

# The predictors of occupational disability in obsessive-compulsive disorder in a large clinical sample

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## Abstract

**Aim:** Obsessive-compulsive disorder (OCD) is a common mental disorder leading to severe loss of functioning. We aimed to investigate socio-demographic and clinical factors affecting occupational disability in OCD.

**Material and Methods:** It is a cross sectional study with individuals recruited from an outpatient psychiatry clinic. A total of 393 patients were given the Yale-Brown Obsessive Compulsive Scale (Y-BOCS), Hamilton Depression Rating Scale-17 Item (HAM-D), Beck Anxiety Inventory, Barratt Impulsiveness Scale-11 and Wender Utah Rating Scale. Occupational disability was defined as the inability to work over the past month due to psychopathology associated with OCD. Housewives, students and retired people were excluded.

**Results:** The rates of occupational disability were 52.9% in the whole sample, 44.3% in men and 60% in women. Higher Y-BOCS scores, higher HAM-D scores, being single, female gender, younger age at first treatment, less school years and previous suicide attempt were associated with a higher risk of occupational disability. The BAI scores, previous hospitalization, age at onset, smoking, childhood ADHD and past or present tic disorder did not statistically affect occupational status.

**Conclusions:** OCD is associated with serious occupational disability causing inability to work in more than half of patients. The severity of OCD and depressive symptoms, marital status, gender, education level, age at first treatment and history of suicide attempt predict occupational disability.

**Keywords:** Occupational disability; disability; functioning; obsessive-compulsive disorder; impulsivity; Attention Deficit and Hyperactivity Disorder (ADHD).

## INTRODUCTION

Obsessive-compulsive disorder (OCD) is a chronic mental disorder which affects approximately 1-3% of the community and leads to loss of functioning in familial, academic, occupational and social life (1-3). Based on the data of the World Health Organization, it is one of the first ten among the non-fatal physical and mental illnesses influencing functioning negatively (2,4). OCD has been shown to cause 5.7% of the cost of all the mental disorders and 2.2% of the total disability (5). Its high prevalence (1), tendency to emerge at young age (6) and be chronic, and limited success of treatment in a considerable portion of cases make this illness a serious individual, social and economic burden (7). Several studies have revealed that OCD disturbs functioning, social relations and quality of life at least as negatively as schizophrenia (7-9). It was reported that on work performance, daily living skills, patients with OCD were significantly more impaired than

hospitalized patients with depressive disorder (10).

The 'Epidemiologic Catchment Area (ECA)' study demonstrated that 22% of OCD patients were unable to work due to the illness, 24% of them lived at a low socio-economic level and 16% received disability payment (11). The ones at the lowest socio-economic status were 2.5 times more than the highest group. Other OCD studies conducted in various countries including the U.S., Sweden, Germany, Britain, Spain, Brazil and Turkey have revealed much higher rates of inability to work varying from 34 to 67.5%. (12-22).

Although several studies investigated quality of life in OCD (2,8,9), few of them have focused on factors associated with occupational disability (16,23). In the present study, we have aimed to compare OCD patients who work and cannot work with respect to demographic and clinical features.

**Received:** 14.05.2019 **Accepted:** 30.05.2019 **Available online:** 03.07.2019

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## MATERIAL and METHODS

### Participants

A total of 393 OCD patients for recruiting treatment (185 women [48.3%] and 208 men [51.7%]) between the ages of 18 and 65 who applied consecutively to Uskudar University Feneryolu Neuropsychiatry Center between February 2014 and May 2018 comprised the sample of this cross-sectional-type study. Patients were diagnosed according to the DSM-5. Since attention deficit and hyperactivity disorder (ADHD) and tic disorder frequently accompany OCD and might alter its clinical picture, we also detected them (24). The criteria to be excluded from the study were determined as; a) being a housewife, retired or student, b) having a physical illness which prevents being employed, c) having epilepsy, sequel-causing neurological diseases or a history of head trauma, d) having mental retardation, bipolar disorder or psychotic disorders, e) being illiterate, f) deficiency in cognitive abilities that hamper filling the questionnaires.

Uskudar University Noninvasive Research Ethics Committee approved the study and all participants signed an informed consent form. The study-based rights of patients were protected by the principles of Helsinki Declaration.

