Investigation of the Most Common Reasons, Symptoms and Treatment in Syrian Women with Polycystic Ovary Syndrome (PCOS)

Ayat Chghrie, Bayan Abd Alkader, Marwa Sajie, Ahmad Shoujaa*

Faculty of Pharmacy, Al-Sham Private University, Damascus, Syria

*Corresponding author: Ahmad Shoujaa, Department of Biochemistry and Microbiology, Faculty of Pharmacy, Al-Sham Private University, Damascus, Syria. Email: a.s.foph@aspu.edu.sy

Citation: Chghrie A, Abd Alkader B, Sajie M, Shoujaa A (2022) Investigation of the Most Common Reasons, Symptoms and Treatment in Syrian Women with Polycystic Ovary Syndrome (PCOS). J Community Med Public Health 6: 234. DOI: 10.29011/2577-2228.100234

Received Date: 06 February, 2022; Accepted Date: 11 February, 2022; Published Date: 15 February, 2022

Abstract

Polycystic Ovary Syndrome (PCOS) is the most common reproductive endocrinopathy affecting up to one in five women of reproductive age. The aim of this research is to investigate the most common reasons, symptoms and treatment in Syrian women with Polycystic Ovary Syndrome (PCOS), and the possibility of a correlation between them, if any. We studied one hundred participants aged between 18-24 years responded to the survey; the mean age of our patients was 21 years. There was a correlation between (BMI, Daily food quality, Lifestyle) and (Number of symptoms, Symptoms improvement, Duration of treatment), respectively. There was no correlation of type of treatment and duration of treatment with symptoms improvement.

Keywords: Polycystic ovary syndrome (PCOS); Correlation; Symptoms; Treatment; Syria

Introduction

Polycystic Ovary Syndrome (PCOS) is the most common reproductive endocrinopathy affecting up to one in five women of reproductive age [1,2]. The international Evidence Based Guidelines (EBG) for the management of PCOS highlights personal lifestyle behaviors to reduce and prevent risk factors significantly associated with increased body weight in women with PCOS [3]. Diet and exercise interventions aimed at weight reduction and prevention of weight gain are first-line management strategies due to their significant impact on clinical outcomes, including reproductive endocrinology and clinical signs and symptoms [3-5]. However, current evidence for lifestyle intervention for women with PCOS is not well established.

Sequela include infertility and obstetrical complications; symptoms of hyperandrogenism including hirsutism, acne, and alopecia; and cardio metabolic risks including dyslipidemia, impaired glucose tolerance, insulin resistance, diabetes, and hypertension [6,7]. Treatment has historically focused on improving reproductive function and managing symptoms such as weight gain, insulin resistance, hirsutism, and acne [8].

Our aim is to investigate the most common reasons, symptoms and treatment in Syrian women with Polycystic Ovary Syndrome, and the possibility of a correlation between them, if any.

Materials and Methods

The study was approved by the Institutional Ethics Committee of the Al-Sham Private University. A survey was undertaken to examine women who had suffered from PCOS and the role of BMI and diet and lifestyle and the most common symptoms and the treatments, which may contribute to the management of their PCOS symptoms and wellbeing.

Questionnaire design

A 30-item anonymous questionnaire was designed to describe the signs and symptoms of women with PCOS and women’s use of medical treatment and diet to manage PCOS. Ten items sought information regarding symptoms and eight items sought information regarding medical treatment in terms of
duration and symptoms improvement. Socio-demographic characteristics were also collected. Multiple response options were available for participants to indicate which signs and symptoms of PCOS they were experiencing, and the types of dietary used and the lifestyle. A cover letter informed participants’ that consent was implied on completion of the questionnaire. The questionnaire took 15-20 minutes to complete.

Data analyses

Responses were analyzed using the statistical package SPSS version 22 (IBM SPSS, Armonk, NY, USA). The stability of the questionnaire was tested by alph Cronbach test to review the applicability and accuracy of the questionnaire. We analyzed reliability of questionnaire by Cronbach’s Alpha. Correlations between variables were explored using Pearson’s correlation, ANOVA and simple linear regression. A p value of 0.05 was considered statistically significant.

