ORIGINAL RESEARCH

Increased Childhood Abuse in Patients With Premenstrual Dysphoric Disorder in a Turkish Sample: A Cross-Sectional Study

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ABSTRACT

Objective: Abuse is considered to have a place in the etiology of various psychiatric disorders. Premenstrual dysphoric disorder (PMDD) is one of the psychiatric disorders for which abuse could be an etiologic factor; however, few studies have investigated the relationship between abuse and PMDD. In this study, our aim was to investigate childhood abuse in patients with PMDD and compare them with healthy female subjects.

Method: This cross-sectional study included 70 women with PMDD (*DSM-IV-TR* criteria) who were admitted to the outpatient psychiatry clinic of Ankara Yenimahalle State Hospital, Ankara, Turkey, between December 2012 and December 2013. Additionally, 78 healthy controls were included in the study. Sociodemographic, familial, and reproductive period characteristics of the women were recorded. All subjects were administered the Premenstrual Syndrome Scale (PMSS) and the Childhood Trauma Questionnaire (CTQ).

Results: Among the sociodemographic characteristics, being a university graduate (76.9%) and being a public servant (70.5%) were significantly higher in the healthy control group ($P=.01$ and $P=.01$, respectively). A family history of PMDD (31.4%), a history of postpartum psychiatric disorders (11.4%), and a history of attempted suicide (7.1%) were higher in the PMDD group compared with the healthy control group ($P=.001$, $P=.003$, and $P=.024$, respectively). Significant differences were also found between PMDD and healthy controls in PMSS score ($P\leq.001$), CTQ total scores ($P=.002$), and subscale scores including emotional abuse and emotional neglect ($P=.004$), physical abuse ($P=.009$), and sexual abuse ($P=.012$).

Conclusions: To our knowledge, the present study is the first to investigate associations between PMDD and childhood abuse from Turkey. More comprehensive studies on this topic with larger sample sizes are required to enrich the literature and enable practitioners to be more effective in clinical practice.

The menstrual cycle occurs for nearly 30–35 years of a woman's life. It is a physiologic cyclic process that occurs every month and may progress with alterations in psychological conditions of the individual. Premenstrual syndrome (PMS) is described in the *DSM-III* as occurring in the late luteal phase of the menstrual cycle for a specific period, frequently repeating with the menstrual cycle, decreasing and disappearing shortly after menstruation begins, not observed for at least a week in the follicular phase, and with a tableau of physical, psychic, and behavioral changes.[1] Premenstrual dysphoric disorder (PMDD) manifests as abnormal somatic, emotional, and behavioral symptoms on the eve of menstruation and occurs in 3%–5% of women. In the *DSM-IV-TR*, PMDD is classified as a set of unspecified depressive disorders. For a diagnosis of PMDD, at least 5 of the 11 symptoms described in the *DSM-IV-TR* should be present, with functional disorders and advanced symptoms observed for at least 2 successive months. These symptoms include depressive mood, ideas of hopelessness or worthlessness, anxiety, feelings of tension or being on edge, continuous and marked anger, irritability or increases in interpersonal conflicts, reduced interest in normal activities, difficulty concentrating, fatigue, changes in appetite, overeating or cravings, insomnia, subjective feelings of being overwhelmed or being out of control, and other physical symptoms such as breast tenderness or swelling, headaches, joint or muscle pain, and weight gain.[2]

The etiology of PMDD may be associated with various steroid hormones such as estrogen, progesterone, and allopregnanolone, as well as thyroid hormones, cortisol, and melatonin. Additionally, the hormones prolactin and relaxin and neurotransmitters such as serotonin, glutamate, and β endorphins are debated as being associated with PMDD; however, there is no consensus.[3] Studies on the serotonergic 5-HT$_{1A}$ receptor gene[4] and the estrogen receptor α gene (*ESR1*)[5] and twin studies on hereditary factors[6,7] have emphasized the involvement of genetic factors. Also, high body mass index,[8] stress,[9] and exposure to traumatic events[10] have been proposed as possible risk factors. Furthermore, women with PMDD have been reported to have higher rates of abuse history than healthy controls.[11]

To our knowledge, there are no studies that have investigated the association between abuse history and PMDD in Turkish women. The aim of this study was to evaluate whether there is an increased abuse history in patients with PMDD and to clarify the characteristics of the abuse in women with PMDD in Turkey.

