Original Article

The relationship between emotional character with depression and anxiety in patients with polycystic ovary syndrome

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Abstract

In this study, the relationship between emotional character and depression and anxiety in patients with polycystic ovary syndrome was investigated. The present research was a descriptive-correlational study. The population of the study included all people with polycystic ovary in 2012 of Ardabil city. A sample of 100 patients was selected from among patients referring to specialized clinics and Caucasus Infertility Center. To collect the data, the scales of emotional character, Beck Depression and perceived anxiety questionnaires were used. To analyze the data, Pearson correlation and multivariate regression analysis were employed. The data analysis showed a significant positive correlation between the emotional character and depression and anxiety in the participants (p < .01). Based on the results of multivariate regression, the dimensions of emotional character were able to predict the depression and anxiety in patients with polycystic ovary syndrome (p < .01). These results have some significant implications for improving the mental health of patients with polycystic ovary syndrome. Therefore, by using the dimensions of emotional personality of patients with polycystic ovary syndrome, anxiety and depression can be reduced in them.

Introduction

Polycystic Ovary Syndrome (PCOS) is a common cause of chronic anovulation associated with excessive Androgens. This disorder is one of the most common androgenic endocrine syndromes (related to the endocrines) that occurs in women's reproductive organs occurring in 5 to 10% of women (Azziz, 2004). This definition is obtained via the cystic ovary, excessive chemical or clinical activity of Androgimia menstrual disorder or menstrual deficiency. This disorder can also cause infertility, uterine cancer, metabolic disorder, cardiovascular and psychiatric disorders (Legro Legro, Arslanian, Ehrmann, Hoeger Murad., Pasquali, Welt, 2013). In the context of psychiatric problems, the results of a meta-analysis showed that women having PCOS experience, will encounter the psychological problems (Barry, Kuczmierczyk, Hardiman, 2011). One of the psychological problems is the increase in symptoms of depression in these patients (Legro et al. 2013). Many

studies have shown high rates of depression between 40% and 60% in women having PCOS (Kerchner, Lester, Stuart, Dokras, 2009). A study conducted on adolescents with PCOS in Turkey found the prevalence of depression to be significantly higher. (Almis et al. 2020). The women having PCOS have experienced periodic depression almost three times more than women in the control group (Setji and Brown, 2014) and other explanations such as high rates of negative body image associated with obesity, Hirsutism, Hyperandrogenism and acne, a higher infertility rate and deficiency of vitamin D in women having PCOS have been reported for this relationship (Jedel et al 2010).

Depression is associated with reduced quality of life related to polycystic ovary syndrome symptoms (Greenwood et al 2019). All of these factors can affect the depression of women having PCOS in the various ways. Also, another common problem in women having polycystic ovarian dysfunction is the anxiety prevalence ranging from 34% to 57% (Hahn, Janssen, Tan, Pleger, Mann, Chedlowski, 2005). In PCOS having patients in

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Turkey, the depression and anxiety disorders are the most common psychiatric conditions that occur (Annagür, Kerimoglu, Tazegül Gündüz, Gençoglu, 2015). Similarly, while many research studies show an increase in the incidence of depression and anxiety in PCOS having women, the physiological pathology of this relationship has not been studied much more.

From the viewpoint of psychiatry genetics, biomedicine and environmental factors, they play an important role in the etiology of mood disorders (depression and bipolar disorder) and in the last decade, several studies have suggested an idea that the characteristics of the emotional character confirmed the Invisible effect on clinical examinations in the classical mood disorders. (Kesebir Gündoğar., Küçüksubaşı, Tatlıdil Yaylacı 2013; De AguiarFerreira, Vasconcelos, Neves, Correa, 2014). The emotional character is severely an inherited phenomenon characterized by a basic biological and genetic tendency of the personality and the ability to automatically respond to events, the establishment of personal activity levels, rhythms, mood, and related cognition (Park, An, Kim, Koh., Namkoong, Kang, Kim 2015). The characteristics of the emotional character are psychiatric determinants that may help predict and recognize the vulnerability in depression and anxiety (Ferreira et al. 2014). Therefore, considering the high rates of depression and anxiety in women having PCOS and affecting the social adjustment, quality of life, marital affairs of these individuals (Hahn, Janssen, Tan, Pleger, Mann, Chedlowski, 2005) then finding baseline pathologic factors seems necessary in the context of psychiatric problems. Therefore, the main goal of this study was to investigate the relationship between emotional and depressive anxiety in patients with polycystic ovary.

