Research Article

Alcohol, Substance and Nicotine Use in Adults with Obsessive-Compulsive Disorder and Comorbid Tic Disorder

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Abstract

Aim: Few studies have investigated the effect of tic disorder (TD) co-occurring with obsessive-compulsive disorder (OCD) on smoking, alcohol use disorders (AUD) and substance use disorders (SUD). The present study aimed to investigate whether the presence of TD in adults with OCD is associated with differences in AUD/SUD, smoking, and adult-life variables including education, unemployment, marital status, and suicide attempts. **Materials and Methods:** In this cross-sectional observational study, we examined 559 adults with OCD, with or without TD, in terms of smoking, alcohol and substance use disorders (AUD/SUD) and adult-life variables including education, unemployment, marital status and suicide attempts (SA). **Results:** Fifty-four patients (9.66%) had current or past TD. Individuals with and without TD had similar prevalence of AUD/SUD and smoking and similar severity of OCD, anxiety and depressive symptoms. OCD+TD group was characterized by earlier OCD onset, male predominance, and low marriage prevalence. Educational attainment, unemployment rate and history of SA did not show any difference. **Conclusion:** TD accompanying OCD in adults does not worsen OCD severity, predisposition to harmful substances, educational attainment, unemployment rate or history of SA, although it appears to influence marital status.

Keywords: Obsessive-compulsive disorder, tic disorder, alcohol use, substance use, smoking.

Introduction

Obsessive-compulsive disorder (OCD) and tic disorder (TD) frequently co-occur and share similar patterns of phenomenology.[1] Both disorders involve the frontostriatal circuit, producing repetitive and stereotypic behavior.[2] As a result, the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) introduced a tic-related specifier for OCD indicating whether the patient has a current or lifetime TD. OCD accompanied by TD (OCD+TD), compared to OCD without TD (OCD-TD), has been reported to show distinct characteristics including early onset, male predominance and difference in symptom dimensions and other comorbid conditions.[1]

Individuals with TD have a high risk of alcohol use disorders (AUD) and substance use disorders (SUD).[3] The literature on the relationship of OCD with AUD/SUD is inconsistent, some studies showing a high comorbidity while others suggesting even a protective effect of OCD against AUD/SUD.[4,5] The erratic pattern of the link between AUD/SUD and OCD is extraordinary since nearly all mental disorders heighten the inclination to AUD/SUD.

The literature on OCD+TD is chiefly focused on pediatric population because TD almost always begins in childhood and most cases remit towards early adulthood. Few studies searching this comorbidity in adults have reported results regarding AUD/SUD. We investigated the prevalence of AUD/SUD and smoking in adults suffering from OCD+TD and OCD-TD. We also examined sociodemographic features principally involving adult life including educational attainment, unemployment rate, marital status, and history of suicide attempts (SA).

Materials and Methods

Five hundred fifty-nine adult outpatients seeking treatment for OCD were recruited at the Medical Faculty of Uskudar University, from June 2014 to August 2023. Mean age was 31.97±10.94 (range 18-77). Females constituted 46.15% of the sample. Patients with psychotic symptoms, bipolar disorder, mental retardation and neurological diseases such as epilepsy were excluded. Fifty-four participants (9.66%) had any TD (including Tourette's disorder and persistent or provisional motor or vocal tics) at the time of recruitment or in the past. The diagnoses of OCD and any TD were made according to the DSM-5. Tics were also evaluated using the Yale Global Tic Severity

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Scale.[6] Lifetime (current or past) AUD, SUD and smoking were questioned. The Yale-Brown Obsession and Compulsion Scale (Y-BOCS),[7] Hamilton Depression Rating Scale-17 (HDRS-17),[8] and Beck Anxiety Inventory (BAI)[9] were employed to estimate illness severity. Chi-square tests, t-test, and Mann-Whitney U test were used depending on whether a parametric or non-parametric test was appropriate. All statistical analyses were performed using IBM SPSS Statistics for Windows, version 25 (IBM Corp., Armonk, NY, USA).

Results

Table 1 summarizes the results. The prevalence of AUD, SUD and smoking did not differ significantly between OCD+TD and OCD-TD groups. The scores of the Y-BOCS (including its subscales of obsession and compulsion), HDRS-17 and BAI were similar. Years of education, unemployment rate, and history of SA did not show difference. The individuals with OCD+TD had an earlier onset of OCD (p=0.0063), were predominantly male (p=0.012) and less likely married (p=0.0067).

Table 1. The comparison of patients with OCD having and not having lifetime TD.

