Original Paper

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Pregnancy-Onset Obsessive-Compulsive Disorder: Clinical Features, Comorbidity, and Associated Factors

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ABSTRACT:

Pregnancy-onset obsessive-compulsive disorder: clinical features, comorbidity, and associated factors

Objective: The prevalence rate of obsessive-compulsive disorder (OCD) was found to be higher in women during pregnancy and puerperium than that estimated in the general population. Additionally, the symptomatology of OCD shows several variations during the lifetime of women. Objective of the current study was to examine the clinical characteristics and comorbidity with other anxiety and mood disorders of pregnancy-onset obsessive-compulsive disorder (POCD) and to investigate factors related to POCD.

Method: The study sample was composed of three groups. The first group (POCD group) included 20 consecutive pregnant women meeting the criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) for OCD, showing an onset of OCD during their current pregnancy. The second group (non-OCD group) consisted of 207 consecutive pregnant women without any mood or anxiety disorders to assess factors associated with POCD. In addition, the study included a control group to compare the symptoms of POCD and non-pregnancy-onset OCD. The control group was composed of 40 nonpregnant female outpatients with OCD. Type and severity of obsessive-compulsive symptoms were assessed with the Yale-Brown Obsessive-Compulsive Scale (YBOCS). OCD and other anxiety or mood disorders were determined by means of the Structured Clinical Interview for DSM-IV (SCID-I). Comorbid axis II disorders were diagnosed with the Structured Clinical Interview for DSM-III-R Personality Disorders (SCID-II).

Results: The mean onset time of OCD in the POCD group was 13.3±6.35 (week5-28) gestational weeks. OCD occurred during the first trimester of pregnancy in 9 women (45%), during the second trimester in 10 (50%) women, and during the third trimester in 1 (5%) woman. The most common obsessions were contamination (n=16, 80%) and symmetry/exactness (n=6, 30%), and the most common compulsions were cleaning/washing (n=16, 80%) and checking (n=12, 60%) in POCD. Thirteen (65%) of the pregnant OCD patients met the criteria for a mood or anxiety disorder. Generalized anxiety disorder was the most frequently diagnosed axis I disorder (40%, n=8). The independent factors associated with POCD were cigarette smoking (p=0.002), the existence of an anxiety disorder at onset of pregnancy (p=0.000), and obsessive-compulsive personality disorder (p=0.003).

Conclusion: The present study suggests that POCD presents similar clinical characteristics with non-pregnancy-onset OCD. Mood or anxiety disorder comorbidity is observed in more than half of the women with POCD. Additionally, pregnant women who have at least one of 3 factors (cigarette smoking, the existence of an anxiety disorder at onset of pregnancy, and obsessive-compulsive personality disorder) seem to be at risk for POCD.

Keywords: pregnancy, obsessive-compulsive disorder, clinical features

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INTRODUCTION

Epidemiological studies suggest that obsessive-compulsive disorder (OCD) is more prevalent in females compared to males[1-4]. Similarly, OCD includes different clinical features between genders. For example, contamination obsessions and cleaning compulsions are observed more frequently in females compared to males[5,6]. In addition to the differences between the genders, epidemiology and symptomatology of OCD show several variations during the lifetime of women. For example, postpartum-onset OCD seems to be more frequently associated with aggressive obsessions compared to non-postpartum-onset OCD[7-9]). Labad et al.[10] reported that OCD patients with hoarding symptoms had the onset at menarche. Additionally, the prevalence rate of OCD was found to be higher in women during pregnancy and puerperium than that estimated in the general population[1,11-20].

Although there is an increasing body of literature examining the relationship between the stages of life and OCD in females, most studies have focused generally on the prevalence of OCD in pregnancy and the postpartum period. The published literature includes few cases of OCD induced by pregnancy. Although several studies on postpartum-onset OCD have been reported, the clinical features (e.g., frequency of obsessive-compulsive symptoms) of pregnancy-onset OCD are unknown. Moreover, to the best of our knowledge, there is no study exploring factors (e.g., family psychiatric history, psychiatric disorder at the onset of pregnancy, personality disorders and cigarette smoking) associated with pregnancy-onset OCD. Similarly, data on comorbidity in OCD during gestation are very limited.

The study aimed to answer the following questions about pregnancy-onset OCD: 1. Are there differences in the clinical characteristics of pregnancy-onset OCD and non-pregnancy-onset OCD? 2. What are the independent sociodemographic or clinical risk factors for pregnancy-onset OCD (POCD)?