## RESULTS

The definition of occupational disability was based on the approach of the baseline version of the Longitudinal Interval (LIFE-BASE) Follow-up Evaluation (25). The LIFE-base, a semistructured interview, assesses functioning over the past month in psychiatric disorders. Occupational disability was defined as inability to work because of psychopathology associated with OCD through 7-point Likert scale (1 = no impairment, 6 = not working due to psychopathology). According to the LIFE-BASE scale, the patients who received the code 0 (0 = Not applicable; did not work for reasons other than psychopathology, exp. Student, housewife etc.) and those who received the 6 code (6= No information) were excluded from the study. The LIFE-BASE scale is considered to be "employed" in the 1, 2 and 3 codes, and the 4 and 5 code are considered "unemployed".

The Yale-Brown Obsessive Compulsive Scale (Y-BOCS) was developed by Goodman et al. (1989) in order to measure the type and severity of obsessive-compulsive symptoms (26). The test administered by the interviewer consists of a total of 19 items, but only the first 10 items are used to determine the total score. Rated on a 5-point Likert scale ranging from 0 (no symptoms) to 4 (severe symptoms). The total score ranges from 0 to 40 and consists of two sub scores for compulsions (range 0 to 20) and obsessions (range 0 to 20). Since evidence has gradually been accruing that compulsivity and impulsivity considerably overlap and influence each other reciprocally, we gathered data about impulsivity (27). The score of each problem varies between 0-4. The Turkish adaptation and validity-reliability study was conducted by Karamustafalioglu et al (1993) (28).

The Barratt Impulsiveness Scale-11 (BIS-11) was employed to determine the levels of impulsiveness levels (29). It consists of thirty items and has three subscales; attentional impulsiveness, motor impulsiveness and non-planning. When evaluating BIS-11, 4 different sub-points are obtained; total points, non-planning, attention and motor impulsivity. The higher the total BIS-11 score, the higher the person's impulsivity level. The Turkish validity and reliability study of BIS-11 was conducted by Güleç et al (30).

The Wender Utah Rating Scale (WURS) was used to question the childhood attention deficit and hyperactivity (ADHD) symptoms. The scale was developed in 1993 by Ward and Wender (31). The scale consists of 61 items and each item is scored between 0 and 4 points. The cut-off value was determined as 46. Those who are above this value are diagnosed with ADHD in childhood (31). The Turkish validity and reliability study of the scale was conducted by Öncü et al. (2005) (31).

The Hamilton Depression Rating Scale-21 item (HAM-D) was used to measure the severity of depressive symptoms. It was developed by the interviewer to determine the severity of depressive symptoms and the level of depression (33). 21-item form was used in our study. The Turkish adaptation and validity-reliability study was conducted by Akdemir et al. (1996) (32).

The Beck Anxiety Inventory (BAI) was used to measure the severity of anxiety. Beck et al. (1988) developed a 21-item scale to determine the severity of anxiety symptoms (35). The total score varies between 0-63. Turkish adaptation was done by Ulusoy et al. (1998) (33).

### Statistics

SPSS for Windows 20.0 was used for statistical analysis. Pearson chi-square test was used for the comparison of categorical data between two groups. For continuous variables, Student's T-test was employed in case of normal distribution and Mann-Whitney U test when distribution is not normal.

To examine the potential predictors (independent variables) for patients who are unemployed (dependent variable: employed = 1, unemployed = 0), multivariate binary logistic regression analysis was used. P values lower than 0.05 were accepted significant in the statistical analyses.

## RESULTS

Categorical variables including some socio-demographic and clinical data are presented in Table 1. 52.9% of our total sample (N=208) were unable to work. Sixty percent of female (N=111) and 44.3% (N=92) of male participants had occupational disability. Being single ( $p<0.001$ ), female gender ( $p=0.002$ ) and a history of suicide attempt ( $p=0.01$ ) were risk factors for occupational disability. Previous hospitalization, smoking, childhood ADHD and tic disorder did not statistically affect occupational disability.

The comparison of numerical data is shown in Table 2.

Those who had and did not have occupational disability differed significantly regarding the years of education, age at first treatment, the scores of the HAM-D and Y-BOCS. More school years ( $p<0.001$ ), older age at first treatment ( $p<0.001$ ), lower scores of the Y-BOCS ( $p<0.001$ ) and HAM-D ( $p=0.016$ ) were associated with less risk for occupational disability. Age, age at onset and the scores of the BIS and BAI did not differ significantly.

Principal symptom dimensions are compared in Table 3. In our sample, only those individuals whose principal symptom dimension was sexual are statistically more

employed, compared to the whole sample ( $p=0.018$ ). There is no statistical difference when contagion-dirt, religious, aggression, repetition, control, symmetry and other dimensions are compared with the whole sample.