Results

One hundred participants aged between 18-24 years responded to the survey. The mean age of our patients was 21 years. The mean height was 160.85cm. The mean weight was 57.22 Kg. The mean BMI was 22.06 Kg/m² (Table 1). The value of Cronbach’s alpha coefficient for all paragraphs of the questionnaire was 0.83 which is greater than 0.6. It is a high percentage for the purposes of conducting the study, which indicates a very good stability of the study tool.

| Variable          | Response Category | f (%) | M  | SD  |
|-------------------|-------------------|-------|----|-----|
| Participant Age   | 18-20             | 35 (35)| 21 | 2.27|
|                   | 21-24             | 65 (65)|    |     |
| Height            | 148-160           | 34 (34)| 160.85 | 5.39|
|                   | 161-170           | 60 (60)|    |     |
|                   | 171-175           | 6 (6) |    |     |
| weight            | 42-59             | 60 (60)| 57.22 | 9.88|
|                   | 60-70             | 26 (26)|    |     |
|                   | 71-80             | 14 (14)|    |     |
| Body-Mass Index   | Underweight (<18.5)| 11 (11)| 22.06 | 3.49|
|                   | Normal Weight (18.5-25)| 68 (68)|    |     |
|                   | Overweight (25-30) | 0     |    |     |
|                   | Obese (>30)       | 21 (21)|    |     |

Table 1: Demographic Information of the participants (n=100) in terms of frequency (f), percentages (%), Mean (M) and Standard Deviation (SD) values.

There was a moderately strong positive correlation between BMI and the number of symptoms of PCOS, meaning that when BMI is higher above the normal level, the number of symptoms will increase in the case of polycystic ovaries by 1.269 times. There was a strong and negative correlation between the quality of daily food and the number of symptoms of PCOS, meaning that when the quality of daily food is higher, the number of symptoms will decrease by 1.47 times. There was a strong and negative correlation between the lifestyle and the number of symptoms of PCOS, meaning that when the lifestyle is more improved, the number of symptoms will decrease by 1.65 times. There was a medium-strong negative correlation between BMI and the improvement of symptoms of PCOS, meaning that when BMI is higher above the normal level, the improvement of symptoms will retreat by 1.343 times. There was a medium-strong positive correlation between the quality of daily food and the improvement of symptoms of PCOS, meaning that when the quality of the healthy daily food is higher, the improvement in symptoms will increase by 1.003 times. There was a strong positive correlation between lifestyle and improvement in symptoms of PCOS, meaning that when the quality of daily life is higher, more improvement of symptoms will be observed in the case of polycystic ovaries by 2.223 times. There was a strong positive correlation between BMI and treatment
duration, meaning that when BMI is higher above the normal level, the longer treatment will be followed by 1.321 times. There was a strong and negative correlation between the quality of daily food and duration of treatment, meaning that when the quality of the daily food is higher, the duration of treatment will be lower by 1.83 times. There was a strong and negative correlation between lifestyle and treatment duration, meaning that when the lifestyle is more improved, the duration of treatment will decrease by 1.85 times. We did not find a correlation between the improvement of symptoms and the type of treatment, nor with the duration of treatment (Table 2).