METHOD

Participants

This cross-sectional study was conducted in the Ankara Yenimahalle State Hospital with the approval of the Institutional Review Board of Gazi University Medical School, Ankara, Turkey. Patients were selected among those who were admitted to the outpatient psychiatry clinic of Ankara Yenimahalle State Hospital between December 2012 and December 2013. The selection criteria included being diagnosed

with PMDD according to *DSM-IV-TR* criteria[2] after a psychiatric examination and evaluated with the Structured Clinical Interview for *DSM-IV* Axis I Disorders. Other selection criteria included being between the ages of 18 and 40 years, not currently taking oral contraceptives, no previous gynecologic surgical operations, no comorbid physical illness or psychiatric disorder, and willing to participate in the present study. Healthy women who were a part of the hospital staff and relatives of the staff were enrolled as subjects for the control group. Inclusion criteria for healthy subjects included being between 18 and 40 years of age, no current physical illnesses or psychiatric disorders, no history of psychiatric disorders or gynecologic operations, not taking oral contraceptives, and willing to participate in the present study. Written informed consent for participation was received from all participants. All participants underwent a psychiatric examination by a senior psychiatrist (E.A.S.). After the elimination of selected participants according to the inclusion criteria for each group, sociodemographic, familial, and reproductive period characteristics were recorded. Following selection, there were 70 women with PMDD and 78 healthy female controls who met the inclusion criteria. The Childhood Trauma Questionnaire (CTQ) and Premenstrual Syndrome Scale (PMSS) were then administered to all subjects.

Instruments

Sociodemographic and clinical consent form. All subjects were given a sociodemographic and clinical consent form arranged in accordance with the aim of our study as well as data obtained from clinical experiences and the literature.

Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I). The SCID-I is a *DSM-IV*–oriented semistructured interview form designed to diagnose the present and lifetime primary axis mental disorders.[12] The SCID-I was translated into Turkish by Ozkurkcugil et al,[13] and its confidence trial has been completed in Turkey.

Childhood Trauma Questionnaire (CTQ). The CTQ is a 40-item, 5-point Likert scale questionnaire created by Bernstein et al[14] to scan trauma experiences before the age of 18 years. Answer options include never, rarely, sometimes, common, and very common. Increased scores mean that abuse was experienced much more during childhood or adolescence. In the study by Bernstein et al,[14] the Cronbach α coefficient varied between 0.79 and 0.94. In a validity and safety study reported by Aslan and Alparslan[15] in Turkey,

for subscales of the CTQ, the Cronbach α coefficient was 0.96 (0.94–0.96). The CTQ total scores ranged from 40 to 200 and consisted of 3 subscales described as follows:

1. Emotional abuse and emotional neglect is a 19-item scale with total scores between 19 and 95.
2. Physical abuse is a 16-item scale with total scores between 16 and 80.
3. Sexual abuse is a 5-item scale with total scores between 5 and 25.[15]

Premenstrual Syndrome Scale (PMSS). The PMSS comprises 44 quinary Likert-type items developed by Gencdogan[16] to measure the symptoms of PMDD and designate its severity; confidence and concurrent validity studies have been completed. The Cronbach α coefficient for the PMSS was 0.75. This scale has 9 subdimensions for depressive effect, anxiety, fatigue, irritability, depressive thoughts, pain, appetite alterations, sleep alterations, and flatulence. The sum of all of the subdimensional scores gives the total PMSS score. The minimum score is 44, and the maximum score is 220. Higher scores demonstrate that the symptoms are intense. Whether PMS exists or not is determined by having a score exceeding 50% of the maximum limit of the total and subscale scores.[16]

Statistics

Data were analyzed using the Statistical Package for the Social Sciences, PC version 16.0 (SPSS Inc, Chicago, Illinois). A confidence interval (CI) of 95% and a 2-tailed *P* value of less than .05 were considered to be statistically significant for all analyses. Variables were tested for homogeneity of variance by using the Levene test and for normality of distribution by using the Kolmogorov-Smirnov test. Differences between groups for age, mean age at menarche, PMSS scores, CTQ total score, and CTQ subscores for emotional abuse and emotional neglect, physical abuse, and sexual abuse were tested with independent sample *t* tests. However, educational status, marital status, occupation, income status, substance abuse, family history of psychiatric disorder, diagnosis of psychiatric disorders in the family, family history of PMDD, parity numbers, history of abortion, history of curettage, history of postpartum psychiatric disorders, and history of suicide attempt were analyzed with a χ^2 test and, when appropriate, with the Fisher exact test. To determine the relationship between PMSS scores and CTQ total score and subscores (emotional abuse, emotional neglect, physical abuse, and sexual abuse), a Pearson correlation analysis was performed.

