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A Case Study: Psychophysiological Impact of Polycystic Ovarian Syndrome and its Management in Pakistani Women

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Abstract

Polycystic ovarian syndrome (PCOS) is a complicated and heterogenous endocrine disorder in the women, and it can cause different metabolic, reproductive, and psychological abnormalities. Depending on diagnostic criteria, 6% to 20% of reproductive-aged women are affected globally. PCOS has been often diagnosed in women across Pakistan and has been reported to cause different physical and psychological abnormalities like obesity, infertility, hirsutism, depression, and anxiety on a large scale. Irrespective of the higher prevalence still, there is inadequacy in the knowledge about PCOS. This study aims to figure out the prevalence of different physical and psychological symptoms of PCOS and their co-relation with the impact on the quality of life of the affected individual and common methods of treatment used for PCOS. A questionnaire-based study was designed to collect the data randomly from women about 17-50 years of age who are affected with PCOS. This questionnaire contained all the necessary questions about the physical and psychological impacts and the treatment methods. This questionnaire-based study was analysed using different statistical tools to provide the complete analytical results. This study will help the medical practitioners in the determination of the most prevalent symptoms. It can also aid the improvement of the treatment methods to enhance the effectiveness of treatment. It can be used in different educational seminars to spread awareness of symptoms and treatment. It can also aid in further research.

Keywords Polycystic ovary syndrome, case-control, depression, anxiety, stress, Pakistan

1. Introduction

Polycystic ovarian syndrome (PCOS) is the most well-known heterogeneous endocrine disorder in women of reproductive age with speculative etiology, causing a wide range of reproductive, metabolic, endocrine, and psychological effects. Among them are ovulatory dysfunction, menstrual irregularities, infertility, hyperandrogenism, increased insulin level, obesity, obstructive sleep apnea, non-alcoholic fatty liver disease, eating and mood disorders, cardiovascular disease (CVD) and an increased risk of type 2 diabetes mellitus (T2DM) are significant factors (1, 2). The etiology of PCOS is not very well confirmed to date, which affects the women on physical and psychological grounds that could deteriorate their quality of life (3, 4). A lot of research is going on to comprehend the disorder completely. The diagnosis of PCOS is based on the presence of at least two of the three criteria, namely, chronic anovulation, hyperandrogenism (clinical or biological) and polycystic ovaries on ultrasound (5). PCOS is now considered one of the most prevalent endocrine disorders among the females of the reproductive age globally (6).

PCOS is associated with different problems that can impact the lives of women on different grounds, such as physically, psychologically, and socially. Among these, the most common physical impacts include ovulatory dysfunction, higher androgen levels in the blood, excessive hair on the face and body and insulin resistance, which is known to affect about 7% of the reproductive-aged women around the globe (7). PCOS is considered a very complicated disorder which is oligogenic, and there are different factors like genetic factors and different

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environmental factors which can determine the severity of the PCOS impact (8).

The complete genetic etiology of PCOS is not confirmed to date. However, different studies have led to the conclusion that PCOS could cluster across families and has shown an autosomal dominant pattern. There are different environmental factors which contribute to PCOS. Some of the previous studies have also suggested that some of the symptoms of PCOS could be reversed by making certain lifestyle changes such as weight loss, exercise and adopting a gluten and dairy-free diet (9). Androgens and insulin are the two hormones that play a key role in polycystic ovarian syndrome. Women with PCOS have a higher level of male hormone androgen and are 50-70 percent insulin resistant (6). Obesity is another major factor for polycystic ovaries, so the women with this disorder are overweight, which increases the risk of diabetes, cardiovascular diseases, and diabetes as well and can ultimately lead to infertility and make women more susceptible to ovarian cancer (10).

The pathophysiology of PCOS is also under study to reveal the details related to PCOS and the complications that ultimately disturb the quality of life of affected individuals so that the diagnostic and treatment strategies can be designed accordingly (11). PCOS has been reported previously to be linked to the disturbance in the insulin hormone defects in its secretion and distribution in the blood, which leads to insulin resistance (12). The significant insulin resistance leads to beta-cell dysfunction that gives a considerably expanded hazard for glucose intolerance as insulin is seen to be associated with regulating ovarian function, as the ovaries show correspondence with the level of hormones in the blood. However, it could be managed to prevent any the severity of the impact of PCOS on the body (13, 14). In the case of the non-pharmacological approaches, weight reduction is preferred, and different lifestyle changes are performed, which involve the opting up for the Gluten and dairy-free diet, exercise, and may involve opting up of seed cycling to improve the menstrual regulation, which ultimately leads to improvement in PCOS symptoms severity (9).