Method

Participants

The design of this research is considered as a cross-sectional descriptive design of correlation type. The statistical population consisted of all individuals having polycystic ovaries who referred to specialized clinics and Ardabil Kafkaz Infertility Center in the first half of 2015. The diagnosis of polycystic ovary syndrome in this study was based on Rotterdam criteria. This criterion includes the incidence of PCOS based on the three criteria of *Amenorrhea*, the presence of PCOC evidences in ultrasound sonography, having clinical (acne, hirsutism, etc.) or laboratory symptoms for high levels of secretion of androgenic hormones. (Banaszewska B, Duleba A, Spaczynski R. 2006; Glueck J, Morrison A, Friedman L. 2006). The contact information has been sent to each of the clients and a written consent was received by explanation of the study process. The research sample consisted of 100 people from the study population who were chosen by the present sampling method. To each of the subjects, explanations were given about the research goals and satisfaction for the study and then the questionnaires,

emotional character scale, Beck's Depression questionnaire, and anxiety questionnaire were filled out by subjects.

Instrument

Scale of emotional and anxious character:

This scale is designed in the form of 62 questions by Lara et al. (2012). In this research, the questions related to emotional character have been used according to the purpose of the research. The subscales of emotional character are as follows: the depression, anxiety, indifference, mood periodicity, restlessness, and boredom, variability, obsession, excitement, and irritability, debarment inhibition, euphoria. The Cronbach's alpha coefficient for the whole questionnaire was 0.86 and for the subscales between 0.75-0.91was reported (Lara et al. 2012). The Cronbach's alpha coefficient in Iran was 0.82 for the whole tool and was reported from 0.89 to 0.49 for its sub-scales (Chalabianloo, Rasulzadeh and Sheikh 2014). Beck's Depression questionnaire: This questionnaire was designed by Beck (1975) and including 21 questions. On a four-degree scale, they respond from zero to three. These are articles in areas such as sadness, pessimism, feelings of disability and failure, guilty feeling, sleep disturbances, loss of appetite, self-abomination and so on with scores ranging from a minimum of zero to a maximum of 63 (Beck et al. 1975). The validity of the Beck's Depression Questionaire has varied from 0.71 to 0.90 in studies of Partoi (1354), Vahabzadeh (1352), and Chegini (2020), Beck, Stear and Brown (2000) reported the internal consistency of this tool 73% to 92% with an average of 86% and the alpha coefficient for the patient group 86% and non-patient 81%. Also, Rajabi et al. (2001) reported the Cronbach's alpha coefficient for the entire questionnaire at 87%, the validity coefficient was 83% and the re-examination coefficient for a period of three weeks was 49% (Fathi Ashtiani 2008; quoted by Zamanloo 2013).

Anxiety questionnaire:

In this research was used of the anxiety scales in the social interaction with 20 articles to assess the anxiety of people with social anxiety disorder. Each article is based on a five-point Likert scale (Strongly agree / agree / don't know / disagree / strongly disagree) are answered and each of these options is scored 0, 1, 2, 3 and 4 respectively.

The scores range is from 0 to 80. During a research conducted by Azadeh Tavoli et al. (2012) on 150 Iranian students, the reliability coefficient was 0.79 and Cronbach's alpha was 0.90 as well as differentiated between the women and men respectively which women are expected to have higher expectations 0.335. The correlation with the social phobia of and fear of negative evaluation was similar to 0.54 (p <0.001) and 0.68 (p <0.001) (Talvoli, Allahyari, Azad Fallah, Fathi

Ashtiani, Meliani, Sahragard, 2012). Also, the reliability of the test-retest on the subjects with the diagnosis of social anxiety disorder was 78% -89% and the alpha coefficient in the group of normal subjects was 94% (Connor KM, Davidson JRT, Curchill LE, Sherwood A, Foa E, Weisler RH., 2000).

Results

In this study, the mean and standard deviation of the subjects in the research were respectively 38.66 and 8.9. 92% of subjects were married and 8% were considered as divorced cases. 27% had undergraduate education, 20% had an upper secondary school diploma, 48% had a diploma and 5% cycled.

Table 1. The mean and SD of subjects in the case variables Study

	Variable	Mean	SD
Emotional character	Depression	18.80	3.97
	Anxiety	19.52	2.88
	Indifference	9.56	2.09
	Mood periodicity	22.76	8.65
	Restlessness	10.30	1.81
	Variability	7.17	2.9
	Obsession	12.40	3.28
	Feeling happy	12.62	6.10
	Excitement	5.86	2.32
	Irritability	13.51	3.16
	Debarment inhibition	9.43	2.45
	Euphoria	14.07	5.21
	total	156.03	24.96
	Depression	17.27	3.12
	Anxiety	18.98	2.90

As the table.1 shows, the total mean (and SD) of emotional character scores are 156.03 (24.96), depression is 17.27 (3.12%) and anxiety 18.98 (2.90).

