACT

Polycystic ovary syndrome (PCOS) is a leading disease in females now a days, and also considered as a main cause of infertility in females. The symptoms of the disease PCOS is appeared in the reproductive age and after puberty in young age. The current study is conducted through online google forms to make community outreach possible. It is considered as a social taboo therefore many women were reluctant to be part of the study and to show their identity. Results showed that the perception of women about the PCOS condition provide a lot of stress and trauma. 30.6% women strongly agreed that PCOS is the major cause of weight gain and therefore recommended to change the life style and have active day routine. It was assessed that this condition affect hormonal imbalance in females and irregularity in periods. More in-depth studies are needed to understand the relationship of this disease with diet and lifestyle factors.

INTRODUCTION

Polycystic Ovary Syndrome PCOS known as a syndrome in females which have negative effects on the hormone level. There is production of male hormone in women with PCOS. So due to higher production of the male hormone have negative bad effects on the female body like growth of unwanted hairs, irregular or no menstruation and problems in pregnancy and also a reason of infertility in most females of reproductive age. PCOS also cause many long term health problems and diseases such as heart disease and diabetes. To improve symptoms and control or fix the imbalance of hormone birth control pills and diabetes drugs can. In PCOS the word "polycystic" means "many cysts" and sacs filled with fluids actually these sacs are follicles and each one follicle containing an immature egg. The eggs are immature enough that it never triggers ovulation. Due to PCOS, changing in the LH hormone level, progesterone as well as in estrogen and FSH is just because of lack of ovulation. In PCOS the amount of hormone, estrogen and progesterone is lower and amount of androgen (male hormone) is higher than usual. PCOS is not new condition, large amount production of male hormone have effects on the period cycle and causes other health problems but the main effect of the large amount of hormone production is infertility and problems in conceiving pregnancy. PCOS is disease or syndrome that affects ovaries of woman and ovaries of the reproductive organs that produce these hormone, estrogen and progesterone, that help to regulate the menstrual cycle. Ovaries also produce androgens (male hormone) in a small amount. Eggs released by ovaries to be fertilized by sperm of man. Each month release of an egg is called as ovulation. These two hormones control ovulation, luteinizing hormone (LH) and follicle-stimulating hormone (FSH). FSH stimulates the ovary to produce a follicle, FSH stimulates the ovary ((Spanish), 015). Egg is contained in a sac known as follicle and the LH stimulates the ovaries for release of a mature egg.

Polycystic ovary syndrome is a well-known problem which occurs in females that having hormone imbalance at their reproductive age, and the age is from 15 to 44 years. Woman with PCOS are in the age group of 2.2 and 26.7%. In 5% and 10 % of women between 15 and 44 age or during the childbearing years have PCOS. Most of the women in their 20s and 30s, when they have problems getting pregnant and visit their doctors, find out that they have PCOS. After puberty PCOS can be diagnosed in females not at specific but at any age. Many women don't know that they have PCOS. And in one study, women up to 70% have PCOS but had not been diagnosed. The World Health Organization (WHO) estimates that about 3.4% women, about more than 116 million women worldwide affect with PCOS and another estimation is that about 7% of women of childbearing age

or reproductive age are affected while using Rotterdam criteria another study estimate that females are diagnosed with PCOS at reproductive age as well as before and after marriage. 8 to 25% is the ratio for those women who are not affected with this disease by using Ultrasonography finding of polycystic ovaries. PCOS is more common now day because women that found PCOS have higher level of insulin than normal. Insulin is hormone that is produce in pancreas and too much high amount of insulin cause ovaries to produce more androgen(male hormone)such as testosterone which than disrupt the menstrual cycle and cause problem in getting pregnant. (Medically reviewed by Debra Sullivan P. M.—W., 2018)

The symptoms of the disease PCOS is appeared in the reproductive age and after puberty in young age. Not all women with PCOS will have all of the symptoms, the symptoms vary from person to person and also there is difference in severity in females like in start the symptoms of disease are mild then these symptoms leads to the complicated stage. Such as some female which have symptoms of this disease is unable to conceive pregnancy because of no or irregular periods. PCOS is caused due to two major factors.