RESULTS

Of the 148 subjects who participated in the study, 78 were in the healthy control group, and 70 were in the PMDD group. The mean ± SD age in the healthy control group was 30.7 ± 6.0 years, with a range of 20 to 40 years. The mean ± SD age of the PMDD group was 29.3 ± 5.3

Table 1. Sociodemographic Characteristics of Study Participants With and Without Premenstrual Dysphoric Disorder (PMDD)[a]

Characteristic	Healthy Controls (n = 78)	Patients With PMDD (n = 70)	Statistic
Age, mean ± SD (range), y	30.7 ± 6.0 (20–40)	29.3 ± 5.3 (21–40)	NS
Marital status			
Single	32 (41.0)	30 (42.9)	NS
Married	45 (57.7)	38 (54.3)	
Widow	1 (1.3)	2 (2.9)	
Education status			
Primary school	6 (7.7)	9 (12.9)	$\chi^2 = 10.23$, $P = .01$*
High school	12 (15.4)	24 (34.3)	
University	60 (76.9)	37 (52.9)	
Occupation			
No regular job	2 (2.6)	2 (2.9)	$\chi^2 = 12.09$, $P = .01$*
Worker	7 (9.0)	13 (18.6)	
Public servant	55 (70.5)	30 (42.9)	
Housewife	9 (11.5)	14 (20.0)	
Student	5 (6.4)	11 (15.7)	
Income status			
Low	5 (6.4)	7 (10.0)	NS
Intermediate	17 (21.8)	26 (37.1)	
Upper intermediate	46 (59.0)	30 (42.9)	
High	10 (12.8)	7 (10.0)	
Substance use history			
Smoking absent	65 (83.3)	50 (71.4)	NS
Smoking present	13 (16.7)	20 (28.6)	
Alcohol absent	75 (96.2)	66 (94.3)	NS
Alcohol present	3 (3.8)	4 (5.7)	

[a]Values are presented as n (%) unless otherwise specified.
*Indicates significance.
Abbreviation: NS = not significant.

Table 2. Familial Characteristics of Study Participants With and Without Premenstrual Dysphoric Disorder (PMDD)[a]

Characteristic	Healthy Controls (n = 78)	Patients With PMDD (n = 70)	Statistic
Family history of psychiatric disorder			
Absent	70 (89.7)	47 (67.1)	$\chi^2 = 11.15$, $P = .001$*
Present	8 (10.3)	23 (32.9)	
Diagnosis of psychiatric disorder in the family			
Unipolar depression	2 (2.6)	8 (11.4)	NS
Anxiety disorder	3 (3.8)	13 (18.6)	
Somatoform disorder	0 (0.0)	1 (1.4)	
Psychotic disorder	3 (3.8)	1 (1.4)	
Family history of PMDD			
Absent	73 (93.6)	48 (68.6)	$\chi^2 = 15.48$, $P = .001$*
Present	5 (6.4)	22 (31.4)	

[a]Values are presented as n (%).
*Indicates significance.
Abbreviation: NS = not significant.

Table 3. Characteristics of the Reproductive Period in Study Participants With and Without Premenstrual Dysphoric Disorder (PMDD)[a]

Characteristic	Healthy Controls (n = 78)	Patients With PMDD (n = 70)	Statistic
Age of menarche, mean ± SD, y	12.9 ± 0.9	13.1 ± 1.2	NS
Mode of birth			
Vaginal	19 (24.4)	17 (24.3)	NS
Caesarian	18 (23.1)	10 (14.3)	
Parity			
None	41 (52.6)	43 (61.4)	NS
1 birth	16 (24.4)	11 (15.7)	
2 births	19 (22.0)	10 (14.3)	
≥ 3 births	2 (2.6)	6 (8.6)	
History of abortion			
Absent	68 (87.2)	56 (80.0)	NS
Present	9 (11.5)	14 (20.0)	
History of curettage			
Absent	70 (89.7)	59 (84.3)	NS
Present	8 (10.3)	11 (15.7)	
History of postpartum psychiatric disorder			$\chi^2 = 6.65$, $P = .003$*
Absent	77 (98.7)	62 (88.6)	
Present	1 (1.3)	8 (11.4)	
History of suicide attempt			$\chi^2 = 27.78$, $P = .024$*
Absent	78 (100.0)	65 (92.9)	
Present	0 (0.0)	5 (7.1)	

[a]Values are presented as n (%) unless otherwise specified.
*Indicates significance.
Abbreviation: NS = not significant.