		OCD+TD (n=54, 9.66%)	OCD-TD (n=505, 90.33%)	p-value
Age		30.54±9.60	32.12±10.20	NS
Gender	**Female**	31.48% (n=17)	49.7% (n=251)	**p=0.012***
	Male	68.52% (n=37)	50.3% (n=254)	
Y-BOCS		24.21±7.11	23.79 ±7.47	NS
Obsession		12.92±4.21	12.45±4.21	NS
Compulsion		11.64±5.05	11.41±4.74	NS
HDRS-17		17.15±7.43	16.71±8.78	NS
BAI		19.57±12.17	21.24±14.25	NS
AUD/SUD (lifetime)		9.62% (n=5)	5.2% (n=26)	NS
Smoking (lifetime)[1]		57.45% (n=31)	45.74% (n=231)	NS
Age at onset		17.53±8.13	21.42±9.37	**p=0.0063***
Education years		13.11±3.16	13.26±2.96	NS
Unemployment rate		29.41%	25.08%	NS
Unemployed/Employed (n)[1]		10/24	74/221	
Percentage of the married		25.93%	45.15%	**p=0.0067***
Married/Others(n)[2]		14/40	228/277	
History of any suicide attempt		12%	9.36%	NS
Yes/No (n)[1]		6/44	30/290	

* Significant.

[1]Total number is not equal to that of the whole sample because of missing values.

[2]"Others" include those who are never-married, divorced and widows/widowers.

Abbreviations: OCD: Obsessive-compulsive disorder; TD: Tic disorder, NS: Nonsignificant, Y-BOCS: Yale-Brown Obsession and Compulsion Scale, HDRS-17: Hamilton Depression Rating Scale-17 Items, BAI: Beck Anxiety Inventory, AUD: Alcohol use disorders, SUD: Substance use disorders.

Discussion

We found that adults with OCD and comorbid TD did not differ from those without TD in lifetime AUD/SUD, smoking, OCD severity, anxiety, depressive symptoms, or history of SA. The OCD+TD group was mainly distinguished by earlier OCD onset, male predominance, and lower marriage rates.

To the best of our knowledge, only five studies screened the comorbidity of AUD/SUD with OCD accompanied by TD in adults. Four out of them reported an increased prevalence of AUD/SUD,[10-13], in contradiction to our results. It is noteworthy that Hirschtritt et al.[13] who included young adults as well as adolescents and children with Tourette syndrome, found that accompanying OCD increased the risk of SUD even more than did the comorbidity of ADHD, which is a well-known risk factor for all kinds of addictive behavior. Only the most recent study[14] denied the detrimental role of OCD+TD co-occurrence on AUD/SUD: The follow-up of a pediatric cohort with Tourette syndrome for 5.6 years showed that the co-existence of OCD was associated with a lower prevalence of alcohol consumption among 227 individuals at the average age 18.5 years (with a range of 11-26). Furthermore, increased severity of OCD was related to a decrease in the use of nicotine and several illegal substances.

A close examination of the OCD literature reveals a paradoxical and inconsistent relationship between OCD and substance use. Epidemiological studies, which predominantly include individuals with milder forms of OCD, often report higher rates of AUD/SUD compared to the general population.[4] In contrast, clinical samples of treatment-seeking patients tend to show lower or similar rates to those observed in the general population, whereas substance use appears to increase again in more severe forms of OCD, giving rise to a U-shaped relationship as proposed by Cuzen et al.[4] This pattern has been attributed to the interplay between compulsivity and core OCD-related traits such as heightened threat perception, risk avoidance, intolerance of uncertainty, and behavioral inhibition. These characteristics may, at least in part, act as protective factors against engagement in addictive behaviors, particularly at moderate levels of illness severity, although their influence may diminish as severity increases further or in the presence of comorbid conditions associated with impulsivity and disinhibition.[4,5] Within this framework, our findings of no increased AUD/SUD or smoking in OCD patients with comorbid TD may reflect the characteristics of a treatment-seeking clinical sample in which such protective features are more prominent . This interpretation may partly explain the discrepancy with previous studies reporting increased substance use in OCD+TD populations, which often rely on heterogeneous sampling strategies or on Tourette syndrome–centered cohorts rather than clinically well-defined adult OCD samples. Furthermore, prior associations between TD and substance use have frequently been linked to co-occurring externalizing conditions, particularly ADHD, a major determinant of impulsivity and risk-taking behaviors.[15] As ADHD was not systematically assessed in our study, its potential contribution cannot be determined; however, our findings raise the possibility that TD per se does not independently increase the risk of AUD/SUD in adult OCD populations. Taken together, these results support a context-dependent and non-uniform relationship between OCD, TD, and substance use.

