The Relationship between Big Five Personality Factors and Premenstrual Syndrome Severity in Child-Bearing Age Women

Ali Sahraian, MD[1], Asma Zamani Mehryan, MD[2], Leila Khabir[3], Amir Bazrafshan, MD[4], Arash Mani, PhD[5,*]

[1]*Research Centre for Psychiatry and Behavioural Sciences, Shiraz University of Medical Sciences, Shiraz, Iran*

[2]*Psychiatry Department, College of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran*

[3]*Day Centre, Hafez Hospital, Shiraz University of Medical Sciences, Shiraz, Iran*

[4]*Substance Abuse Research Centre, Shiraz University of Medical Sciences, Shiraz, Iran*

[5]*Research Centre for Psychiatry and Behavioural Sciences, Shiraz University of Medical Sciences, Shiraz, Iran*

*Corresponding Author: *Arash Mani, Research Center for Psychiatry and Behavioral Sciences, Shiraz University of Medical Sciences, Shiraz, Iran,* **Email:** *mania@sums.ac.ir*

Abstract

Background: *Premenstrual Syndrome (PMS) is a prevalent disorder among women. Personality traits are involved in severity symptoms of PMS. The present study was conducted to investigate the relationship between big five personality factors and premenstrual syndrome severity in child-bearing age women.*

Methods: *In this cross-sectional study, volunteer women who were eligible to participate in the study were evaluated by a psychiatrist based on an interview; then, 100 women who fulfilled the inclusion criteria were selected based on target sampling. Demographic questionnaires, Daily record of Severity of problems (DRSP) and NEO Five-Factor Inventory (NEO-FFI) were filled out by each patient. Data were analyzed by SPSS and p values less than 0.05 were considered as significant.*

Results: *The present study revealed that personality factors, neuroticism, extraversion, and agreeableness had a significant correlation with severity of PMS (P<0.01). Also, the difference between the mean of personality factors of PMS patients and normative data of Iranian women was significant in neuroticism, extraversion and openness.*

Conclusion: *Based on the results, there was a relationship between personality factors and PMS. Thus, women with a specific type of personality might suffer from this syndrome much more than usual.*

Keywords: *Premenstrual Syndrome, Personality Assessment, Women*

1. INTRODUCTION

More than 80 percent of women of reproductive age experience physical, mental and emotional symptoms known as Premenstrual Syndrome (PMS). This syndrome begins one or two weeks before menstruation in the luteal phase and usually ends about one week after the onset of menstruation.[1] The symptoms are of somatic and psychological nature.[2]

About 80 to 90 percent of reproductive age women experience at least one of the symptoms of premenstrual syndrome. In a survey from Iran, the prevalence of PMS has been reported 55% in medical students.[3] In 30 to 40 percent of these people, the symptoms are very severe and methods and therapeutic interventions are required.[4] In 3 to 8 percent of individuals with PMS, the symptoms are so intense that they interfere with daily functioning.[5]

Hormonal changes related to ovulation have a prominent and well-known role in creating this syndrome. These hormonal changes of the menstrual cycle occur in all women, but most of them do not experience premenstrual syndrome. This evidence suggests that, in addition to hormonal causes, other factors are involved in causing symptoms of this syndrome.[6] Two important factors that affect the incidence and severity of premenstrual syndrome are psychological state in these patients.[7]

Although the root cause of premenstrual syndrome is biological and hormonal changes, psychological factors can unfold these symptoms and changes in their severity.[2] Many studies revealed that psychological factors are effective on premenstrual syndrome.[5] One of these factors is personality traits. Personality can be seen as a consistent pattern of thought and

behavior that affect the response to the stimulus and environmental stresses.[8] In fact, the apparent difference in the incidence of this syndrome can be attributed to the unique personality traits of individuals.

Results of this research revealed definite correlations between the PMS syndrome's intensity and the tendency toward a pathologic personality.[9] Women with severe PMS had a higher prevalence of personality disorders (27%) than asymptomatic women (0%).[10]

Some studies revealed that those with more severe PMS also had a higher score in neuroticism in the personality questionnaire.[1,11,12,13,14] Another study showed that individuals with anxiety and suspicion suffer a higher severity of PMS symptoms. These features are subsets of neuroticism.[13]

Because of the inconsistency in results, there is a need for further studies. In addition, given the important and influential role of women in the family and society, the importance of conducting further studies to investigate the causes of this syndrome should be given special attention.[5] The present study was conducted to investigate the correlation between personality traits and premenstrual syndrome in child-bearing age women.

