Research Article

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

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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.

Sequelae 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 life style 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 life style. 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/m^2 (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[a]	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[a]	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[a]	1.365	189.720	10.365
	Sig.	0.001	0.021	0.001
Type of treatment	Pearson Correlation		-0.18	
	Sig.		0.086	
Duration of treatment	Pearson Correlation		0.23	
	Sig.		0.098	
[a]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

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