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ORIGINAL RESEARCH

Clinical and Sociodemographic Differences in Adult Women and Men with Obsessive-Compulsive Disorder

Deniz Adnan Çoban[1], Oğuz Tan[2], İbrahim Gündoğmuş[3]

[1] *Antalya Belek University, Department of Clinical Psychology, Antalya,Türkiye*

[2] *Üsküdar University, Department of Psychiatry, İstanbul, Türkiye*

[3] *Ankara Etlik City Hospital, Department of Psychiatry, Ankara, Türkiye*

Abstract

Objective: Gender is related to differences in the prevalences, manifestations and comorbidities of mental disorders. Findings on the effect of sex on adults with obsessive-compulsive disorder (OCD) are limited and inconsistent. We aimed to compare male and females with OCD in a large sample of adults.

Methods: We included 559 patients with OCD (299 females, 50.68%). We employed the Yale-Brown Obsession and Compulsion Scale (Y-BOCS), Hamilton Depression Rating Scale-17 (HDRS-17) and Beck Anxiety Inventory (BAI). We gathered data about the onset of illness, the years of education, marital status, long-term unemployment, history of hospitalization and suicide attempts, lifetime attention deficit and hyperactivity disorder (ADHD), tic disorder, alcohol use disorder (AUD), substance use disorder (SUD), smoking and symptom dimensions.

Results: The Y-BOCS, HDRS-17 and BAI scores were significantly higher in women. Men were characterized by earlier onset of OCD, younger age, longer years of education, higher prevalence of past or current tic disorders and higher frequency of AUD/SUD and smoking. Ratio of being married was higher among women whereas most of males were never-married. History of suicide attempt was more common among women.

Conclusion: Our research offers additional support for variations in clinical characteristics of OCD based on gender. It is essential to investigate the biological foundation of gender differences on OCD.

Keywords: Obsessive-Compulsive Disorder, Gender, Tic Disorder, Substance Use Disorder

INTRODUCTION

It is well-known that gender is important modifier of health and disease (1). Mental illness, as with a great variety of medical conditions, is influenced by gender (2). Research has also demonstrated that gender affects the epidemiology and clinical picture of obsessive-compulsive disorder (OCD) (3). Its distribution shows a bimodal pattern across sexes: Male predominance is evident in pediatric populations whereas females are more often affected by OCD during adulthood (3). Data reveal that the onset of the disease is relatively early in males compared to females (4-13). Contamination and washing dimension are more common among women while men relatively frequently suffer from taboo thoughts (6, 8-10, 13-15). OCD is reported to be more chronic in men, but more severe in women (5, 14). Comorbid disorders also differ between the two sexes (8, 13).

OCD is a heterogeneous disorder in many aspects, and gender differences may help to identify possible homogeneous subgroups (12,13). This idea may improve our understanding of the pathophysiology of OCD. It may also be useful in developing effective treatment strategies for homogeneous subgroups in the treatment of OCD patients (13,14). To the best of our knowledge, a limited number of studies have examined the effect

Corresponding Author: İbrahim Gündoğmuş, **E-mail:** dribrahim06@gmail.com

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of gender on OCD in adults and produced inconsistent results. Additionally, there are limited numbers of studies with small samples examining gender differences in the Turkish OCD patient population (6,10,15).

The present study was planned with the hypothesis that gender differences in the Turkish OCD patient population may have an effect on the clinical presentation and demographic characteristics of the patients. In order to further examine the role of gender in OCD, this study aimed to explore specific clinical characteristics across genders in a large group of Turkish patients presenting to a clinic.