2. METHODS

2.1. Study Population

This cross-sectional study was conducted at Emam Reza Polyclinic affiliated to Shiraz University of Medical Sciences (SUMS), Shiraz, Iran. During the course of 10 months (July 2016 to May 2017), the researchers explained about the goal of the study in the clinic and asked the women to register and participate in the psychiatric interview based on DSM-IV-TR(15) to rule out any psychiatric problems. According to this method, about 175 women visited and finally 100 women with premenstrual syndrome (PMS) impressions elected based on the target sampling participated in the study. All the selected cases fulfilled the inclusion criteria such as age between17-45 and six years of formal education. Exclusion criteria were psychiatric and neurologic problems and addiction. The study protocol was approved by the ethics committee of SUMS with the code number of IR.SUMS.REC.1393.5722. None of the participants needed to write her name and they verbally agreed to complete the study; they were also free to withdraw from the study at any time.

2.2. The Study Protocol

PMS patients who fulfilled the criteria were informed about the study and the confidentiality of the data and they gave their informed consent. After the initial psychiatric interview, they completed a demographic questionnaire, Daily Record of Severity of Problems (DRSP), and NEO-FFI to evaluate the personality factors in big five factors such as neuroticism, extraversion, openness, agreeableness, and consciousness. The extracted data from the PMS patients were compared within PMS severity which was estimated according to the score of DRSP. Moreover, the patients' mean score on personality factors was compared with normative data of Iranian women.[15]

2.3. Instruments

2.3.1. Demographic Questionnaire

To evaluate the age, education, place of living and marital status.

2.3.2. Daily Record of Severity of Problems (DRSP)

DRSP form is a questionnaire developed to aid in the diagnosis and evaluation of DSM-IV Premenstrual Dysphoric Disorder (PMDD).[1] The ratings on the DRSP are to be made daily by the subject throughout her menstrual cycle, on items with 6-point severity scales, ''to indicate the degree to which the problems had been experienced.'' The levels of severity on the DRSP are: 1-Not at all, 2-Minimal, 3-Mild, 4-Moderate, 5-Severe, and 6-Extreme. The women are also instructed to indicate the days of ''spotting'' or ''full flow of menses''. A score between 0-33 is considered as mild premenstrual syndrome. A score between 33 to 66 is regarded as moderate form of premenstrual syndrome and score higher than 66 as severe form of premenstrual syndrome.[17] The DRSP is a sensitive, reliable, and valid questionnaire for the symptoms and impairment of PMDD.[16,18,19]

2.3.3. Neuroticism-Extraversion-Openness Inventory Five-Factor Inventory (NEO-FFI)

This questionnaire contains 60 statements (12 questions per domain) representing the following five personality domains: neuroticism (N), extraversion (E), openness to experience (O), agreeableness (A), and conscientiousness (C).[20] It is scored based on the 5-point Likert scale (strongly disagree, disagree, neutral, agree and strongly agree). Higher scores represent more characteristics of that domain. Internal consistency value ranged from 0.74 to 0.89.[21]

2.4. Data Analysis

The collected data were analyzed using the questionnaires among PMS patients through SPSS version 16; descriptive statistics, one-way ANOVA, Pearson correlation were used. P values less than 0.05 were considered as significant.

3. RESULTS

The present study was conducted on 100 women aged 17- 45 years, with a mean of 28 years old. 53% of them were single and 47% married. 7% of the subjects had elementary education, 58% of diploma education, 20% bachelor's degrees, 9% graduate degrees, and 6% doctoral degrees. 86 percent were residents in Fars province and 14 percent lived in other areas. The results of this study showed that 3% of the subjects had mild PMS, 55% moderate PMS, and 42% had severe PMS. According to the DRSP score, the patients were divided into 3 categories (mild, moderate and severe) and then the mean scores of each personality factor were compared based on this category.

The results of one-way ANOVA indicated that only neuroticism factor showed significant differences among these three categories and the other factors showed no differences. Post-hoc evaluation confirmed that the severe category had significant and higher mean scores than the mild and moderate ones. Table 1 presented the mean score and differences in details.

Table1. *Comparison of personality factors according to PMS severity*

Personality traits	Severity of PMS	Mean ± SD	p
N	mild	26.66 ± 2.08	0.009
	moderate	25.73 ± 7.87	
	severe	30.82 ± 8.04	
E	mild	30.33 ± 1.15	0.08
	moderate	26.43 ± 6.39	
	severe	23.85 ± 7.50	
O	mild	22.66 ± 3.78	0.3
	moderate	24.63 ± 4.49	
	severe	25.64 ± 4.69	
A	mild	31.00 ± 7.81	0.2
	moderate	29.54 ± 5.10	
	severe	27.92 ± 5.20	
C	mild	37.66 ± 7.09	0.3
	moderate	33.30 ± 6.37	
	severe	32.07 ± 7.05	

Table 2 shows the relationship between five personality factors with PMS severity. This result revealed that the personality trait of neuroticism had a significant and positive correlation with PMS severity, and extraversion and agreeableness factors had a significant and negative correlation with PMS severity.