Family history of psychiatric disorders was significantly higher in the PMDD group compared to the healthy control group ($\chi^2 = 11.15$, $P = .001$). Familial characteristics of the groups are shown in Table 2.

When the groups were evaluated for the presence of a family history of PMDD, it was established that having a family history of PMDD was significantly higher in the PMDD group than in the healthy control group ($\chi^2 = 15.48$, $P = .001$). Familial characteristics of both groups are shown in Table 2.

In the comparison of reproductive period characteristics, no significant differences were found between the groups in terms of age at menarche, mode of delivery, parity, and the number of spontaneous or induced abortions. However, history of postpartum psychiatric disorder was significantly higher in the PMDD group ($\chi^2 = 6.65$, $P = .003$). History of suicide attempt was also significantly higher in the PMDD group compared to the healthy control group ($\chi^2 = 27.78$, $P = .024$). Reproductive period characteristics for both groups are shown in Table 3.

A significant difference was found between PMDD subjects and healthy controls for PMSS scores and CTQ total and subscale scores. CTQ total score and subscores of emotional abuse/emotional neglect, physical abuse, and sexual abuse were higher in the PMDD group compared with the healthy control group ($P = .002$, $P = .004$, $P = .009$, $P = .012$, respectively). Comparison results between the 2 groups are shown in Table 4. Correlation analysis revealed significant positive correlations between PMSS scores and CTQ total score ($r = 0.281$, $P < .001$), emotional abuse and

years, with a range of 21 to 40 years. Sociodemographic characteristics of the healthy control group were matched with PMDD subjects as much as possible. However, in the healthy control group, being a university graduate (76.9%) and being a public servant (70.5%) were significantly higher than in the PMDD group ($\chi^2 = 10.23$, $P = .01$ and $\chi^2 = 12.09$, $P = .01$, respectively). There were no statistically significant differences between the groups in terms of smoking and alcohol history. Sociodemographic characteristics of the groups included in the study are illustrated in Table 1.

Table 4. Comparison Between Premenstrual Syndrome Scale (PMSS) Scores and Childhood Trauma Questionnaire (CTQ) Total and Subscale Scores in Study Participants With and Without Premenstrual Dysphoric Disorder (PMDD)[a]

Scale	Healthy Controls (n = 78)	Patients With PMDD (n = 70)	Statistic
PMSS score	76.74 ± 19.02	145.23 ± 22.09	$F = 1.14, P \leq .001$*
CTQ score			
Total	59.39 ± 13.02	68.02 ± 18.74	$F = 5.42, P = .002$*
Emotional abuse/ emotional neglect	30.52 ± 8.71	35.94 ± 13.11	$F = 6.92, P = .004$*
Physical abuse	23.80 ± 5.51	26.48 ± 6.79	$F = 0.99, P = .009$*
Sexual abuse	5.06 ± 0.29	5.67 ± 1.95	$F = 29.01, P = .012$*

[a]Values are presented as mean ± SD.
*Indicates significance.

emotional neglect subscores ($r = 0.233$, $P < .001$), physical abuse subscores ($r = 0.221$, $P < .001$), and sexual abuse subscores ($r = 0.222$, $P < .001$).

DISCUSSION

In the present study, patients with PMDD had higher total CTQ scores than healthy controls; they also had higher scores for emotional abuse, emotional neglect, physical abuse, and sexual abuse. A previous study also found a significant difference in physical and sexual abuse history between women with PMDD and healthy women.[11] Similar to our study, that study also used the SCID; however, the emotional abuse of participants was not evaluated. Similarly, another study found a greater proportion of women with PMDD had histories of both sexual and physical abuse compared with women without PMDD.[17] However, that study appeared to ignore emotional abuse and neglect. Contrary to these studies, our study found high rates of emotional abuse and neglect in women with PMDD. We believe that, compared to physical and sexual abuse, emotional abuse and neglect, which cannot be confirmed by medical examinations, should not be overlooked. In another study that examined risk factors for PMDD in a sampling population of young women,[10] traumatic events were emphasized and determined to be a risk factor in the development of PMDD.