Weight reduction for the obese patients with PCOS can help in the lowering of the blood androgen and insulin, which ultimately tends to improve the process of ovulation and regulates the whole process and the severity of the symptoms could be decreased, and the issue of infertility could be addressed properly (14). Different medications could also be used, such as birth control pills, metformin and other anti-diabetic medicines are also suggested to be used by PCOS patients (15). Needle therapy is an antiquated treatment utilized by oriental societies for over 3000 years. The system involves the addition of flimsy sterile needles (9).

The use of inositol supplements is now under consideration for the treatment of ovarian syndrome as it treats the PCOS symptoms way better than that of the metformin and produces less side effects on the body of the individual. But still, there are certain limitations to its use for treatment because the ratio of the different inositol supplements and their impacts on PCOS still requires so much research to prevent any sort of disturbance and side effects in the body (16). The main objectives of conducting this study are to determine the most common physical, and psychological impacts of PCOS, treatment and therapies that are helpful to cure polycystic ovary syndrome.

2. Historical Background

PCOS was described first by Dr Stein and Leventhal in 1935 and was initially named the Stein Leventhal syndrome as they described it. They explained about seven different situations where the ladies have polycystic ovarian syndrome along with hirsutism (16). PCOS common physiological symptoms include irregular periods, weight gain and insulin resistance (4, 17). In 2004 CE, Wright, and his team in the USA 2004, conducted a study to see the correlation between diet and physical activity in women. The physical activity questionnaire focused on measuring the BMI values of the individuals under study frequently (18). Another study was conducted in Germany in 2005 in which researchers collected all the data about the metabolic, hormonal, and psychological impacts of PCOS and how it was affecting their quality of life (19). After this study, they came up to the conclusion that PCOS is directly co-related with the physical impacts like acne, hirsutism, infertility etc. (19).

Another study was conducted in Pakistan to determine the interaction and impacts of the hormonal variation in individuals having PCOS, and this study took place between 2009 to 2010. In this study, about 65 patients with PCOS were chosen between the age of 18-45 years (10). This was a questionnaire-based study, and the data which was collected was analysed using the SPSS version 16. After the study, the researchers concluded that the patients having PCOS had raised fasting insulin levels and the waist-to-hip ratio was also observed to be increased among individuals having PCOS (20).

To check the increase in the prevalence of PCOS in young females across Pakistan, another team from Pakistan

stepped forward and conducted a study in 2017. After the study, they concluded that about 30% of the females already had PCOS, and about 25% were suspected of having PCOS and were having the common physiological symptoms. One of the most important conclusions they made was that most the females were unaware of the syndrome although all the symptoms of PCOS were present in them, and most of them informed that they had not even visited a gynaecologist ever, which could be a point of serious attention (21). After conducting the study, they knew that about 32% of the women had anxiety, and about 5% of them were the victim of depression (22, 23). It was a case-controlled study, and all the data which was collected was analysed using SPSS version 17 (24). After conducting this study, the researchers came up to the conclusion that the rate of depression and anxiety was significantly higher in women having PCOS than the normal individuals. The females included in the study, about 42% of them had severe anxiety issues, and 31% of them had depression (25).

In 2010 a team of researchers 2010 published a study in which they published about the most common diagnosis of PCOS in which they reported ovulatory dysfunction, polycystic ovaries, hyperandrogenism and the physiological impacts of the hyperandrogenism (26). About 714 women participated in the study to aid in the development of the PCOSQOL scale. Among different impacts, hirsutism, anxiety and depression, mood swings and infertility were reported at the top of the list (27). A study was conducted in Rawalpindi in which about 52 girls were selected. Researchers came up to the conclusion that obesity was one of the leading factors which led to the severity of symptoms of PCOS among the affected individuals (12).

3. Methodology

3.1 Study Design

This was a questionnaire-based cross-sectional study. The questionnaire was generated by using the internet forum, circulated among ladies of different age groups who were of the reproductive age. The main target of the study was the young girls (age 18-30) belonging to different areas of Pakistan and those who were diagnosed with PCOS. Detailed personal, menstrual, and family history of PCOS, infertility, weight gain hirsutism and the age at which the women were diagnosed with the syndrome were taken on a predesigned proforma.

3.2 Study population

This questionnaire was distributed among 50-60 women about 18-50 years of age who are diagnosed with PCOS and are using different treatments for treating PCOS.

3.3 Questionnaire

This questionnaire was divided into 5 different parts, having some basic information, most common physical aspects, most common psychological impacts, and how the patients learned that they have PCOS. And the last part was about which treatment strategy was prescribed by the doctor and which treatment method has helped decrease the severity of the symptoms of PCOS.