1. Genetic Factors.
2. Environmental Factors.

Genetics plays an important role in this syndrome. It can be transfer in next generation if first degree relatives of that female suffer from type 2 diabetes and hyper androgenism. Another reason is that, SNP (single nucleotide polymorphism) is also directly related with it because this polymorphism in this nucleotide affects the protein synthesis in cell which leads to disturbance in endocrine system. There are many genes that are called PCOS genes. Any disturbance like polymorphism in these genes can leads to PCOS. These genes are CYP11A, follistatin gene, insulin gene etc. but it is not confirmed which gene directly affects the androgen level in female (Meri-Majja Ollila, 2020). Many environmental factors are also related with pathogenesis of PCOS. These factors are Socio economic status (SES), Unhealthy behavior (smoking, drinking), Diet (poor diet) and lack of Exercise etc. Many factors are associated with these factors. Due to pollution many toxins are also released in environment. So, these toxins and infectious agents also contribute to PCOS. Insulin resistance also causes PCOS. In it patient's body can't use insulin properly. So sugar in food is not digested properly and body needs more insulin. In this situation pancreas start producing more insulin without any check. Ovaries produce more testosterone which is male hormone. Increased level of testosterone produces symptoms of PCOS (excessive hair growth on body). Obesity is also an important factor of PCOS. Obesity is responsible for insulin

resistance and it increases risk of type 2 diabetes. In type 2 diabetes body cells can't respond to insulin and pancreas produces more insulin that triggers ovaries to produce male hormones in this response.

If a female has PCOS, then level of inflammations increase in her body. Increased level of inflammations increases androgen level in body. Being overweight also contributes to high level of inflammations in the body. (S. Persson1, 2019). Although above two major factors have many sub factors but most influential factors are Environmental factors because these factors have effect on genetics. Many toxins in our environment can have severe affects that these can alter our genetic makeup.

Major aims and objectives of our study were to assess the symptoms and causes of PCOS. To understand the perception and attitude of women about PCOS.

METHODS

The questionnaire method is used to develop the understanding about PCOS. For the purpose, a questionnaire based of 4 broad sections was developed which was assessed through google forms. These questions are related their lifestyle, nutritional diet, hormonal check-up of progesterone, estrogen and androgen, menstrual cycle, acne, anxiety and depression, excessive hair growth, age at delivery time, exercise, smoking habits and family diseases. Multiple questions were acquired and using rating scheme, the respondents were asked to rate their perceptions from 1 to 5 in one section of questionnaire.

RESULTS AND DISCUSSION

The questionnaire method is used to find out the reason of PCOS and this shows that the eating habit and the life style is the main reason of PCOS. The response of this questionnaire is 85 females and out of which 43.5% is single and 56.5% is married and only 1.1% are infertile. Therefore, this shows that PCOS is not a leading cause of infertility.

A total of women (n=46) are considered and taken into consideration. We came to know that out of 100% population; 73.9% are those who are single and virgin. While 26.1% are married. The age of 17 to 41 years of women are used to fill out this generic questionnaire. When we studied, we diagnosed that age of 22 years (17.4%) girls are more suffering with PCOS rather than other ages of women. Out of 100%, 17.4% are suffering from many metabolic problems like skin problem, loss and gain in body weight as well as other problems such as not proper regulation of menstrual period which cause infertility. We can clearly predict from the graph that which age of women are more suffering with PCOS and which age of women are the least suffering. We consulted this generic questionnaire to doctor who was advised us to give precautions to these infected women and asked them to consult her doctors immediately. Main precautions that doctors were advised are diet control, weight reduction and regular exercise to the overweight women. Oral contraceptives pill and progesterone were prescribed to the women with hormonal problems. The women with symptoms that are similar to the PCOS then they should go for check up and the first step in the treatment of this disease is that the patient are treated by giving them clomiphene citrate medicine.

One other origin of this disease is genetics. The PCOS leads in female through genetically, as it pass from one parent to their offspring so it is a disorder that is pass genetically. The one more origin of this disease is high resistance of insulin action or also due to type 2 diabetes. One further more thing that is associated with PCOS is ethnicity. From which 56.5% were single and 43.5% were married.74.5% people knows about PCOS.25.9% did not know about it.56.5% suffer from menstrual problems.69.4% have visible hair growth on body.62.4% feel difficulty at staying at ideal body weight.45.9% have dark, coarse hair on body during menstruation.55.3% were obese during 16-40 years.62.4% showed hair growth on abdomen.77.6% people tire easily.40%