METHODS

The present prospective study included 590 consecutive outpatients seeking treatment for OCD who were recruited from the Medical Faculty of Üsküdar University, from April 2011 to August 2023. The study is based on a database in which all outpatients over 18 years of age diagnosed with OCD in the Feneryolu Medical Center of the faculty were included, with no exclusion criteria, since April 2011. The diagnosis of OCD was made with a detailed mental examination and history. Various psychometric tests were applied. For the analyses of current study, patients with psychotic features, mental retardation, neurological disorders such es epilepsy, comorbid bipolar disorder, hoarding dimension and those with a score below 16 in the Yale-Brown Obsession and Compulsion Scale (Y-BOCS) were excluded. As a result, 147 out 737 patients constituting the database were not included. Sixty-two (10.60%) of 590 participants had never received pharmacological treatment or psychotherapy whereas others had used medication, with or without psychotherapy, at or before recruitment. Mean age was 31.89±10.01 (range 18-77). Females constituted 50.68 % of the sample (Table 1). Patients who scored less than 16 in the Yale-Brown Obsession and Compulsion Scale (Y-BOCS) (Goodman et al., 1989) and those who had hoarding dimension, bipolar disorder, psychotic symptoms, mental retardation and neurological diseases such as epilepsy were excluded. In addition to the Y-BOCS (16), the Hamilton Depression Rating Scale-17 (HDRS-17) (17) and the Beck Anxiety Inventory (BAI) (18) were used to estimate illness severity.

To make the diagnoses of OCD, current or past attention deficit and hyperactivity disorder (ADHD), current or past tic disorder and those disorders related to current or past alcohol or substance use, we used DSM-IV before 2013 and, after that date, the DSM-5. The DSM-IV had included such categories as alcohol abuse, alcohol dependence, substance abuse and substance dependence; the DSM-5 gathered all these under the title alcohol use disorders (AUD) or substance use disorders (SUD). We also used the terms AUD and SUD. Individuals who smoked cigarettes every day or some days were defined as current smokers whereas those who smoked fewer than 100 cigarettes in their lifetime were referred to as never-smokers. Long-term unemployment referred to people who had been unemployed for 12 months or more. There were missing values on the prevalence of ADHD, tic disorders, AUD/SUD/smoking, long-term unemployment, suicide attempts and prior hospitalizations (shown in Table 1). Missing data resulted from inaccuracies in assessments, suicide attempts before the onset of OCD and ambiguities regarding the cause of hospitalization (any suspicion as to whether the individual was hospitalized for OCD or other psychiatric conditions such as depression or substance abuse).

We assigned symptom dimensions considering the "principal" symptom questioned in the Y-BOCS. We excluded from the relevant analysis those patients who declared more than one symptom dimension as their principal symptom. Symptom types were subclassified into three main categories: washing, taboo thoughts (symptoms of religious, aggressive or sexual content and checking compulsions) and S+C+R+O (symmetry, counting, repetition and ordering). This subdivision based on previous factor-analysis al., studies. (19) The Ethics Committee of the … University approved the study.

Sociodemographic Data Form: This is a form developed by the researchers in accordance with the literature in accordance with the purposes of the study. This questionnaire collects information on various sociodemographic factors such as age, gender, marital status. It also includes information on their medical history.

The Yale-Brown Obsessive Compulsive Scale (Y-BOCS) was used to assess the severity of OCD. Y-BOC, developed by Goodman et al., serves to assess the nature and severity of obsessive-compulsive symptoms and is considered the gold standard for this purpose (16). It is widely used in clinical settings. The administration of the scale requires an interviewer with knowledge of psychopathology. When assessing symptom severity, factors such as the type, number, or content of the symptoms are not considered. There are 19 items assigned from zero to four points for each symptom,

but only the first 10 questions are used in scoring. The initial five items assess obsessions, while the sum of the following five items evaluates compulsions. The total score is then calculated by combining the obsession and compulsion scores, ranging from zero to 40. In 1993, Karamustafalıoğlu et al. conducted a reliability and validity study for the Turkish version of the scale (20).

The Beck Anxiety Inventory (BAI) was used to measure the anxiety severity. Beck et al. designed the BAI to assess the intensity of anxiety symptoms. (18) This self-report scale comprises 21 items measured on a 4-point Likert scale. The total score ranges from zero to 63, with higher scores indicating a greater severity of anxiety symptoms. The scale's validity and reliability for the Turkish population were examined in a study conducted by Ulusoy (21).