METHOD

Subjects

Pregnant women were recruited from the Obstetric Outpatient Clinic of Necmettin Erbakan University, Meram Faculty of Medicine, and the Obstetric Outpatient Clinic of Faruk Sukan Child and Maternity Hospital in Konya, Turkey. Women aged eighteen or more were included in the study. Subjects with a history or presence of schizophrenia or related disorders, the presence of any gestational complications (e.g., imminent abortion, preeclampsia, placenta previa), a history of neurological disease, and concomitant severe medical illnesses (e.g., uncontrolled endocrine abnormalities, cardiovascular or pulmonary diseases) were excluded from the study.

The study sample consisted of three groups. The first group (POCD group) included 20 consecutive pregnant women meeting the criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) for OCD, showing an onset of OCD, who had not received any psychotropic medication during their current pregnancy[22]. The second group (non-OCD group) consisted of 207 consecutive pregnant women without any mood or anxiety disorder to assess factors associated with POCD. In addition, the study included a control group to compare the symptoms of POCD and non-pregnancy-onset OCD. The control group was composed of 40 non-pregnant female outpatients with OCD from the Psychiatry Outpatient Clinic of Necmetin Erbakan University, Meram Faculty of Medicine, who were parous, and had not received any psychotropic medication during previous 12 weeks. This group also had the same inclusion criteria as the pregnant women.

Measurements

The gestational week was confirmed with ultrasound screens on the basis of the last menstruation date. The diagnosis of OCD and comorbid mood and anxiety disorders in gravid

and nongravid women was made by using of the Structured Clinical Interview for DSM-IV (SCID-I)[23]. SCID-I was also used to determine mood and anxiety disorders at the onset of the current pregnancy in the pregnant women. The onset time (before or during the pregnancy) of OCD was established on the basis of reports from the pregnant women. Personal and family history of major depressive disorder and OCD were obtained based on SCID-I and reports given by the pregnant women about their first-degree relatives, respectively. Cluster C personality disorders in the three study groups were diagnosed with the Structured Clinical Interview for DSM-III-R Personality Disorders (SCID-II)[24]. SCID-I and SCID-II have been standardized for the Turkish population[25,26]. The Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) was used to determine the severity and types of obsessions and compulsions in OCD patients[27]. SCID-I, SCID-II and Y-BOCS were carried out by different psychiatrists trained in the use of interviews in each study groups. The reliability and validity of the Turkish version of the Y-BOCS has been examined and found to be as high as its original version[28]. In addition, a semistructured interview form developed by the authors was used to determine the sociodemographic features and obstetric information.

Procedures

The objectives and procedures of the study were explained to all subjects, and written informed consent forms were signed. The study was approved by the Ethics Committee of Meram Faculty of Medicine of Necmettin Erbakan University (2010-006). After the sociodemographic characteristics and results of obstetrical evaluation were recorded at the obstetrics outpatient clinics, the participants were referred to psychiatrists. Additionally, 40 non-pregnant women with OCD who were admitted to the psychiatry outpatient clinic during the same period as the pregnant group were included in the study. Following the SCID-I interview, SCID-II was performed on the subjects of the three study groups. The last instrument administered in women with OCD was Y-BOCS.

Statistical Analyses

All statistical analyses were performed using Statistical Package for the Social Sciences (SPSS), version 13.0 for Windows. All variables were tested with the Kolmogorov-Smirnov test to determine whether the test distributions were normal or not. Continuous variables normally or abnormally distributed between the groups were compared with Student's t test and Mann-Whitney U test, respectively. Fisher exact test and χ^2 tests were used to analyze 2 x 2 and 3 (or more) x 2 categorical variables between the groups. Independent factors associated with POCD were assessed using binary logistic regression analysis. Statistical significance was defined as $p<0.05$.

RESULTS

The mean age of the pregnant women (n=227) was 26.76±5.74 years (range: 18-47 years). The mean duration of gestation was 29.60±9.56 weeks (range, 5-41 weeks), and the mean number of children was 0.92 (range, 0-4) in these women. Most of the women were married (n=226, 99.6%), housewives (n=207, 91.2%), and primary school graduates (n=185, 81.5%). The trimester of the pregnancy was: first in 17 (7.5%) women, second in 53 (23.3%) women and third in 157 (69.2%) women. The proportion of unplanned pregnancy was 18.9% (n=43). Seventy-five (33.3%) subjects had a history of abortion. The number of primigravid women was 74 (32.6%).