The multivariate logistic regression analysis suggested that patients who are with occupational disability were more likely to be female (Odds ratio,  $OR=3.31$ , 95% CI 1.25 to 8.74,  $p = 0.015$ ), and less likely to have education years ( $OR=1.22$ , 95% CI 1.06 to 1.41,  $p=0.005$ ) (Table 4). The model explained 28.5% (Nagelkerke  $R^2$ ) of the variance, with an overall correct classification of 73.5%.

**Table 1. Relation of Occupational Disability to Categorical Variables**

	Total	Patients with occupational disability		Patients without occupational disability		$\chi^2$	df	p
	N	%	N (%)	N (%)				
Total	393	100	185 (47.1)	208 (52.9)				
Gender								
Female	185	48.3	74 (40.0)	111 (60.0)	9.750	1	<sup>a</sup> 0.002**	
Male	208	51.7	116 (55.7)	92 (44.3)				
Marital Status								
Married	177	44.7	103 (58.2)	74 (41.8)	16.729	1	<sup>a</sup> <0.001**	
Single	216	55.3	81 (37.5)	134 (62.5)				
Suicide Attempt								
No	103	86.6	48 (46.6)	55 (53.4)	6.611	1	<sup>a</sup> 0.01**	
Yes	16	13.4	2 (12.5)	14 (87.5)				
Previous Hospitalization								
No	111	94.1	48 (43.2)	63 (56.8)	0.580	1	<sup>a</sup> 0.446	
Yes	7	5.9	2 (28.6)	5 (71.5)				
Smoking								
No	213	54.1	94 (44.1)	119 (55.9)	0.253	1	<sup>a</sup> 0.615	
Yes	180	45.9	84 (46.7)	96 (53.3)				
Childhood ADHD								
No	43	17.9	17 (39.5)	26 (60.5)	0.779	1	<sup>a</sup> 0.377	
Yes	197	82.1	92 (46.9)	104 (53.1)				
Past or Present Tic Disorder								
No	277	93.9	5 (27.8)	13 (72.2)	2.401	1	<sup>a</sup> 0.121	
Yes	18	6.1	128 (46.5)	147 (53.5)				

<sup>a</sup>Pearson chi-square test, \* $<0.05$ , \*\* $<0.01$

**Table 2. Relation of Occupational Disability with Numerical Variables**

	Mean±SD	Mean±SD	T/Z	p	
Age	33.05±6.62	31.56±11.86	1.508	<sup>a</sup> 0.132	
Education Years	14.45±2.46	12.56±2.96	-7.056	<sup>b</sup> <0.001**	
Age at onset	20.27±9.46	19.06±10.07	-1.712	<sup>b</sup> 0.087	
Age at first treatment	24.45±9.73	22.56±9.74	-3.916	<sup>b</sup> <0.001**	
Time without treatment	4.98±6.41	3.58±5.65	-1.454	<sup>b</sup> 0.146	
BIS-11	Total	62.23±10.83	61.01±10.47	0.182	<sup>a</sup> 0.855
	Motor	16.75±4.03	16.89±4.15	-0.294	<sup>a</sup> 0.769
	Attentional	18.81±4.44	18.75±4.54	0.115	<sup>a</sup> 0.909
	Non-planning	26.66±4.79	26.35±4.76	0.583	<sup>a</sup> 0.561
HAM-D	13.98±7.73	15.90±7.76	-2.424	<sup>a</sup> 0.016*	
BAI	19.97±13.54	19.91±12.92	-0.040	<sup>a</sup> 0.968	
WURS	29.73±15.87	31.32±19.96	-0.656	<sup>a</sup> 0.513	
Y-BOCS	Total	20.36±6.84	23.01±7.47	-3.578	<sup>a</sup> <0.001**
	Obsession	11.23±4.00	12.04±4.52	-1.874	<sup>a</sup> 0.062
	Compulsion	9.04±4.87	10.97±5.03	-3.846	<sup>a</sup> <0.001**

<sup>a</sup>Student's T-Test, <sup>b</sup> Mann-Whitney U Test, BIS-11; Barratt Impulsivity Scale-11, Y-BOCS; Yale-Brown Obsession Compulsion Scale, HAM-D; Hamilton Depression Rating Scale, BAI; Beck Anxiety Inventory, WURS; Wender Utah rating Scale, \* $<0.05$ , \*\* $<0.01$