A prospective, longitudinal study[18] found that traumatic events may be causal effects for PMDD. The common symptoms of irritability, anxiety, and sleep disorders in PMDD and posttraumatic stress disorder attracted notice from clinicians. The study reported that significant reductions in progesterone, allopregnanolone, and other neurosteroids during the luteal phase of the menstrual cycle contributed to the development of posttraumatic stress disorder symptoms.[18] Receptors related to anxiety are significantly affected by modulation of these hormones.[19]

History of abuse during childhood has been researched in relation to many psychiatric diseases. A study of female drug addicts found that, when childhood sexual, physical, and emotional abuse was present, drug treatment compliance was poor.[20] In a study researching the relapse

risks of cocaine addiction,[21] childhood abuse increased the risk of relapse in women, while in males, there was no such increased risk. One study reported that sexual, emotional, and physical abuse during childhood was a predictor for self-mutilation among incarcerated women.[22] This result was interpreted as the externalization of feelings related to the women's history of abuse.[22] A Turkish study reported that the suicide attempt rate was 15 times higher, and the self-mutilation rate was 39 times higher, among women who had experienced any form of abuse or neglect.[23]

Increasing evidence suggests that long-term alterations in the autonomic nervous system and hypothalamic-pituitary-adrenal (HPA) axis are produced by trauma in childhood, which may be more distinct in females.[24,25] As a result of long-term irregularities in the HPA axis caused by childhood stress, continuing sensitization of these systems may affect the balance of proinflammatory and anti-inflammatory factors. A proinflammatory state later in life is independently related to general traumatic stress and particularly early life stress.[26,27] A case-controlled study of male and female rheumatoid arthritis patients, a chronic systemic inflammatory autoimmune disorder, reported that women with rheumatoid arthritis had a significantly higher rate of emotional abuse and physical abuse with emotional neglect in childhood.[28] Other studies have confirmed that exposure to childhood events might be associated with asthma, cardiovascular and autoimmune diseases, and multiple sclerosis.[29,30] Studies are available in the literature proving physical abuse, emotional abuse, and emotional neglect are risk factors for the development of chronic headaches, including transformed migraines.[31] A study on abuse and eating disorders indicated that current eating disorder symptoms were the only significant predictor of childhood emotional abuse.[32] That study found that recent sexual assaults were related to current eating disorder symptoms. There is a need for more awareness of possible problems involving chronic pain that may be associated with abuse in light of the significant link between pain in adult life and a history of physical abuse in childhood.[33]

Numerous studies have investigated the lifetime prevalence of PMDD in the population. Estimates have found that the prevalence of PMDD symptomatology varies from 1% to 9%.[18] Epidemiologic studies have suggested that PMDD is a syndrome and report that the prevalence of PMDD is from 8.1% to 13.6%[34] and 8.3%.[35] As previous studies have demonstrated, the prevalence of PMDD might vary between different clinical settings and populations. We think that a part of the group of patients with PMDD have been overlooked or misdiagnosed with another psychiatric disorder or physical illness. Considering the association between abuse history and PMDD in our study, clinicians and researchers should be more alert for the diagnosis of PMDD when they detect a history of abuse in female patients.

When considering the limitations of our study, hormonal tests (thyroid axis hormonal measurements, HPA hormone measurements such as clonidine) were not completed to

examine the biological effects of trauma. Patients were also not evaluated for personality disorders using the SCID-II, and the low number of participants has been noted. The family history of PMDD was significantly higher in the PMDD group compared with the healthy control group, which might be a confounding factor in our results, and we suggest that this is another limitation.

In conclusion, our study is important for reporting the association between PMDD and childhood abuse in a Turkish sample. We also suggest that this study presents a novel finding showing that emotional abuse and emotional neglect during childhood could be significantly related to PMDD later in life. We emphasize the reality that childhood experiences affect both spiritual and physical health of adults positively and negatively. Just as the importance of healthy development in childhood for a country's health and productivity cannot be denied, we believe the negative effects of unhealthy childhood experiences are a concern for the future.

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