The Hamilton Depression Rating Scale (HAM-D) is employed to gauge the severity of depressive symptoms. It was initially formulated by Hamilton et al., and its Turkish version's validity and reliability were affirmed by Akdemir et al. (16, 22) In this scale, various aspects of depression are assessed, providing a standardized method for evaluating the intensity of depressive symptoms.

The study data were analyzed using SPSS 22.0 (Statistical Package for Social Sciences, IBM Inc., Chicago, IL, USA). The conformity of the data to normal distribution was tested with Shapiro-Wilk, Skewness and Kurtosis values. Descriptive data were presented with frequency and percentage for categorical variables and mean and standard deviation for continuous variables. Chi-square analysis and Fisher's exact test was used for the intergroup comparisons of categorical data. Binary comparisons of continuous variables were made using Student's t-test and Mann-Whitney U test after their conformity to normal distribution was tested. The statistical significance was $p \leq 0.05$

RESULTS

Table 1 compares men and women in terms of clinical and sociodemographic characteristics. The percentage of males and females did not significantly differ. Males were characterized by younger age at the time of recruitment ($p<0.001$), an earlier onset of OCD ($p<0.001$), longer years of education (<0.001), higher prevalence of lifetime tic disorders ($p<0.05$) and higher frequency of AUD/SUD ($p<0.01$) and smoking ($p<0.001$). Greater proportion of women were married as opposed to men who tended to remain unmarried ($p<0.001$). Females had more elevated scores on the Y-BOCS ($p<0.001$), including its compulsion subscale ($p<0.001$), while the scores on obsessions subscales were similar between the two sexes. Females also scored higher on the scales of the HDRS-17 ($p<0.01$) and BAI ($p<0.001$). Positive history of suicide attempt was more common among women ($p<0.001$) Long-term unemployment rate, history of hospitalization and prevalence of current or past ADHD did not differ significantly between the sexes.

Table 2 compares females and males with respect to symptom dimensions. The most common symptom was washing in females. As the principal symptom, 55.43% of women reported washing compared to only 27.46% of men whose principal symptom was washing ($p<0.001$). Taboo thoughts were the principal symptom in 64.75% of males and in 37.32% of females ($p<0.001$). Within the category of taboo thoughts, religious ($p<0.001$) and sexual (<0.05) obsessions/compulsions were more frequently the principal symptoms in man than in women whereas the percentages of aggressive obsessions/compulsions were similar between the sexes. Checking compulsions were also more often announced as their principal symptom by males ($p<<0.05$). S+C+R+O dimension did not differ between men and women.

The regression model that emerged in the logistic regression analysis performed to examine the variables thought to have an effect on gender in line with the basic statistics was evaluated as statistically significant ($\chi2$ (8)=35.588, $p<0.001$). Age ($p=0.023$, OR=0.955, 95% CI 0.918-0.994), Y-BOCS ($p=0.040$, OR=0.915, 95%CI 0.840-0.996) and Suicide attempt ($p<0.001$, OR=0.166, 95%CI 0.059-0.467) were detected to be significant predictors for gender according to the model. Values related to the logistic regression model are presented in Table 3.

Table 1. Comparison of males and females with OCD regarding clinical and sociodemographic features

Variable	Females	Males	p-value[1]
Number (percent)	299 (50.68%)	291 (49.32%)	NS
Age	33.67±10.43	29.97±9.21	**<.001**
Age at onset	22.52±8.97	19.25±8.90	**<.001**
Years of education	12.80±3.32	13.70±2.51	**<.001**
Y-BOCS[2] Total	26.53±6.00	24.88±5.77	**<.001**
Obsession	13.45±3.49	13.16±3.75	NS
Compulsion	13.16±3.57	11.79±4.15	**<.001**
HDRS-17[2]	18.8±8.51	16.92±	**<.01**
BAI[2]	23.73±14.72	20.36±13.62	**<.001**
Long-term unemployment rate[3] (data from 355 patients)[4]	36 out of 125 patients (28.8%)	55 out of 210 patients (26.20%)	NS
Marital status			**<.001**
Married	159 (53.18%)	90 (30.93%)	
Never-married	109 (36.45%)	183 (62.89%)	
Suicide attempt (data from 355 patients)[4]	30 out of 176 patients (17.05%)	7 out of 179 patients (3.91%)	**<.001**
Hospitalization (data from 325 patients)[4]	15 out of 160 patients (8.57%)	13 out of 164 patients (7.34%) NS	NS
ADHD[2] (data from 302 patients)[4]	26 out of 144 patients (18.05%)	36 out of 158 patients (22.78%)	NS
Tic disorder (data from 471 patients)[4]	15 out of 233 patients (6.44%)	30 out of 238 patients (12.61%)	**<.05**
Lifetime AUD/SUD[2] (data from 575 patients)[4]	8 out of 293 patients (2.81%)	24 out of 282 patients (8.51%)	**<.01**
Smoking (data from 578 patients)[4]			**<.001**
Never smokers	190 (64.85%)	132 (46.32%)	
Ever smokers[5]	103 (35.15%)	153 (53.68%)	