have heavy bleeding during menstruation.55.3% feel lack control on situation.67.1% people suffer from back pain during menstruation.71.8% suffer from menstrual cramps.54.1% feel frustration in trying to lose their weight. From married women only 1.1% has no children.34.6% women have 2 children.48.8% people don't checked their hormonal level. Only 22.1% people have checked their hormonal level. No smoking habit was observed in women.61.2% people agreed that PCOS is not family problem. Only 18.2% people said that this is family problem and 20% were uncertain about it.56.5% women showed excessive hair growth on their face and chin. 57.6% women showed irregular menstrual cycles.60% of women shoed late menstrual periods.45.9% of women prefer frozen foods.77.6% suffer from headache.72.9% suffer from anxiety.14.1% women suffer from cardiovascular diseases.12.9% women were diabetic patients.41.2% women exercise daily.21.2% women exercise two times in a week.56.5% women suffer from acne problems.28.2% people eat meat 2-3 days in a week.8.3% people have 56kg weight at first delivery.6.3% women have no children.

Table -1 response of Female study population in Lahore

No. of obs.	Questions	Options	Number of responses
1-	How many peoples will response?	Married Single	43.5% 56.5%
2-	When did you know about PCOS?	Before marriage After marriage	50% 50%
3-	Do you feel growth of visible hair on abdomen?	Yes No	62.4% 37.6%
4-	Do you feel frustration in trying to lose weight?	Yes No	54.1% 45.9%
5-	Do you feel heavy menstrual bleeding during menstrual cycle?	Yes No	40% 60%
6-	Is PCOS is your family problem?	Yes No May be	18.8% 61.2% 20%
7-	Do you face issue regarding increased appetite or increased back pain?	Yes No	67.1% 32.9%
8-	Do you feel abdominal bloating and menstrual cramps?	Yes No	71.8% 28.2%
9-	Do you feel lack of control over the situation?	Yes No	55.3% 44.7%
10-	Do you exercise daily?	Yes No	41.2% 58.8%
11-	Do you have acne problem?	Yes No	56.5% 43.5%
12-	Do you prefer frozen food?	Yes No	45.9% 54.1%
13-	Do you have visible hair growth on body?	Yes No	69.4% 30.6%
14-	Are you cardiovascular patient?	Yes No	14.1% 85.9%
15-	Do you suffer from headache?	Yes No	77.6% 22.4%
16-	Do you suffer from anxiety?	Yes No	72.9% 27.1%
17-	Do you have late menstrual period?	Yes No	60% 40%
18-	Do you face irregular menstrual cycles?	Yes No	57.6% 42.4%
19-	Do you feel excessive hair growth on your face and chin?	Yes No	56.5% 43.5%
20-	Have you ever checked your hormonal level?	Yes No	22.1% 77.9%
21-	Do you feel menstrual problem like irregular menstrual?	Yes No	56.5% 43.5%
22-	Were u ever obese or overweight in the ages between 16 and 40?	Yes No	55.3% 44.7%
23-	During your menstruation did you have a tendency to grow dark, coarse hair on body?	Yes No	45.9% 54.1%
24-	Do you face difficulties in staying at your ideal weight?	Yes No	62.4% 37.6%
25-	Are you diabetic patient?	Yes No	12.9% 87.1%

24.7% women strongly agreed that taking exercise is enough for healthy life style or walk in the morning. 35.3% women strongly agreed that they take enough hours of sleeping that is necessary for healthy life style.30.6% women strongly agreed that they tire easily and feel fatigue.30.6% women strongly agreed that PCOS is the major cause of weight gain in women.28.2% women strongly agreed that PCOS leads to anxiety and depression.34.1%

women strongly agreed that women with PCOS face more complications during pregnancy.28.2% strongly agreed that excessive hair growth o face and chest is sign of PCOS.27.1%women agreed that they feel imbalance in their body. 24.7%women agreed that they take coffee and caffeinated beverages.29.4%women agreed that women of age between15-44year are at high risk of having because.29.4%women agreed that androgen level is low in women with PCOS.30.6%women agreed that irregular and having no periods is sign of PCOS.37.6%women agreed that stress level is high in PCOS patient then normal women.29.4%women slightly this agree that oily skin and acne is because of PCOS.