**Table 3. Occupational Disability According to Principal Symptom Dimension**

Obsession Type	Total		Patients with occupational disability n (%)	OCD patient without occupational disability n (%)	Obsession Type & Total			Total		
	n	%			X <sup>2</sup>	df	p	X <sup>2</sup>	df	p
Contamination	115	29.3	47 (40.9)	68 (59.1)	2.512	1	*0.113	9.095	7	*0.246
Sexual	74	18.8	44 (59.5)	30 (40.5)	5.613	1	*0.018*			
Religious	53	13.5	28 (52.8)	25 (47.2)	0.815	1	*0.367			
Aggression	47	12.0	20 (10.8)	27 (13.0)	0.438	1	*0.508			
Repetitive	23	5.9	8 (34.8)	15 (65.2)	1.481	1	*0.224			
Checking	22	5.6	11 (50.0)	11 (50.0)	0.080	1	*0.777			
Symmetry	10	2.5	4 (40.0)	6 (60.0)	0.206	1	*0.650			
Other	49	12.5	23 (46.9)	26 (53.1)	0.000	1	*0.984			

\*Pearson Chi-square Test, \* <0.05, \*\*<0.01

**Table 4. Logistic regression analysis for predictors of occupational disability**

	β	S.E.	P	Odds Ratio	95% Confidence Interval	
					Lower	Upper
Gender (Female)	1.199	0.494	0.015	3.318	1.259	8.745
Marital Status, (Married)	-0.857	0.508	0.092	0.424	0.157	1.149
Education Years	0.204	0.072	0.005	1.226	1.064	1.413
Suicide Attempt (No)	-1.029	0.879	0.242	0.358	0.064	2.003
Age at first treatment	0.046	0.027	0.088	1.047	0.993	1.105
Hamilton Depression Scale	-0.046	0.035	0.193	0.955	0.892	1.023
Y-BOCS Total Score	0.029	0.039	0.461	1.029	0.954	1.110

Y-BOCS; Yale-Brown Obsession Compulsion Scale

## DISCUSSION

The main result of the study is that more than half (52.9%) of OCD patients were afflicted with occupational disability. We found that being married, male gender, lack of suicide attempt in history, more school years, older age at the first treatment, less severe OCD, less severe depressive symptoms and sexual obsessions as principal symptoms are associated with a lower risk of occupational disability. This group of unemployed patients was characterized by being more likely to be female and having less educational year. To the best of our knowledge, the present study is the first one examining the features of the patients with OCD who had and did not have occupational disability in a large clinical sample in Turkey.

It is well-established that unemployment in individuals with chronic mental illnesses are due to disability, labeling, prejudice and discrimination (16,23). Unemployment rates of patients with OCD have been found between 22% and 67.5% in literature. (11,13-18, 20-22) The ECA study, as mentioned in the Introduction, found that 22% of OCD patients were unemployed (11) and 16% of them were receiving disability payments (18). American

authors reviewing OCD announced that 40% of patients were chronically underemployed or simply unemployed (34). Two later northern American studies done in clinical samples found that 34% of 197 patients (13) and 38% of 238 patients (16) were unable to work due to their psychopathology. In Germany, three studies declared the percentages of unemployment in OCD as 33.7 (N=89, Mavrogiorgou et al., 2015 (17), 50 (N=20, Grabe et al., 2000 (15) and 54.93 (N=75, Stengler-Wenzke et al., 2006 (21). A British study screening 8580 people in general population reported that out of 114 individuals with OCD, 52.9% were unemployed or in an inactive working status (22). In Spain, 40.6% of 64 patients were unemployed in the study by Rodrigues-Salgado et al. (20) In a Brazilian sample, unemployment rates were 60.9% (N=23) in refractory cases and 23.1% (N=23) in treatment-responsive ones. (14) Another study conducted in Turkey, as the current one, found an unemployment rate of 67.5% in 40 patients (39). It seems that all studies have reported high levels of unemployment and disability even in developed countries though some differences in figures. The discrepancy between the rate we found (52.9%) and that reported by the other Turkish study (67.5%, Cicek et al. 2013 (35) might be due to socioeconomic disparities between the cities where researches were conducted. Our study was done in Istanbul, the economic and cultural center of Turkey; the other study was conducted in Konya, which is too less industrialized than Istanbul. Indeed, unemployment rate in controls in that study in Konya was as high as 57.5% and not significantly differed from the rate in patients.

Institutions estimating employment statistics use various terms such as labor force and labor force participation rate in addition to employment and unemployment. In their terminology, the word employment or unemployment rate implies only job seekers and exclude the disabled. None of the OCD studies we have mentioned have applied such a differential vocabulary and they scarcely remarked a precise definition of unemployment. It seems that these studies have referred to not working during data collection, regardless of its reason (not seeking for job, failure to find a job though willingness or disability), as unemployment. Only Mancebo et al. (2008) (16) discarded this ambiguity and gave a clear-cut designation: They avoided the

term unemployment, instead, they chose "occupational disability" based on the LIFE-base. We also adopted this term and description.