[1]Significant values are in bold. NS denotes "not significant."
[2] Y-BOCS: Yale-Brown Obsession and Compulsion Scale; HDRS-17: Hamilton Depression Rating Scale-17 items; BAI: Beck Anxiety Inventory; ADHD: Attention deficit and hyperactivity disorder; AUD: Alcohol use disorder, SUD: Substance use disorder.
[3]Long-term unemployment was defined as unemployment for 12 or more months. Housewives, retirees and students were not included in the analysis.
[4]Data were not available for all patients.
[5]Ever smokers include former and current smokers.

Table 2. Distribution of symptom dimensions between females and males.[1]

		Females (N=276)	Males (N=244)	p-value[2]
Washing		153 (55.43%)	67 (27.46%)	**<.001**
Taboo thoughts and checking	Total	103 (37.32%)	158 (64.75%)	**<.001**
	Religious	24	50	**<.001**
	Sexual	40	54	**<.05**
	Aggressive	27	32	NS
	Checking	12	22	**<.05**
S+C+R+O[3]	Total	20 (7.25%)	19 (7.79%)	NS
	Symmetry	7	9	NS
	Counting	4	3	NS
	Repetition	9	17	NS
	Ordering	0	0	NS

[1]Those patients who announced more than one symptom dimension were excluded from the analysis.
[2]Significant values are in bold.
[3]S+C+R+O: Dimensions of symmetry, counting, repetition and ordering.

Table 3. Logistic regression model created to determine predictors of gender.

	Estimate	S.E.	p	Odds Ratio	95% C.I. for Odds Ratio	
					Lower	Upper
Age	-0.046	0.020	**.023**	0.955	0.918	0.994
Yale-Brown Obsession and Compulsion Scale	-0.089	0.043	**.040**	0.915	0.840	0.996
Education Years	0.055	0.064	.383	1.057	0.933	1.197
Hamilton Depression Rating Scale-17	0.049	0.037	.188	1.051	0.976	1.131
Beck Anxiety Inventory	-0.023	0.019	.219	0.977	0.941	1.014
Attention deficit and hyperactivity disorder	0.687	0.491	.162	1.987	0.760	5.197
Tic disorder	0.275	0.447	.539	1.316	0.548	3.161
Suicide attempt	-1.798	0.529	**<.001**	0.166	0.059	0.467

DISCUSSION

The current study represents one of the largest clinical samples addressing gender issue in adults with OCD. About half of our patients were females. Women, compared to men, had more severe OCD, anxiety and depressive symptoms and they made more suicide attempts. Men were characterized by earlier onset of OCD, higher long-term unemployment rate despite higher levels of education, higher frequency of current or past tic disorders and more obvious propensity for lifetime AUD/SUD/smoking. Women were more likely to be married whereas men tended to remain single. History of hospitalization and past or present ADHD did not differ between the two sexes.