Of the 227 women included in this study, 36 (15.9%) met the criteria for at least one cluster C personality disorder. The most common diagnoses among these disorders were avoidant (7.0%) and obsessive-compulsive (6.6%) personality disorders. Dependent (4.8%) and passive aggressive (2.6%) Axis II diagnoses were less frequent.

The mean onset time of OCD in the POCD

group was 13.3±6.35 gestational weeks. OCD occurred during the first trimester of pregnancy in 9 women (45%), during the second trimester in 10 (50%) women, and during the third trimester in 1 (5%) woman. The most common obsessions were contamination (n=16, 80.0%) and symmetry/exactness (n=6, 30.0%), whereas the most common compulsions were cleaning/washing (n=16, 80.0%) and checking (n=12, 60.0%) in the POCD group. The obsessions were related to the fetus in 1 (50.0%) of 2 women with aggressive obsessions and 7 (43.8%) of 16 women with contamination obsessions. There was no significant difference in the frequency of obsessions and compulsions on the Y-BOCS symptom checklist between POCD and non-pregnant OCD groups. However, non-gravid women with OCD had significantly higher points of Y-BOCS-obsession, Y-BOCS-compulsion, and Y-BOCS-total (Table 1).

Thirteen (65.0%) of the pregnant OCD patients had an additional mood or anxiety disorder. Comorbidity of anxiety disorders (60.0%) was more prevalent than comorbidity of mood disorders (15.0%). The most common comorbid diagnoses were generalized anxiety disorder (40.0%) and specific phobia (25.0%). When all the groups including gravid and non-gravid OCD patients were compared with regard to comorbid disorders, especially major depression and dysthymic disorder were more frequently diagnosed in non-pregnant patients. On the other hand, both groups had similar comorbidity rates of personality disorders (Table 2).

There were no significant differences between pregnant women with and without OCD in terms

Table 1: Sociodemographic and clinical characteristics of female patients with POCD and non-pregnancy-onset OCD

Variable	POCD n=20	Non-pregnancy-onset OCD n=40	p value
Age, mean±SD, years	26.55±2.14	28.02±6.24	0.343[a]
Education, n (%)			0.918[b]
Primary school	15 (75.0)	30 (75.0)	
Secondary school	4 (20.0)	7 (17.5)	
University	1 (5.0)	3 (7.5)	
Employment status, n (%)			1.000[b]
Unemployed	19 (95.0)	37 (92.5)	
Obsessive-compulsive symptoms, n (%)			
Obsessions			
Aggressive	2 (10.0)	5 (12.5)	1.000[c]
Contamination	16 (80.0)	32 (80.0)	1.000[c]
Symmetry/exactness	6 (30.0)	19 (47.5)	0.269[c]
Sexual	1 (5.0)	3 (7.5)	1.000[c]
Religious	3 (15.0)	9 (22.5)	0.734[c]
Hoarding/saving	1 (5.0)	3 (7.5)	1.000[c]
Somatic	3 (15.0)	5 (12.5)	1.000[c]
Miscellaneous	2 (10.0)	10 (25.0)	0.304[c]
Compulsions			
Cleaning/washing	16 (80.0)	32 (80.0)	1.000[c]
Checking	12 (60.0)	27 (67.5)	0.579[c]
Ordering/arranging	6 (30.0)	18 (45.0)	0.402[c]
Repeating	2 (10.0)	11 (27.5)	0.188[c]
Counting	2 (10.0)	12 (30.0)	0.112[c]
Hoarding/collecting	1 (5.0)	2 (5.0)	1.000[c]
Miscellaneous	6 (30.0)	10 (25.0)	0.760[c]
Y-BOCS scores, mean±SD			
Obsession	10.60±2.14	13.52±2.97	0.000[a]
Compulsion	11.35±2.03	13.97±2.89	0.001[a]
Total	21.95±3.68	27.50±5.37	0.001[a]

OCD: Obsessive-compulsive disorder, POCD: Pregnancy-onset obsessive-compulsive disorder
[a]t test, [b]χ^2 test, [c]Fisher's exact test

Table 2: Comorbid conditions in female patients with POCD and non-pregnancy-onset OCD