| N=100 | Number of symptoms | Symptoms improvement | Duration of treatment |
|-------|--------------------|----------------------|----------------------|
| BMI   | Pearson Correlation| 0.583                | -0.532               | 0.647                |
|       | Sig.               | 0.000                | 0.000                | 0.002                |
|       | F Value*           | 267.75               | 10.283               | 125.16               |
|       | Sig.               | 0.000                | 0.000                | 0.002                |
| Daily food quality | Pearson Correlation| -0.87                | 0.432                | -0.76                |
|       | Sig.               | 0.000                | 0.002                | 0.000                |
|       | F Value*           | 1.565                | 238.685              | 10.265               |
|       | Sig.               | 0.000                | 0.002                | 0.000                |
| Lifestyle | Pearson Correlation| -0.65                | 0.622                | -0.75                |
|       | Sig.               | 0.001                | 0.021                | 0.001                |
|       | F Value*           | 1.365                | 189.720              | 10.365               |
|       | Sig.               | 0.001                | 0.021                | 0.001                |
| Type of treatment | Pearson Correlation| -0.18                | -0.18                | -0.18                |
|       | Sig.               | 0.086                | 0.086                | 0.086                |
| Duration of treatment | Pearson Correlation| 0.23                 | 0.23                 | 0.23                 |
|       | Sig.               | 0.098                | 0.098                | 0.098                |

*The F value is the result of an ANOVA test to find out if the means between two parameters are significantly different.

Table 2: Correlation between BMI, Daily food quality, Lifestyle, Type of treatment and Duration of treatment with Number of symptoms and Symptoms improvement and Duration of treatment. N: frequency of valid cases, BMI: Body Mass Index, Sig: Significance.

**Discussion**

Prescribing (Metformin) was the type of treatment followed by 28 patients, with a percentage of 28%. While (oral contraceptives) was the type of treatment followed by 34 women, with a percentage of 34% and (advising to modify lifestyle) was the type of treatment for 38 women, with a percentage of 38%. In contrast, the results of an electronic research questionnaire about women with PCOS included the Syrian Arab Republic for 1032 participants by Al-Sham Private University in the Faculty of Pharmacy in Lattakia. The hormone regulator were the most used in treatment by 71.5%, followed by metformin, which was the treatment option for 47.1% of the patients, and finally, 22.6% of the patients were treated by changing the lifestyle, and here we find agreement in the most common treatment protocol options with different percentages observed. This is maybe due to the larger number of participants and the diverse age groups, and finally because of the wider geographical area, which included Lattakia, Homs and Damascus [9]. According to the options mentioned in the questionnaire about the duration of treatment for women with PCOS, the duration of treatment for women with PCOS was (less than a month) for 20 women, with a percentage of 20%. While the duration of treatment (from one month to less than 3 months) for 54 women, with a percentage of 54%. While the duration of treatment was (from three months to less than six months) for 16 women, with a percentage of 16%. The duration of treatment (six months and more) for 10 women, with a percentage of 10%.