The percentage of females and males was similar among our subjects. Most clinical studies handling gender differences in adults have found a higher prevalence of OCD in females although the data are inconsistent (3). Three Turkish studies other than the present one detected a higher female ratio, 57 to 71% (6, 10, 15). Results from the US (4) and Japan (23) also indicated a female predominance (56% and 57%, respectively). Sixty percent of patients participating an international study across continents were women (12). Among two Brazilian studies carried out on hundreds of patients, the one with a larger sample revealed that women represented 60% of the subjects (8) while the other with a relatively small number of participants (24) was characterized by a higher proportion of men (55%). Males made up 60 to 72% of patients recruited in Spain (25) and India (7, 9, 11). An Italian sample (13) was marked with an approximately equal number of men and women as our study did.

OCD was more severe in our female subjects than in male ones. Female patients from Indian (9, 11), Spanish (25) and Brazilian (8) samples were characterized by relatively severe OCD compared to males. Other studies done in Turkey (10, 15), Brazil (24) and India (7) found no differences in the severity of OCD between men and women. Results from Italian (13, 14), Japanese (23) and South African (5) samples and from an international sample of several continents (12) indicated comparable scores on the Y-BOCS in both sexes. The only persistent implication is that no study so far has found a more severe OCD in men.

Our female patients had increased levels of anxiety and depressive symptoms compared to men. Our results are in consistence with the studies finding that females suffered more severe anxiety or depressive symptoms (8, 10, 14, 24, 25) or were more frequently affected by coexistent depression (4). Several researchers reported similar severities of depressive symptoms and anxiety (11, 12, 15, 23) or similar prevalences of comorbid major depression and anxiety disorders (5, 7, 13) between males and females. No OCD studies have detected a male predominance in susceptibility to anxiety or depression. Although females tend to have higher scores in scales evaluating clinical severity of illness, the course was reported to be worse and more chronic in males (5, 14).

Among our participants, the ratio of females who had attempted suicide was more than four times higher than that of men. Research on the relationship of suicidality and gender in OCD has failed to produce coherent results. Men and women recruited in Turkey (10) , Brazil (8) and the US did not differ in terms of history of previous suicide attempts whereas Indian women were at higher risk of suicide than males. (9) An international study found similar percentages of suicides attempts between the sexes. The most robust findings come from a Swedish study that investigated the records of more than 35.000 patients kept for 45 years, revealing that females attempted suicide more often while committed suicide was more frequent among males.

History of hospitalization, an indicator of serious illness, did not differ between sexes in the current study. This is consistent with investigations that questioned any former hospitalization among outpatients (10, 12). Studies that included only inpatients demonstrated that male to female ratios were either similar (26, 27) or that males comprised more than half of patients. (28)

Lifetime AUD/SUD was approximately three times more common in men than women among our patients. Some authors found no significant difference in the prevalence of AUD/SUD between the two sexes (5, 9, 12, 13, 15, 24) whereas others observed that men are more likely to be predisposed to AUD/SUD (4, 8, 11). Current or past smoking was also common among our male patients compared to females. In a former study of ours, we found that 70% of females with OCD had never smoked, compared to 50% of never-smokers among males. (29) An international study was relevant to our results, showing a high susceptibility of males to smoking. (30) Nevertheless, several searches did not detect a relationship between smoking and gender in individuals with OCD. (10) It seems that AUD/SUD/smoking is either more frequent among males or similar between the sexes; no study observed higher prevalence among females. However, when considering that men are much more frequently victims of addiction in general population, whether OCD increases or not the odds of AUD/SUD/smoking among females is an interesting question deserving to be investigated.

In our sample, lifetime tic disorder was almost twice as prevalent in men as in women. Males with OCD from the US were also reported to have had a history of tic disorder that was three times more common than females (4, 8, 24) demonstrated that Brazilian males also more likely suffered from tics. Other studies did not detect a gender predilection to tic disorders (5, 7, 9, 12). It is also worth noting that no study found tics more common in women; the prevalence of a history of tic disorders associated with OCD in adults are either more common in men or similar between the sexes.

The history of lifetime ADHD did not show a significant difference between our female and male patients. Few studies have looked at the relationship of this comorbidity with gender. Our results are in consistence with those of Torresan et al. (2013) (8) and Tripathi et al. (2018) (11) while Jaisoorya et al. (2009) (7) found that males more often had a history of ADHD than women. Research on children and adolescents has denied a predominance of any sex (31).