	POCD n=20	Non-pregnancy-onset OCD n=40	p valuea
Axis I diagnoses	13 (65)	28 (70.0)	0.772
Any mood disorder	3 (15.0)	23 (57.5)	0.002
Major depression	3 (15.0)	21(52.5)	0.006
Dysthymic disorder	0 (0)	8 (20.0)	0.040
Bipolar disorder	0 (0)	2 (5.0)	0.548
Any anxiety disorder	12 (60.0)	21 (52.5)	0.784
Panic disorder	1 (5.0)	8 (20.0)	0.249
Social phobia	2 (10.0)	6 (15.0)	0.707
Specific phobia	5 (25.0)	11 (27.5)	1.000
Generalized anxiety disorder	8 (40)	13 (32.5)	0.579
Posttraumatic stress disorder	0 (0)	3 (7.5)	0.544
Cluster C personality disorders	11 (55.0)	21 (52.5)	1.000
Avoidant	6 (30)	15 (37.5)	0.775
Dependent	4 (20.0)	3 (7.5)	0.208
Obsessive-compulsive	8 (40.0)	13 (32.5)	0.579
Passive-aggressive	2 (10.0)	3 (7.5)	1.000

OCD: Obsessive-compulsive disorder, POCD: Pregnancy-onset obsessive-compulsive disorder
[a]Fisher's exact test

Table 3: The sociodemographic characteristics and psychiatric histories of pregnant women with and without POCD

	POCD group n=20	Non-OCD group n=207	p value
Age, mean ± SD, years	26.55 (4.12)	26.78 (5.88)	0.860[a]
Education, n (%)			0.334[b]
Primary school	15 (75.0)	170 (82.1)	
Secondary school	4 (20.0)	20 (9.7)	
University	1 (5.0)	17 (8.2)	
Employment status, n (%)			1.000[c]
Unemployed	19 (95.0)	188 (90.8)	
Marital status			1.000[c]
Married	20 (100)	206 (99.5)	
Planned pregnancy, n (%)	16 (80.0)	168 (81.2)	1.000[c]
No. of children, mean ± SD	1.30 (1.08)	0.89 (0.95)	0.081[d]
Primigravid, n (%)	6 (30.0)	68 (32.9)	1.000[c]
History of abortion, n (%)	11 (55.0)	66 (31.9)	0.319[c]
Cigarette smoking, n (%)	6 (30.0)	10 (4.8)	0.001[c]
Family history of major depression	4 (20.0)	4 (1.9)	0.002[c]
Personal history of major depression	5 (25.0)	9 (4.3)	0.004[c]
Family history of OCD	1 (5.0)	1 (0.5)	0.169[c]
Major depression at the onset of pregnancy	1 (5.0)	0 (0)	0.088[c]
An anxiety disorder at the onset of pregnancy	9 (45.0)	4 (1.9)	0.000[c]

POCD: Pregnancy-onset obsessive-compulsive disorder
[a]t test, [b]χ^2 test, [c]Fisher's exact test, [d]Mann-Whitney U Test

of age, marital and employment status, educational level, number of children, whether primigravida or not, history of abortion, planned or unplanned pregnancy, a family history of OCD, or the existence of major depressive disorder at the onset of pregnancy. Compared to healthy pregnant women without OCD, patients with POCD had a higher rate of cigarette smoking, personal and family history of major depressive disorder, and the existence of an anxiety disorder at the onset of pregnancy (Table 3). In addition, the prevalence rate of any cluster C personality disorder and avoidant, obsessive-compulsive and dependent personality disorders were significantly

Table 4: Cluster C personality disorders in pregnant women with and without POCD, n (%)

	POCD group n=20	Non-OCD group n=207	p value[a]
Avoidant	6 (30.0)	10 (4.8)	0.001
Dependent	4 (20.0)	7 (3.4)	0.001
Obsessive-compulsive	8 (40.0)	7 (3.4)	0.000
Passive-aggressive	2 (10.0)	4 (1.9)	0.089
Any personality disorder	11 (55.0)	25 (12.1)	0.000

POCD: Pregnancy-onset obsessive-compulsive disorder
[a]Fisher's exact Test

greater in the POCD group than the control group of pregnant women without OCD (Table 4).