Consistent with previous meta-analytic data,[1] TD comorbidity did not appear to mark a more severe form of OCD in our adult sample. This interpretation is supported by comparable OCD, anxiety, and depressive symptom scores, similar SA history, and no difference in educational or occupational status between groups. Early onset of OCD and male predominance in the comorbid cases were apparent, being consistent with the literature.[Cloft] The findings on marital status (high proportion of non-married individuals in the OCD+TD group including individuals who are never married, divorced, or widowed are striking

The male predominance observed in the OCD+TD group in our study is consistent with the well-established epidemiology of TD.[1,2] Previous studies have shown that Tourette syndrome is more frequent in males, with reported male-to-female ratios of approximately 3:1 to 4:1.[13,16] Although this difference appears to be less marked in non-Tourette TD, male predominance is still evident in these conditions.[17] Therefore, the higher proportion of males in the OCD+TD group in our sample is likely to reflect the underlying distribution of TD rather than a sampling bias.

The finding of a higher proportion of non-married individuals in the OCD+TD group merits further consideration. Although tic disorder comorbidity did not appear to affect symptom severity or major functional outcomes such as education and employment, marital status may reflect more subtle aspects of social and interpersonal functioning. One possible explanation relates to developmental factors. Tic-related OCD is typically characterized by earlier onset,[1] and even in the absence of greater clinical severity, early-onset conditions may interfere with the acquisition of social and communication skills and the formation of stable interpersonal relationships. Although our study does not directly assess these domains, both OCD and tic disorders have been associated with reduced quality of life and difficulties in social functioning in previous research.[18,19] A second, non-mutually exclusive explanation is that tic symptoms may have psychosocial consequences beyond clinical severity, including stigma, social rejection, bullying, reduced self-esteem, and difficulties in interpersonal communication, which may influence long-term relationship formation.[20-22] In addition, the higher proportion of males in the OCD+TD group may have contributed to the lower marriage rates, as men tend to have lower marriage rates than women both in the general population and among individuals with OCD.[23-25] These observations suggest that tic comorbidity may be associated with subtle differences in social trajectories rather than with increased clinical burden in adult OCD.

Beyond symptom severity, functional outcomes such as educational attainment, occupational status, and suicidality constitute critical dimensions in the characterization of OCD with comorbid TD. Previous studies have suggested that OCD+TD may be associated with less favorable sociodemographic outcomes, including lower educational levels and poorer occupational functioning,[26] as well as higher rates of SA in certain subgroups.[27] In contrast, in our adult clinical sample, educational attainment, unemployment rates, and history of SA did not differ between patients with and without TD. These findings indicate that, although OCD itself is consistently associated with impaired educational outcomes[28] and occupational disability,[29] the presence of TD may not confer an additional burden in adulthood.

This apparent discrepancy may be attributable to several methodological and clinical factors. First, in the present study, TD was defined on a lifetime basis and encompassed a broad spectrum of tic conditions, including Tourette syndrome as well as chronic and provisional tic disorders. In contrast, many previous studies have focused on more narrowly defined and clinically severe groups, particularly individuals with chronic tic disorder or Tourette syndrome.[3,10-13,19,21,22] This distinction is important, as persistent tic disorders are naturally expected to be more consistently associated with greater functional difficulties. Second, although both OCD[28] and chronic TD[30] have been independently linked to educational and functional impairments, evidence from adult populations with chronic TD suggests that overall functioning is more strongly influenced by comorbid psychiatric conditions -particularly depression, anxiety, and ADHD- than by tic severity per se.[31]

The retrospective diagnosis of TD is a shortcoming of our study. However, TD is a childhood problem as opposed to AUD/SUD/smoking which usually emerge in adulthood. A prospective design whereby children are recruited at the time of the diagnosis of TD and followed-up till the age of about 32 (the average age of our patients) is obviously difficult.

Conclusions

In adults with OCD, comorbid current or past TD was associated with earlier onset, male predominance, and lower marriage rates, but not with increased substance-related risk, greater symptom severity, or poorer educational/occupational outcomes. Future comorbidity studies that will also include ADHD, a condition commonly accompanying TD as well as OCD though characterized by high levels of risk-taking as opposed to OCD, may shed further light on contradictions in the literature.

Patient informed consent

There is no need for patient informed consent.

Ethics committee approval

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Conflict of interest

There is no conflict of interest to declare.

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Author contribution subject and rate

- Oğuz Tan (60%): Designed the study, conducted data collection and statistical analysis, interpreted the results, and wrote the initial and final versions of the manuscript.
- Adnan Çoban (40%): Contributed substantially to the research design and methodology, supervised the entire research process, assisted in data interpretation, and critically revised the manuscript for important intellectual content.

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