Table 2. The Correlation coefficient of emotional character with depression and anxiety in patients with polycystic ovary syndrome

	Variable	Variable	
		Depression	Anxiety
Emotional character	Depression	***0.80	***0.34
	Anxiety	**0.35	***0.84
	Indifference	*0.28	*0.31
	Mood periodicity	*0.34	*0.35
	Restlessness	*0.29	*0.36
	Variability	*0.41	*0.39
	Obsession	*0.35	*0.32
	Feeling happy	*0.38	*0.43
	Excitement	*0.29	*0.31
	Irritability	**0.45	**0.37
	Debarment inhibition	**0.38	**0.41
	Euphoria	*0.26	*0.24

* $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$

Table 3. The results of multivariate regression analysis (method of entry). The dimensions of emotional character with depression

Variable	Beta	T	Sig	R	R$_2$
Depression	0.88	3.59	0.001		
Anxiety	0.21	3.45	0.01		
Indifference	0.25	5.98	0.01		
Mood periodicity	0.18	4.35	0.04		
Restlessness	0.27	1.65	0.01		
Variability	0.19	6.75	0.01	0.837	0.70
Obsession	0.24	5.98	0.01		
Feeling happy	0.14	5.85	0.04		
Excitement	0.26	3.46	0.01		
irritability	0.31	4.54	0.001		
Debarment inhibition	0.18	3.57	0.01		
Euphoria	0.22	2.93	0.01		

The results of regression analysis in Table.3 show that the dimensions of depression, anxiety, indifference, periodicity, restlessness, variability, obsession, feeling happy, blame, excitement, debarment inhibition, and euphoria generally with a multiple correlation coefficient of 83/0, explain about 70% of the variance related to depression. The values of the beta coefficients show that the dimensions of emotional character are as follows: indifference (B =25%), periodicity (B =18% ess (B = 27%) variability (B =19%), obsession (B=24%), being happy (B =14%) excitement (B = 26%) excitability (B = 31%), debarment inhibition (B =18%) and euphoria (B =22%) Depression (B =88%) and will be anticipated possibly positive.

Table 4. The results of multivariable regression analysis (method of entry) of the dimensions of emotional character with anxiety

Variable	Beta	T	Sig	R	R₂
Depression	0.73	1.69	0/001		
Anxiety	0.93	5.35	0.001		
Indifference	0.24	4.89	0.01		
Mood periodicity	0.18	6.35	0.02		
Restlessness	0.29	6.65	0.01		
Variability	0.19	7.79	0.01	0.86	0.74
Obsession	0.24	4.10	0.01		
Feeling happy	0.26	3.25	0.01		
Excitement	0.35	9.56	0.001		
Irritability	0.36	4.24	0.001		
Debarment inhibition	0.19	7.74	0.01		
Euphoria	0.28	3.75	0.01		

Also, the multiple regression analysis in Table. 4 shows that the dimensions of depression, anxiety, apathy, mood periodicity, restlessness, variability, obsession euphoria, blame, excitement, debarment inhibition and euphoria altogether explain and predict the multiple correlation coefficient of 0.86 about 75% of variance related to anxiety. The values of beta coefficients indicate that the dimensions of emotional character are respectively as: the indifference (B = 24%) periodicity (B =18%) restlessness (B =29%), variability (B =19%), the obsession (B =24%), feeling happy (B = 14%) excitability (B = 35%) debarment inhibition (B =19%) And euphoria (B = 28%), depression (B =88%) forecast the anxiety as a positive value.

Discussion

The purpose of this study was to investigate the power of dimensions of emotional character in anticipation of the depression and anxiety. The results of this study showed that there is a positive and significant relationship between the dimensions of emotional character and depression and anxiety in patients having polycystic ovary.