As for the result of the correlation between BMI and the number of symptoms of PCOS, it agreed with a study conducted on women in both northern and southern China, which showed women with PCOS in northern China with a higher body mass index, due to the presence of large climatic differences between the north and south of China that result in different lives between the two populations. It was found that women in northern China exercised less, and this was associated with more severe symptoms of acne and worse metabolic attacks including higher glucose levels and lower levels of HDL, as well as lower rates...
of ovulation [10]. Regarding the result of the correlation between the quality of daily food and the number of symptoms of PCOS, it agreed with studies conducted on female patients in the United States of America, China and Korea, which showed that female patients in East Asia shared less severe symptoms than those of female patients in the United States of America and this is due to the higher mass index, which may be caused by the spread of ready-made and fried foods in the United States of America, while the predominantly healthy style of food preparation is common in East Asia, accompanied by a lower mass index [10-14]. As for the result of the correlation between the daily lifestyle and the number of symptoms of PCOS, it agreed with the same studies that were conducted on female patients between North and South China, which showed the impact of lifestyle and surrounding factors on the severity of symptoms, so that women in North China have a daily lifestyle represented by exercising less, due to the slightly cooler climate from the south, and this was clearly reflected in the severity of symptoms, including a lower ovulation rate and an increase in central obesity, insulin resistance, high blood lipids and high pressure [10]. As for the result of the correlation between BMI and the improvement of symptoms of PCOS, it agreed with a study conducted on women with PCOS in India, which showed an increase in the ovulation rate by 56.2% and an improvement in symptoms in general with the mass index approaching the normal value [14]. On the other hand, it was found that the severity of symptoms increased among the patients in North China, with a slower treatment response due to the increase in the mass index, since the mean body measurement was greater [10]. As for the result of the correlation between daily food quality and symptom improvement, it was agreed with studies in North and South China, that the northern female patients who followed a diet with a higher intake of wheat, meat and poultry showed a slower response and less symptom improvement compared to the diet pattern of female patients in the south with a higher intake of rice, fish and vegetables, the improvement of symptoms was clearer [15,16]. As for the result of the correlation between lifestyle and symptom improvement, it agreed with a study that showed improvement in symptoms, including psychological symptoms resulting from the syndrome, as well as a decrease in the incidence of diseases associated with the syndrome by changing lifestyle and following social support programs [17]. As for the result of the correlation between BMI and the duration of treatment, it was in agreement with the results of a study that showed that the Body Mass Index (BMI) more than 25, the more treatment of the syndrome turned to long-term treatment, so that a loss of 5 to 10% of the weight of the patients is beneficial in improving the metabolic and physiological symptoms and reproductive health, which reduces the treatment period [18]. As for the result of the correlation between the quality of daily food and the duration of treatment, it agreed with studies indicating the effect of the duration of treatment with the type of food, as food low in carbohydrates contributes to enhancing treatment and reducing the duration of treatment [19]. As for the result of the correlation between lifestyle and the duration of treatment, it agreed with a study that showed that a poor lifestyle and a sedentary regimen leads to an increase in insulin resistance and thus negatively affects the efficacy of treatment and a longer period for managing symptoms of the syndrome [10].

As for the result of the correlation between the type of treatment and the improvement of symptoms, this may be due to the nature of the disease and the suitability of the type of treatment prescribed for them. We cannot say that drug treatment (metformin, oral contraceptives) contributes to an improvement in the disease state more than (lifestyle modification), but adherence to the prescribed treatment, whatever it is, will contribute to an improvement in the disease state.

As for the result of the correlation between the duration of treatment and the improvement of symptoms, this may be due to the severity of the pathological condition, as a severe pathological case may require a longer treatment time than a mild or moderate case that may require a shorter period of time for the improvement of pathological symptoms, and the reason may be non-adherence to treatment or the treatment protocol was not sufficient. As we mentioned in the questionnaire paper, among the 100 patients, the participation of more than one treatment is not mentioned, or the number of questionnaires may be insufficient to show any association. It may also be due to other factors, including adherence to the prescribed treatment. A patient who adheres to prescribed treatment may need a shorter period of time for treatment than a patient who did not adhere to the treatment.

**Conclusion**

Significant prevalence of PCOS in general community of Syria draws attention towards the issue related to reducing the body mass index and focusing on quality of daily food and improving lifestyle for women who may be exposed to the syndrome. Further larger prospective studies about correlation of type of treatment and duration of treatment with symptoms improvement are needed to find out the most expected reason for result.

**Acknowledgements**

We thank Prof. Sharif Al Ashkar, the president of Al-Sham Private University. We thank Dr. Khaled Alhomsi, Vice president of Al-Sham Private University. We thank Dr. Bassel Hussein, Scientific Vice Dean and Dr. Wael Alaghawani, Administrative Vice Dean of faculty of Pharmacy in Al-Sham Private University for their help and guidance.

**References**

1. March WA, Moore VM, Willson KJ, Phillips DIW, Norman RJ, et al. (2010) The prevalence of polycystic ovary syndrome in a community sample assessed under contrasting diagnostic criteria. Hum Reprod 25: 544-551.
2. Azziz R, Carmina E, Chen Z, Dunai A, Laven JSE, et al. (2016) Polycystic ovary syndrome. Nat Rev Dis Primers 2: 16057.