3.4 Data collection

The questionnaire was distributed among the women using different online platforms, and the data was collected online. All the valuable information about the affected individual, such as the individual's age. When and how the individual was diagnosed with PCOS.

3.5 Data Analysis

All the data which was collected was analysed using Microsoft excel and by performing different descriptive analysis techniques.

4. Results

In this study about a total of 51 women were included, and all of them were of reproductive age. The majority (46) of participants were in the age category of 15-45 years; however only five women were reported to be above 45. When we checked the level of awareness about PCOS among the females included in the study, it was quite captivating that most women knew about PCOS. About 86.3% of the females were aware of PCOS. When they were asked at which age, they came to know that they had PCOS, so it came into the knowledge that about 51.1 % of the females were diagnosed (Figure 1) at a very young age of about 15-20 years of age which is quite a good sign because the earlier the PCOS gets diagnosed more are the chances for the management.

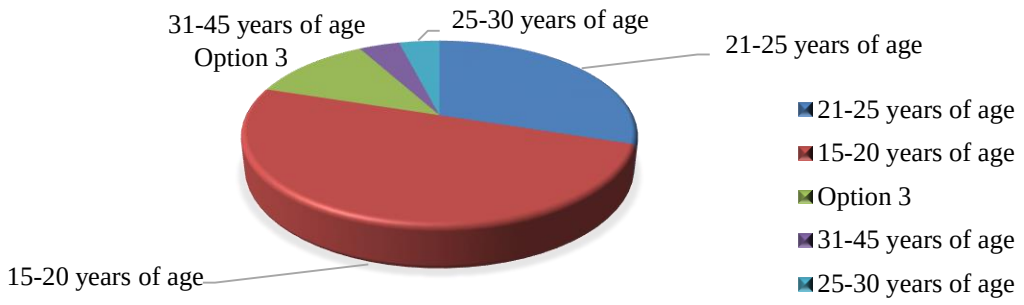

Figure 1: Out of 51 women, 25 women were about 15-20 years old when they get diagnosed with PCOS

Different psychological impacts of PCOS were narrated by the respondents in which mood swings and overstress were on the top of the list with a percentage of 35.3 % and 21.6%, respectively (Figure 2).

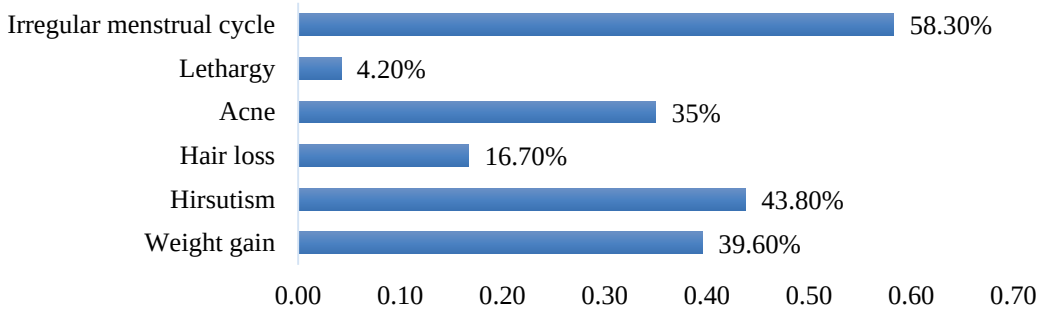

Figure 2: Different physiological impacts of PCOS among 51 women's

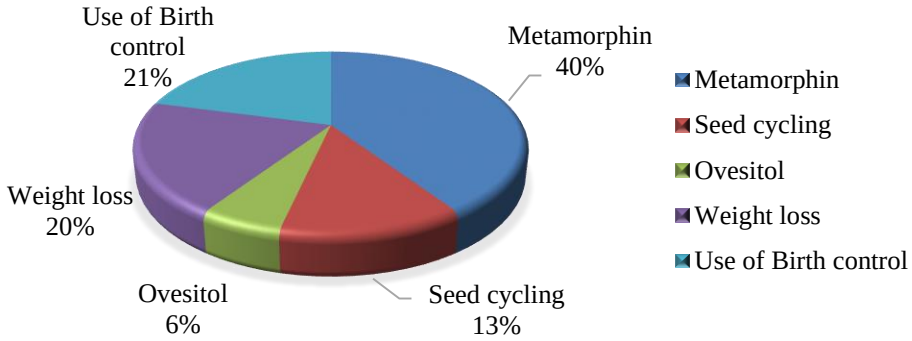

Figure 3: Different methods of diagnosis doctors use for PCOS detection.

Among 51 women, many women reported that they got diagnosed with PCOS by the ultrasound scanning and by the sudden excessive facial hair growth by 37% to 30.4%, respectively (Figure 3).