Female subjects in our sample were more likely to be washers whereas males were more frequently afflicted with taboo thoughts including sexual, religious and checking symptoms. Aggressive obsessions/compulsions did not differ between the sexes. These results are consistent with most of the literature. (6, 8-11, 13-15, 24) A comprehensive meta-analysis estimated that the sole symptom that differed between the sexes was sexual dimension that was more common in males. (32) The fact that cleanliness showed no female predilection in that review (32) is surprising but might be accounted for by the discrepancy in the methods (for example, sample selections) of the included studies. Furthermore, distribution of obsessive-compulsive symptoms between sexes is influenced by culture; for example, contamination and washing predominate in the Middle East and Asia whereas sample from the US and Europe are primarily affected by aggressive obsessions and checking. (32)

All studies, including the present one, agree that OCD emerges at an earlier age in males than in females. (4-13) Our female subjects had a high frequency of being married in comparison to males who were mostly single. This is consistent with the literature (4, 6-12, 14, 23, 24) with the sole exception of a Turkish study; Tükel et al. (2004) (15) detected no difference in marital status between genders. Social and interpersonal impairment were reported to be more marked in men. (4)

We found that men had been in school longer than women. When questioning educational status among individuals with OCD, it appears that either men are advantaged (6, 8, 11, 12, 24) or men and women are equally educated .(5, 10, 15, 23) It must also be noted that educational inequalities persist in some persists of the world, including Turkey where the current study was conducted, though much progress has been made in favor of girls' education. However, in Australia which is a developed country, pediatric OCD was reported to be associated with early school leaving. (33)

On the other hand, long-term unemployment rate was similar between our male and female participants. Among the few studies investigating employment status, those from South Africa and Brazil detected higher unemployment rates among males (5, 8) whereas a more recent international study found employment status similar between men and women (12), consistent with our results. It also be noted that the definition of unemployment is unclear in OCD research, making it difficult to compare results. We chose "long-term" unemployment since it is a more reliable indicator

of severe occupational disability than short-term unemployment. Males in a Japanese sample were characterized by more marked social and occupational impairment (23) whereas Brazilian males with OCD were of higher socioeconomic status. (24)

Several attempts have been made to explain gender disparities in OCD. Research has revealed structural (34), genetic (35) and endocrine (25) differences between males and females with OCD. Our current state of knowledge is far from explaining why men and women present dissimilar manifestations. Unfortunately, the effect of culture remains to be investigated.

One of the advantages of our study is its large sample. Only two studies had larger sample sizes than ours, a Brazilian study with 858 subjects (8) and an Indian sample including 945 participants (11) . The two Turkish studies comparing female and male adults with OCD included 169 (15) and 198 patients (10), respectively. The current study sheds light on the occupational disability associated with OCD. This is important as working life is marked by gender inequalities, not to mention illness-related problems. Surprisingly, few studies have addresses loss of occupational functioning in OCD and they are marred by a precise definition of unemployment. We defined long-term unemployment more clearly than previous studies. On the other hand, our data on ADHD have the potential to contribute to the literature since our patients were adults whereas most studies on ADHD have been conducted in pediatric samples. Cross-sectional design is the chief shortcoming. The diagnoses of past ADHD and past tic disorder were based on the interview with the participant and subject to recall bias. Eating disorders, skin picking, and specific phobias were not evaluated can be considered among the limitations. This limitation is also true for most adult studies of OCD.

We found that OCD, among females, was associated with more severe symptoms and more common history of suicide attempt though marital status was less influenced. Men were more educated, suffered more often from tic disorders and were more prone to AUD/SUD/smoking. More than half of women were washers whereas taboo thought and checking compulsions prevailed among men. Our results are consistent with some of the studies. Discrepancies among studies can be partially accounted for by heterogeneity among samples. Future studies investigating the effect of culture on the relationship between OCD and gender issue will contribute greatly to the literature. The influence of gender on response to treatment remains to be clarified through prospective research.

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