3. Teede H, Misso M, Costello M, Dokras A, Laven J, et al. (2018) International evidence-based guideline for the assessment and management of polycystic ovary syndrome. In: Council NHaMR, ed. Australia: NHMRC.

4. Teede H, Deeks A, Moran L (2010) Polycystic ovary syndrome: a complex condition with psychological, reproductive and metabolic manifestations that impacts on health across the lifespan. BMC Med 8: 41.

5. Lim SS, Hutchison SK, Van Ryswyk E, Norman RJ, Teede HJ, et al. (2019) Lifestyle changes in women with polycystic ovary syndrome. Cochrane Database Syst Rev 3: CD007506.

6. Escobar-Morreale HF (2018) Polycystic ovary syndrome: definition, aetiology, diagnosis and treatment. Nat Rev Endocrinol 14: 270-284.

7. Azziz R, Carmina E, Dewailly D, Diamanti-Kandarakis E, Escobar-Morreale HF, et al. (2009) The Androgen Excess and PCOS Society criteria for the polycystic ovary syndrome: the complete task force report. Fertil Steril 91: 456-488.

8. Goodman NF, Cobin RH, Futterweit W, Glueck JS, Legro RS, et al. (2015) American Association of Clinical Endocrinologists, American College of Endocrinology, and Androgen Excess and PCOS Society disease state clinical review: guide to the best practices in the evaluation and treatment of polycystic ovary syndrome–part 1. Endocr Pract 21: 1291-1300.

9. Harfouch RM (2021) Polycystic ovary syndrome: Strategies of treatments. Open J Clin Med Images 1: 1001.

10. Gao J, Ma H, Wang Y, Yang X Cao Y, et al. (2021) Hospital-Based Phenotypic Features and Treatment Outcomes of Chinese Women with Polycystic Ovary Syndrome: The Effect of Body Mass Index and Geographic Distribution. Engineering 7: 170-177.

11. Legro RS, Brzyski RG, Diamond MP, Coutifaris C, Schlaff WD, et al. (2014) Letrozole versus clomiphene for infertility in the polycystic ovary syndrome. N Engl J Med 371: 119-129.

12. Legro RS, Brzyski RG, Diamond MP, Coutifaris C, Schlaff WD, et al. (2014) The pregnancy in polycystic ovary syndrome II study: baseline characteristics and effects of obesity from a multicenter randomized clinical trial. Fertil Steril 101: 258-269.e8.

13. Legro RS, Barnhart HX, Schlaff WD, Carr BR, Diamond MP, et al. (2007) Clomiphene, metformin, or both for infertility in the polycystic ovary syndrome. N Engl J Med 356: 551-566.

14. Kar S, Sanchita S (2015) Clomiphene citrate, metformin or a combination of both as the first line ovulation induction drug for Asian Indian women with polycystic ovarian syndrome: a randomized controlled trial. J Hum Reprod Sci 8: 197-201.

15. Yu C, Shi Z, Lv J, Du H, Qi L, et al. (2015) Major dietary patterns in relation to general and central obesity among Chinese adults. Nutrients 7: 5834-5849.

16. Zhang JG, Wang ZH, Wang HJ, Du WW, Su C, et al. (2015) Dietary patterns and their associations with general obesity and abdominal obesity among young Chinese women. Eur J Clin Nutr 69: 1009-1014.

17. Pirotta S, Joham AJ, Moran LJ, Skouteris H, Lim SS (2021) Implementation of evidence-based PCOS lifestyle management guidelines: Perceived barriers and facilitators by consumers using the Theoretical Domains Framework and COM-B Model. Patient Educ Couns 104: 2080-2088.

18. Allen LA, Shrikrishnapalusuriyar N, Rees DA (2021) Long term health outcomes in young women with polycystic ovarian syndrome: A narrative review. Clin Endocrinol:

19. Wylie-Rosett J, Aebersold K, Conlon B, Isasi CR, Ostrovsky NW (2013) Health effects of low-carbohydrate diets: where should new research go? Curr Diab Rep 13: 271-278.