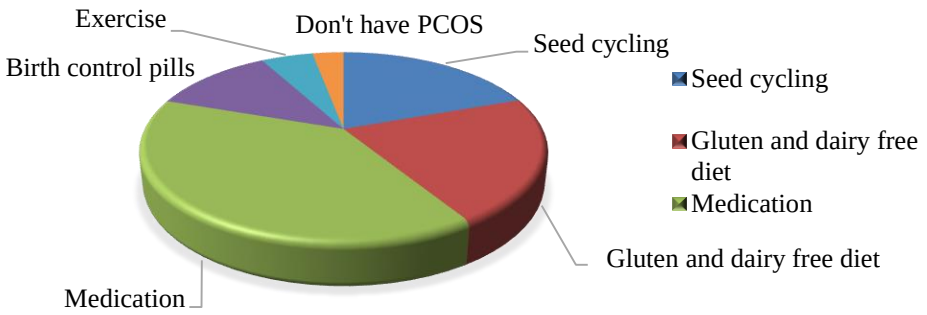

Figure 4: Both medicated and non-medicated treatment of PCOS.

Metformin was on the top of the list of the common treatment method suggested by doctors in Pakistan. Seed cycling was on the top of the list with a percentage of 37.3%, which has proven to be effective in treating PCOS (Figure 4). About 44% of women said that exercise helps in treating PCOS, and about 20% of women were sure that using the gluten and dairy-free diet helps in the treatment of PCOS (Figure 5).

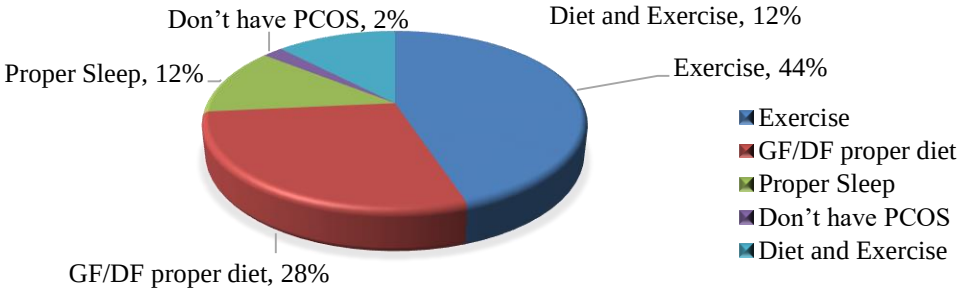

Figure 5: Effectiveness of lifestyle changes in treating PCOS.

5. Discussion

PCOS is a hormonal, and metabolic disorder which can cause different physical and psychological problems in the body of the affected women (28). This syndrome is quite complex because there are different complications about its pathogenesis because this syndrome produces different symptoms in the body of the affected women varying from one to another. There are many diagnostic tests like ovarian ultrasound imaging which could confirm whether an individual has PCOS or not. This case study shows that PCOS is being diagnosed with a higher percentage in the young girls of about 15-20 years of age, and rare cases of PCOS diagnosis in the elder women are reported (29, 30). The present study depicted that PCOS is a hormonal and metabolic disorder. Still, there is a need for extensive research in terms of diagnostic criteria of PCOS because still there are many complications in the diagnostic procedures. This study shows that the presence of ovarian cyst cannot be the only hall mark for the diagnosis of PCOS (31, 32). The current study shows that the PCOS can be diagnosed by the checklist of the combination of the diagnostic methods for PCOS in which now the blood androgen levels, the ratio between the Luteinizing hormones, Follicle-stimulating hormones the testosterone, the ovarian cysts are on the top and are preferred by the clinicians (33, 34). About 80% of the individuals having PCOS reported having disturbances in the sleep cycle. Depression and anxiety are now more often reported by individuals having PCOS (35). In the current study, it has been reported that the level of stress among PCOS patients is about 21.6 %. This increase in stress level is quite alarming because if it is not treated in time, it can even lead to anxiety and depression.

6. Conclusion

From the literature, we conclude from the treatment strategies that the use of metformin was extensively observed, and it has proven to be quite useful in managing different symptoms of PCOS. It can help in the regulation of the menstrual cycle. Specifically, in the women having difficulty in losing weight but metformin, despite its benefits it, does have different side effects on the body of the individual if it is used for a prolonged period. And Another seed cycling strategy involves the use of about six different seeds periodically from the start of a menstrual cycle to the end of the cycle. And most surprisingly a, about 37.3% of the individuals having PCOS have reported having their PCOS symptoms improved after using seed cycling.

Conflict of interest The authors declared that they have no competing or conflict of interest.

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