Also, the results of regression analysis showed that the dimensions of emotional character could significantly predict depression and anxiety. The results of this study are consistent with the results of other studies (Kesebir et al. 2013; Alexander et al. 2014). Kesebir et al. (2013) compared the relationship between the emotional character and resilience in the healthy and depressed people. They found that the depression, anxiety, irritability and anxious character scores were higher than those in the depressed group. In addition to using the questionnaire, some other interviews were also applied. Also, Alexander et al. (2014) examined the relationship between the emotional character and response to antidepressants in people with mood disorders. In this study, 99 patients having bipolar-disorder and 88 patients having depressive-disorder were used. The results of this study showed that the emotional-anxious character can be effective in responding to antidepressant drugs and recovery periods in people having depression. But still, there is a great need for longitudinal studies in this area. The patients having polycystic ovary syndrome (PCOS) are one of the most common endocrine disrupters among premenopausal women. The clinical expression of PCOS such as hair loss, acne, menstrual irregularity and obesity have a huge effect on the quality of life. (Krępuła et al. 2012). PCOS often emerges at the age of periodic sexual fertility that is important when finding a partner and marriage. The women having PCOS have been reported that will lose their feminine identity and have fewer feminine feelings than their peers (Kitzinger and Wilmot 2002). The exterior appearance, cosmetic and psycho-sexual effects are those that are due to deep emotional stress in women with PCOS (Eggers, S., Kirchengast,S., 2001). While many research studies show an increase in the incidence of depression in women having PCOS, the physiological pathology considers this connection false. The insulin resistance and obesity play an important role in the pathogenesis of PCOS. The previous studies have reported a correlation between insulin resistance and depression (Ecomura et al. 2000; Chiba et al. 2000; Timonen et al. 2005). It has been shown that women with depression-

associated PCOS have lower insulin sensitivity than non-depressed PCOS women (Krępuła 2012).

In the current study, there was a positive correlation between the depression and emotional character scores. In the explanation of this finding, it can be said that the character of a liability is in the depression (Kesebir et al. 2013; Aksiskal and Pinto 2000) and the irritable character may be a predictor of a susceptible person who will be depressed in the future; Because it is especially for women with PCOS disorder, There is a positive correlation between the levels of anxiety and the scores of anxiety found in the previous researches (Kesebir et al. 2013; Rasgon et al. 2003; Manson et al. 2002). On the other hand, the scores of depression, anxiety, character, and protest excitement were achieved in this study. These findings have diagnosed that women having PCOS had a tendency to be irritable, anxious, depressed and mood periodic considering that the formation of character was a fundamental basis in mood disorders (Akiskal et al. 2005). These findings also coincided with the findings of this study which means that the premature emotional character is a predictor of depression (Aksiskal and Pinto 2000). Anyway signs of anxiety and often abnormalities occur simultaneously with depression. Benson et al. showed that the anxiety disorders were found in 34% of women with PCOS. In this study, the anxiety was related with acne and fertility problems (Benson et al. 2009). This study showed a high level of anxiety in women having PCOS. Also, a correlation between anxiety score and sub-components of emotional character was obtained in regression analysis. This result can be concluded due to the fact that hair loss as an outward appearance may trigger signs of anxiety in anxious PCOS patients. It is also difficult to get some points about the perception of patients regarding their appearance as long as we do not make an evaluation of the cognitive processes of patients. However, Stefanaki, C. et al. (2015) have done a randomized study in 8 weeks suggesting that a stress management program with mindfulness might be a hopeful method of treating stress, anxiety, and depression and improving the quality of life. It can be concluded that the cognitive-complexity of patients (such as cognitive errors) about their appearance can be the cause or starter of symptoms of anxiety-depression. A cross-sectional plan of research and the limited evidence may cause the problem of providing more details in this field.

Although all of these factors may be linked to depression and anxiety in women having PCOS, the evidence obtained from the ontology of psychiatric conditions for women having PCOS is still limited and not entirely clear. This study was considered as the first study in the field of women having PCOS to assess the relationship between depression and anxiety and patients' character. According to the results of this study, it may seem that the emotional character as a family genetic phenomenon is one of the factors most important in the etiology of psychiatric conditions in women having PCOS. At the end, according to this that the patients having PCOS will be possibly referred to the hospital in outpatient form.

Conclusion

Considering the high level of mood-anxiety symptoms and their effect on the quality of life predicting and treating these important clinical psychological problems, it seems that the problem of the formation of emotional character for women with PCOS, it may help in the clinical prediction of people with PCOS who are prone to the depression and anxiety. One of the limitations of this study is the stage-by-stage design and the self-expression scale of the study which made it possible to make more appropriate conclusions about the depression and anxiety but it should be noted that the main goal of this study was not showing the extent of psychiatric disorders. Therefore, in this study self-expression scale for depression and anxiety was used to assess the relationship between the clinical-non-clinical characteristics and character. Also, the relatively small size of sample limits the determination of the findings which is recommended in the subsequent studies with a larger sample size.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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