To determine the predictors of POCD, significantly different variables (cigarette smoking, personal and family history of major depression, personal history of OCD, the existence of an anxiety disorder at the onset of pregnancy, and avoidant, obsessive-compulsive and dependent personality disorders) in comparisons with χ^2 test, t test or Mann-Whitney-U test between POCD group and non-OCD group of pregnant women were entered into the binary logistic regression model. Cigarette smoking (B=2.00, Wald χ^2=5.04, df=1, p=0.025), the presence of an anxiety disorder at onset of pregnancy (B=4.06, Wald χ^2=22.27, df=1, p=0.000) and obsessive-compulsive personality disorder (B=2.56, Wald χ^2=9.16, df=1, p=0.002) were independent factors associated with POCD. The analysis indicated that personal (B=-0.70, Wald χ^2=0.29, df=1, p=0.587) and family (B=0.98, Wald χ^2=0.63, df =1, p=0.427) history of major depression and avoidant (B=1.08, Wald χ^2=1.05, df=1, p=0.304) and dependent (B=0.59, Wald χ^2=0.21, df=1, p=0.640) personality disorders were not significant predictors.

DISCUSSION

To our knowledge, this is the first study examining the clinical features, comorbid conditions, and predictors of POCD among pregnant women. Previous studies on this topic have mostly been conducted retrospectively on outpatients who were admitted to a psychiatry or OCD clinic, and detailed analyses of clinical features, comorbidity, and factors affecting POCD were not included. Therefore, to compare our results with those of previous similar studies is difficult.

There are limited data on the symptoms of POCD in the literature. A cross-sectional study suggested that the most common obsessive-compulsive symptoms were contamination, symmetry/exactness, and checking in pregnant women with OCD[29]. More recently, Chaudron and Nirodi[9] reported hoarding compulsions as the most common ones in addition to these symptoms. However, OCD patients included in these studies consisted mostly of subjects in whom OCD had begun before gestation.

There are two new retrospective studies carried out on clinical samples of non-pregnant OCD patients. First, Labad et al.[10] reported that contamination/cleaning symptoms were related to perinatal onset of OCD. Second, Forray et al.[30] noted that frequencies of contamination obsessions were significantly greater in the perinatal-related subgroup compared to the non-perinatal-related subgroup of OCD patients. Results of the present study support the published data in that the most common OCD symptoms are contamination obsessions and washing/cleaning compulsions in POCD. This study also demonstrated that POCD exhibits no significant differences from non-POCD in terms of frequency of obsessive-compulsive symptoms on the Y-BOCS symptom checklist.

Previous reports examining the relationship between initiation of OCD and gestational week reported that OCD usually occurs in the second or the third trimester of gestation[29,31-33]. This is, however, inconsistent with our data where OCD developed mostly within the first 28 weeks,

making the first two trimesters more important for the onset of OCD, with fewer than 5% of the cases in the third trimester. It is worth mentioning here that our study sample number was much larger than those in the other published reports referred to were.

In the current study, we found no association between the development of OCD and being primigravid. The proportion of primigravid was 30% among the pregnant women with OCD. Neziroglu et al.[34] noted that roughly half of patients who had an onset of OCD during pregnancy experienced onset with the first child. These findings are supported by retrospective studies with limited cases of pregnancy-induced OCD[7,29,31,35]. These differences between our study and other published reports may be explained on the basis of the type of patients recruited. Samples in the other studies consisted of women with OCD who had been admitted to anxiety or OCD clinics, whereas in our study the patient sample was taken from obstetrics outpatient clinics. In addition, the previous studies did not include a comparative control group composed of healthy pregnant women.

The preexisting mental status of the women appears to be a considerable factor in determining the development of psychopathologies in their reproductive life. Experiencing mood or anxiety symptoms in the antenatal period has been shown to predict postpartum depression[36-38]. Likewise, some authors reported that psychological problems before pregnancy are associated with anxiety symptoms that develop in pregnancy[39]. In the current study, the existence of any anxiety disorder at the onset of gestation was a strong factor in predicting the occurrence of OCD during gestation.

In our sample, we found no difference between pregnant women with and without OCD for family history of OCD, whereas family history of major depression was more frequent among women with OCD. Genetic factors are noteworthy in the pathogenesis of OCD[40-42]. Although it may be hypothesized that a positive family history of OCD is associated with POCD, our results did not support this. However, in this study the family histories were established on the basis of reports by the patients. We did not perform interviews with first-degree relatives of the pregnant subjects or a structured standardized diagnostic instrument for family history, which constitutes a restrictive factor for the interpretation of our results. In the present study, a personal history of major depression in addition to the family history showed no predictive value although these variables were found to be associated with POCD in bivariate analyses. Previous studies suggested that a personal history of depression determines perinatal depressive disorder[36,37,43]. Similarly, Felice et al.[13] reported that personal psychiatric history is a significant risk factor for overall anxiety disorders in the antenatal period.