Table 2: Response regarding PCOS of characteristic populations

No of obs.	Questions	Options	Number of responses
1	Do you take coffee and caffeinated beverages?	1	12.9%
		2	24.7%
		3	23.5%
		4	23.5%
		5	15.3%
2	Do you feel oily skin or acne on face is because of PCOS?	1	12.9%
		2	17.6%
		3	23.5%
		4	29.4%
		5	16.5%
3	Stress level in PCOS patient is relatively high as compare to normal person?	1	5.9%
		2	37.6%
		3	22.4%
		4	14.1%
		5	20%
4	PCOS is also a major cause of weight gain in women?	1	10.6%
		2	24.7%
		3	30.6%
		4	25.9%
		5	8.2%
5	Women with PCOS are at high risk of developing complications during pregnancy?	1	10.6%
		2	18.8%
		3	34.1%
		4	17.6%
		5	18.8%
6	Women having PCOS face difficulty in pregnancy?	1	17.6%
		2	20%
		3	28.2%
		4	17.6%
		5	16.5%
7	PCOS may also lead to anxiety and depression?	1	9.4%
		2	23.5%
		3	28.2%
		4	22.4%
		5	16.5%
8	Excessive hair growth on face or chest is a sign of PCOS?	1	12.9%
		2	24.7%

PCOS is not leading cause of infertility in females. This only affect hormonal imbalance in females and irregularity in periods. Therefore only 1.1% suffer from infertility. May be these females have low level of PCOS. Secondly psychological stress and depression is also responsible for it ad in our study population most of females suffer from stress and depression.

In the developed countries there are about 6 to 10% PCOS that is found in females. It is known polygenic and prevalent conditions which are thought to be attributed to the both environmental factors and genetic factors. There are many research articles and debate on the origin of PCOS disease and different studies shows that, it is thought that one more primary cause of the disease PCOS is improper functioning in the insulin action. The PCOS is also cause by many environmental factors and in studies the environmental factors include both unhealthy behavior and also the socio-economic status. In these factors the things that contribute more and also causes of PCOS are including poor diet, lack of proper daily exercise and smoking habit, while socio-economic status which are main leading cause of PCOS disease include obesity. Obesity is also a main symptom of PCOS. Because of these misbehaviors in childhood, it causes PCOS. Many other points are highlighted with the help of further studies on research works and on the environmental factors that influenced the healthy routine and cause PCOS in females and also help to find out developmental origin as well.



Fig. 1: Retort of physical activity by study's population

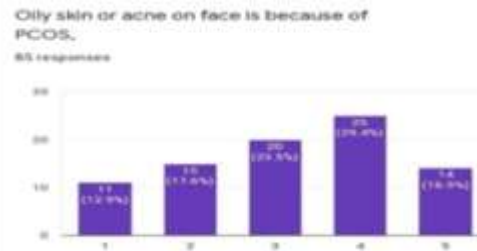


Fig. 2: Facial issues observed in PCOS patients

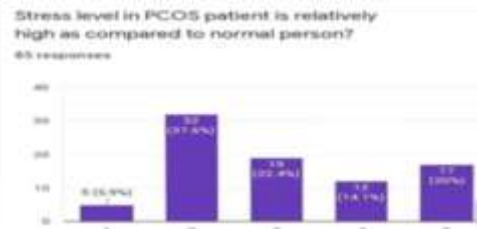


Fig. 3: Emergence of stress in females with PCOS

CONCLUSION

From the above discussion it is concluded that the eating habit (frozen food and meat) and changing in life style such as depression, anxiety, do not take exercise is the main reason of PCOS. The response of female shows that they prefer frozen food, eat meat almost 3-4 days in a weak and do not take exercise daily which make them unfit and unhealthy. As compare to married women the single women take exercise 2 to 3 days in a week to maintain their body. Smoking is not considered as the cause of PCOS because there ratio is very low and can't be considered. The ratio of infertility is also low 6.3%, the reason behind this is that they are suffering with PCOS after babies. With the help of questionnaire we realize that the women do not check there hormone level which is not good. The women should check there hormonal level time to time, prefer fresh foods, eat meat only 1 day in a week, do some exercise daily which make them fit and save from many diseases.

REFERENCES

- Retrieved from <https://www.cdc.gov/diabetes/basics/pcos.html>
- Retrieved from <https://www.healthline.com/health/polycystic-ovary-disease>
- Retrieved from <https://www.cdc.gov/diabetes/basics/pcos.html>
- Retrieved from <https://www.nhs.uk/conditions/polycystic-ovary-syndrome-pcos/symptoms/>
- Open Journal of Endocrine and Metabolic Diseases 06(01):58-65 . January 2016 with 9, 8. R. (n.d.).
- Ageing women with PCOS: Menstrual cycles, metabolic health and health related. (n.d.).
- Medically reviewed by Debra Sullivan, P. M.—W. (2018).
- Meri-Maija Ollila, T. T.-P. (2020).
- ORIGINAL ARTICLE Reproductive epidemiology. (n.d.).
- S. Persson1, 3. E.-L. (2019).