Table2. *The correlation between DRSP and personality factors*

	N	E	O	A	C
DRSP	0.34**	-0.23*	0.10	-0.24**	-0.03

** p<0.01

* p<0.05

The comparison of the big five personality factors of PMS women with normative data extracted from Haghshenas (15) revealed that significant differences were obtained in N, E and A factors. Women with PMS had a significantly higher mean in neuroticism and significantly lower mean in extraversion and openness to experience. Table 3 shows the mean score of the present study and normal population.

Table3. *Mean differences between PMS patients and normal data*

Personality factors	Normal Mean ± SD	PMS Mean ± SD	P Value
N	23.9±8.01	27.88±8.17	0.001
E	28.7±5.67	25.47±6.92	0.001
O	26.2±4.21	25.00±4.57	0.01
A	28.7±5.05	28.91±5.23	0.68
C	33.00±6.24	32.92±6.69	0.91

4. DISCUSSION

The present study focused on to two parts: first the severity of the disorders among women who got the impression and second personality factors related to PMS.3% of the patients were categorized in mild, 55% in moderate, and 42% in severe PMS. Other studies didnot confirm these results; for example, Angst et al. (2001) conducted a study among women aged 21 to 35 and reported an average prevalence of PMS of 13.6% and severe PMS of 8.1%.[22] Another study on Iranian papulation by Akaberi et al. (2013), which was performed on 478 female college students at the Persian Gulf University and Bushehr University of Medical Sciences, showed that 53.7% had mild PMS, 31.2 mild PMS, and 1.7% severe PMS.[7] The present study, compared to the previous researches mentioned, reported a higher prevalence of the syndrome. To describe this finding, it should be mentioned that the present study evaluated the severity of PMS among the women who got the impression due to psychiatric semi-structured interview, so it does not represented the severity of the syndrome among normal papulation.

In another part of the study, the findings confirmed that among the five factors, N, E and

A had a significant correlation with the severity of the syndrome; on the other hand, N, E and O factors had significant differences with the normal female papulation. It might be concluded that these factors have the main description why some women suffer more than others from the PMS symptoms. The findings of personality among PMS women are in line with previous ones, which are mainly focused on neuroticism facet, although these are not considered in our study.

In line with the present study, it has been indicated that women who have a neurotic personality have a higher risk of PMS. The association between neuroticism and PMS is probably related to the influence of neuroticism on pain perception. It appears that neuroticism is a vulnerability factor, lowering the threshold at which pain is perceived as intense and threatening.[1, 23]

The study by Dimitron et al. (1991), which used Eysenck's personality type questionnaire to examine the personality traits, showed that those with more severe PMS also had a higher score in neuroticism in the personality questionnaire.[14] The study of Kord Firoozjaei et al. (2015), which examined the personality factors associated with premenstrual syndrome in women aged 20-40 years in Iran, also achieved similar results.[11] Similarly, the results of this section of the study are consistent with the findings of Taylor (1991), Gingnell (2009) and Mai Eissa (2010).[1,12,13] In addition, the present study revealed that E and A factors had a negative significant relationship with PMS severity.

Although Gingnell et al.'s (2009) findings on N facets were in line with those of the present study, they concluded that E factor had no significant relationship with PMS severity. This difference between Gingnell (2009) and our findings indicates a very important fact which might be helpful in psychotherapy which is known as cultural differences; the present findings revealed that the more the score in E personality factor, the less the PMS severity; it means that in Iranian culture talking about the psychological aspect of PMS needs more warmness and feeling of acceptance by others; this might less important in other cultures and they feel free to talk about this natural phenomenon.

Due to the use of different instruments and personality questionnaires, comparing the results of this study with other researches was not possible accurately and completely. However, as with many studies, the present study suggests a significant relationship between personality traits and severity of PMS

5. CONCLUSION

Our study showed that there was a significant correlation between personality traits of neuroticism and PMS. These findings are consistent with other studies, indicating that neuroticism is associated with PMS severity. Therefore, we can conclude that people with neuroticism are irritable and have a sympathetic system. We recommend further investigation about the relationship between psychological factors and PMS using other personality questionnaires.

The results of this study can be used in psychotherapy centers. In addition, the high prevalence of premenstrual syndrome and disruption of people's daily lives require continuous effort to identify the factors involved in the development of this syndrome; also providing a suitable solution for controlling and treating this syndrome by monitoring the emotional traits might be helpful.