Epidemiological studies demonstrate a high smoking comorbidity in patients with OCD[44]. A systematic review found an association of smoking with depressive symptoms during gestation[45]. According to our results, cigarette smoking is a predictor for POCD, which is to our knowledge, the first report suggesting this connection. Postpartum-onset OCD appears to be unrelated to cigarette smoking[8]. Therefore, to determine whether a specific relationship exists between POCD and smoking, larger prospective studies are required.

Approximately half of the patients with OCD have an Axis II diagnosis[46-49]. Several studies demonstrated that obsessive-compulsive personality disorder is the most common comorbid Axis II disorder, with a rate of 26-36%[49-51]. We found that this Axis II diagnosis is an independent determinant of POCD. Similar results for postpartum-onset OCD have been reported by a prospective study[8]. The relationship of POCD with personality disorders is unclear. A considerable number of pregnant women experience anxious intrusive thoughts[52,53]. Abramowitz et al.[54] reported that a negative interpretation of intrusive thoughts can mediate the association between obsessive beliefs and OCD symptoms during the perinatal period. Obsessive-compulsive personality disorder may

predispose a negative interpretation of intrusive thoughts. On the other hand, since no difference was found between OCD patients with and without pregnancy and non-pregnancy onset in the present study, the predictor value of obsessive-compulsive personality disorder does not appear to be specific for POCD. Moreover, it has been previously suggested that a connection exists between postpartum depression and cluster C personality disorders or styles[53-57].

OCD frequently exhibits comorbidity with other Axis I diagnoses, with the rate ranging from 48% to 92%[58-62]. Most of the studies reported that major depression at assessment is the most common comorbid disorder[60-63]. We found no data regarding comorbidity of specific Axis I disorders from the studies exploring an association between pregnancy and OCD. Although the overall comorbidity rate is similar to the results of previous studies conducted among general OCD patients, specifically generalized anxiety disorder comorbidity was the most prevalent in our patient sample with POCD. A high rate of this disorder may be related to the pregnancy itself, but this opinion should be confirmed by further studies. On the other hand, compared to non-pregnancy onset OCD, comorbidity of depressive disorders was less frequently observed among women with POCD in our sample. Whereas non-pregnancy onset OCD patients comprised of subjects who were admitted to a psychiatry clinic, pregnancy onset OCD patients were recruited from the obstetric outpatient clinic. Some authors have reported more frequent comorbidity of major depression in patients seeking medical intervention than those that do not seek health care among subjects with OCD[64]. This may explain the difference between these two groups with respect to comorbidity of depressive disorders.

The present study has several limitations affecting the generalizability of the results. (1) The sample of pregnant women consisted of subjects attending the obstetric outpatient clinic, and thus does not represent all pregnant women in the community. (2) We did not perform interviews with the first-degree relatives of the pregnant women to determine family history of major depression and OCD. The family history was based on unstructured interviews with the pregnant women about their relatives, because a structured diagnostic instrument assessing family history that is standardized for the Turkish population does not exist. (3) The onset time (whether during the current pregnancy) of OCD in pregnant women was established with retrospective recall rather than a prospective observation. However, when the entire pregnancy period was considered, it seemed unlikely that the pregnant women would misrecall the onset time of OCD. (4) In this study, comorbidity and clinical features of POCD were compared to a non-pregnant OCD group recruited from OCD patients who were admitted to a psychiatry outpatient clinic. Ideally, this comparison should be conducted with women with non-pregnancy-onset OCD who did not consult any psychiatry outpatient clinic in the community.

CONCLUSIONS

Despite some limitations, the results of the present study suggest the following: (1) Pregnancy- and non-pregnancy onset OCD seem to have similar clinical characteristics. (2) Mood or anxiety disorder comorbidity is observed in more than half of the women with POCD. (3) Women with a history of cigarette smoking, an anxiety disorder at the onset of the pregnancy, and obsessive-compulsive personality disorder have an increased risk of new-onset OCD during pregnancy compared to women who do not exhibit these characteristics. The results should confirmed by further studies that avoid the limitations of this study.

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