Previous studies have shown that unemployment rate is 75-90% in schizophrenia (36), 30-60% in bipolar disorder (37), 30-40% in depressive disorders (38). Several risk factors including disease severity, response or non-response to treatment, number of attacks, alcohol-substance use, age, gender, marital status, education level, and stigmatization have been reported to affect employment status. (37-39) When a few non-psychiatric diseases are exemplified, it seems that unemployment rate is 56% in Parkinson's disease, 48% in multiple sclerosis, 12.6% in osteoarthritis and 39% in Chron's disease (39). These figures confirm that OCD is one of the most disabling disorders among all medical conditions.

We found that the severity of OCD and depressive symptoms influence occupational disability (the mean Y-BOCS score was 23 in our patients with occupational disability and 20.36 in those without occupational disability; HAM-D scores 15.9 and 13.98, respectively). Mancebo et al. (2008), consistently with our results, estimated that patients with and without occupational disability had mean Y-BOCS scores of 26.53 and 21.30 and 24-item HAM-D scores of 16.07 and 9.12, respectively (16). Other studies did not report disease severity in employed and unemployed patients differentially. Eisen et al. (2006) found a correlation between work impairment and disease severity (13). The mean Y-BOCS and 21-item HAM-D scores of their whole sample including employed and unemployed individuals were 21.41 and 11.44, respectively. Furthermore, we found that the subjects with a history of suicide attempt were at a higher risk of unemployment. This finding is pertinent with those mentioned above since suicide attempt usually indicates more severe illness.

Our female and single patients were also more likely afflicted with occupational disability. Gender inequality is in occupational life a well-known unfortunate fact regardless of the presence of disability although it has dwindled in time (It is also well-established that unmarried and widowed men and women are more likely unemployed than those who are married (U.S. Department of Labor). Besides, a 15-year prospective follow-up study reported that the two best predictors of remission in OCD are being married and absence of depression (40).

Mancebo et al. (2008) found that OCD patients with and without occupational disability differed in severity of OCD and depressive symptoms, previous hospitalization, comorbid mood disorder and substance use (16). On the other hand, their patients having and not having occupational disability did not differ in age at onset, age at first treatment, duration of illness, gender, age group, marital status, educational level. That study was conducted in the U.S. and the current one in Turkey. Hence, it is problematic to explain the inconsistencies between their study and the current one because the two countries greatly differ socioeconomically and culturally.

The finding that the scores of compulsion but not obsession are associated with occupational disability remains to be investigated by further studies since no study has so far handled this questioned and our design does not allow interpreting it. Perhaps one may think that compulsions can more seriously impair Professional functioning than obsessions can since compulsions are usually acts rather than thoughts. The severity of anxiety, age at onset of OCD, history of childhood ADHD, comorbidity with past or present tic disorder, levels of impulsiveness, previous hospitalization, smoking status have not been found to be associated with occupational disability.

Our study should be interpreted with some limitations. Firstly, our results are limited with a clinical sample and cannot be generalized to community samples. Secondly, the results are based on the cross-sectional data and the detailed information related to inability-to-work period has not been collected. Moreover, the study is not a monitoring one. Thirdly, the treatments of the patients have been ignored. Pharmacological and cognitive-behavioral therapies can affect occupational disability. Fourth, our study did not include a control group. Lastly, if any, allowance and disability payments, which patients receive due to OCD, have not been questioned.

## CONCLUSION

Occupational disability caused by OCD is a serious problem to the extent that more than half of individuals with OCD except those who are housewives, students and retired are unable to work over some period in their life. While literature up to now is mostly focused on the general burden of OCD; the present study, with a more analytical approach, researched the socio-demographic and clinical parameters associated with occupational disability. Not surprisingly, the more severe OCD and depressive symptoms, the higher the risk of occupational disability is. More educated, male and married individuals with OCD are more likely employed. Having been introduced to treatment at earlier age and having attempted for suicide also predict occupational disability. Our major findings support substantially the results of the previous studies. In biological and psycho-social treatments, more progress is needed in order to improve the occupational functioning. The support, training and adaptation programs are greatly needed to decrease the financial burden on the patients with OCD and their relatives and improve the occupational functioning. We also believe that our results have important social and economic functioning effects.

*Competing interests: The authors declare that they have no competing interest.*

*Financial Disclosure: There are no financial supports*

*Ethical approval: Uskudar University Noninvasive Research Ethics Committee approved an approved consent form.*

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