REFERENCES

[1] Eissa M.Personality and Psychosocial Factors Affecting Premenstrual Syndrome. Current Psychiatry. 2010; 17(1):55-62.

[2] Thomas I, Narayanan G. Psycho-social correlates of premenstrual distress. JIAAP.2006 Jan; 32(1):71-80.

[3] Faramarzi M, Kheirkhah F, Azadfrouz S. Psychological predictors of premenstrual syndrome. International Neuropsychiatric Disease Journal 2014; 2(6):368-381.

[4] Parry BL, BergaSL. Premenstrual Dysphoric Disorder. In; Sadock BJ, Sadock VA, editors. Kaplan and Sadocks Comprehensive. 8th ed. Philadelphia: Lippincott Williams and Wilkins; 2008.p.2315-23.

[5] Halbreich U,Borenstein J,Pearlstein T,Kahn LS.The prevalence, impairment, impact and burden of premenstrual dysphoric

disorder.Psychoneuroendocrinology.2003;28:1-23.

[6] Gaion PA, Vieira LF.Influence of personality on pre-menstural syndrome in athletes.Span J Psyclol.2011 May;14(1):336-43.

[7] AkaberianS, Bahreini, AfrasiabiS, Motamed N, Hajiloo M. The relationship between premenstrual syndrome and personality types among female students of Bushehr universities. IJOGI.2013; 16(56):9-16.

[8] Azimzade Parsi A, Hoseinimehr Ali, Rahmani A. The relationship between the five-factor model of personality and happiness among university students. Quarterly Journal of Educational Psychology.2011;2(2):1-12.

[9] Foresti G, Ferraro M, Reithaar P, Berlanda C, Volpi M, Drago D, Cerutti R, Premenstrual Syndrome and Personality Traits: A Study on 110 Pregnant Patients. PsychotherPsychosom 1981; 36:37-42.

[10] Sassoon SA, Colrain IM, Baker FC. Personality disorders in women with severe premenstrual syndrome. Archives of Women's Mental Health 2011; 14(3):257-264.

[11] Kord Firoozjaei S,AgajaniDelavar M,Bayani AA.Personality factor associated with premenstrual syndrome in employed women at reproductive age.JCBPS.2015 August;5(4):3885-92.

[12] Treloar SA,Heath AC,Martin NG.Genetic and environmental influences on premenstrual symptoms in an Australian twin sample. Psychologcal Medicine.2002; 32:25-38.

[13] Gingnell M,Comasco E,Oreland L,Fredrikson M,SundstromPoroma I.Neuroticism related personality traits are related to symptom severity in patients with premenstrual dysphoric disorder and to the serotonin transporter gene linked polymorphism 5-HTTPLPR.Arch WomensMent Health.2010;13:417-23.

[14] Dimitriou EC,Didangelos PA.Premenstrual tension and personality.J Psychosom Res.1991; 38(6):557-67.

[15] Haghshenas H. Validation of the NEO personality inventory, revised form. JThought and Behavior in Clinical Psychology. 1999; 3:38-47.

[16] Delaram M, Sadeghiyan Z, Jafari F, KHairi S, Bekhradi E, Rafeiyan M. Effects comparison of echinophora-platyloba, fennel and placebo on pre-menstural syndrome in shahrekord university students. J ShahidSadoughiUniv Med Sci.2011; 19(2):201-10.

[17] Taghizadeh Z, Shirmohammadi M, Arabi M, Mehran A.The effect of premenstrual syndrome on quality of life in adolescent Girls.Iran J Psychiatry.2008;3(3):105-9.

[18] Endicott J,NeeJ,HarrisonJ.Daily record of severity of problem reliability and validity. ArchWomensMent Health.2006; 9:41-9.

[19] Davoudi I, Izadi Mazidi S, Mehrabizade Honarmand M. The effects of group cognitive-behavioral/narrative therapy of premenstrual syndrome of female university-students. IJOGI. 2012;15(11):7-15.

[20] Haghshenas H. Personality psychology. Shiraz: Shiraz University of Medical Sciences Publications, 2009, p.1-142.

[21] Fazel J. The comparison of big five personality traits between male and female athletes and non-athletes. Journal of Development and Motor Learning. 2011;3(2):81-98.

[22] Angst J, SellaroR, StolarM, MerkangasKR, EndicottJ.The epidemiology of premenstrual psychological symptoms. ActaPsychiatr Scand. 2001; 104(2):110-6.

[23] Faramarzi M, Kheirkhah F, Azadfrouz S. International Neuropsychiatric Disease Journal 2014; 2(6): 368-81.

[24] Goubert L, Crombez G, Van Damme S. The role of neuroticism, pain cata-strophizing, and pain-related fear in vigilance to pain: A structural equations approach. Pain. 2004; 107(3):234-41.