Skin picking and trichotillomania in adults with obsessive-compulsive disorder

Lucas Lovato, Ygor Arzeno Ferrão, Dan Stein, Roseli G. Shavitt, Leonardo F. Fontenelle, Analise Vivan, Eurípedes Constantino Miguel, Aristides Volpato Cordioli

Abstract

The objective of this study was to compare patients with obsessive-compulsive disorder (OCD) with pathologic skin picking (PSP), with or without trichotillomania, and patients with OCD without such comorbidities, for demographic and clinical characteristics. We assessed 901 individuals with a primary diagnosis of OCD, using the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) Axis I disorders. Diagnoses of PSP and trichotillomania were made in 16.3% and 4.9% of the sample, respectively. After the logistic regression analysis, the following factors retained an association with OCD-PSP/trichotillomania: younger (odds ratio [OR] = 0.979; \( P = .047 \)), younger at the onset of compulsive symptoms (OR = 0.941; \( P = .007 \)), woman (OR = 2.538; \( P < .001 \)), with a higher level of education (OR = 1.055; \( P = .025 \)), and with comorbid body dysmorphic disorder (OR = 2.363; \( P = .004 \)). These findings support the idea that OCD accompanied by PSP/trichotillomania characterizes a specific subgroup.

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1. Introduction

The hallmark features of obsessive-compulsive disorder (OCD) are intrusive and persistent thoughts (obsessions) that evoke anxiety, followed by ritualized behaviors (compulsions) intended to relieve anxiety [1]. Despite this general diagnostic concept, there is considerable heterogeneity in clinical presentation, which hinders the interpretation of findings from genetic, neuroimaging, and treatment studies [2,3]. Various authors have found specific characteristics according to age at onset [4-6], patterns of comorbidity [4,6], sex [7], and level of insight [8].

Delineating OCD subgroups that are more homogeneous has been the objective of various studies focusing on the psychopathology/pathophysiology of OCD and patterns of treatment response [9-13]. The findings of many such studies, such as those investigating the genetics of OCD [3], support the use of the symptom dimension approach. Hasler et al [14] suggested that specific OC symptom (OCS) dimensions are more heritable than is OCD in general, and van Grootheest et al [15] found that specific genetic components are related to the contamination dimension. In addition, neurobiological studies have found specific differences between distinct subgroups. Saxena et al [16] found that the patterns of cerebral glucose metabolism differ between OCD patients with hoarding and those without.

Viswanath et al [17] found evidence that familial OCD differs from sporadic OCD in age of onset, type of OCS, pattern of comorbidity, and treatment response. It has been suggested that OCD subgroups can be defined on the basis of the patterns of comorbidity [18-20].

According to current classification of mental disorders, impulse control disorders (ICDs) constitute a heterogeneous group of psychiatric disorders, including trichotillomania, pathologic gambling, intermittent explosive disorder, pyromania, and kleptomania. Such disorders are characterized by a failure to resist impulses or temptations to perform some act that is harmful to oneself or others, by an increasing sense of tension before acting, and by a sense of pleasure, gratification, or relief at the time of committing the act or shortly thereafter [1]. Three studies in particular have explored the issue of comorbidity between OCD and ICDs in adult patients. Fontenelle et al [21] studied 45 patients with OCD and concluded that OCS severity was greater in those with at least one comorbid ICD, who also required a greater number of changes in the selective serotonin reuptake inhibitor treatment regimen during follow-up. In addition, Matsunaga et al [22] assessed 153 adult patients with OCD and found that subjects with comorbid ICD differed from other patients with OCD on a range of demographic and clinical features, the former group showing more pervasive and severe psychopathology, as well as poorer treatment...
outcomes. In the largest such study, involving 293 patients, Grant et al. [23] concluded that symptom severity, functioning, and quality of life were worse among individuals with OCD and a comorbid ICD than among those with OCD and no ICD.

It is possible that the current classification of ICD includes disorders that are quite heterogeneous in origin. Therefore, the co-occurrence of a specific ICD might have a singular impact on the expression of OCD. Grant et al. [23] suggested that certain ICDs, including pathologic skin picking (PSP) and trichotillomania, are particularly common among individuals with OCD. In a recent family study of OCD, PSP and trichotillomania were collectively designated “grooming disorders” (GDs) because of the nature of the repetitive behaviors involved. We find it interesting that GDs were more common in first-degree relatives, whether the probands had the same diagnosis, suggesting that these disorders are part of the familial OCD spectrum [24]. In a sample of pediatric patients with OCD, Flessner et al. [25] observed high comorbidity with grooming behaviors, with distinct characteristics, and suggested that the identification of this patient subgroup calls for specific changes in treatment manuals. Knowledge of this putative specific OCD subgroup could guide future OCD treatment practices, such as including habit reversal techniques in cognitive-behavioral therapy, as well as encouraging researchers to evaluate specific pharmacologic agents (such as modulators of the dopaminergic system) in clinical trials [26,27]. Accordingly, genetic and neurobiological studies should be conducted to further elucidate the psychopathology of OCD-related disorders.

The objective of the present study was to determine whether patients with OCD and GDs (PSP or trichotillomania) differ from those with other ICDs and those without such comorbidities, in sociodemographic and clinical characteristics, as well as to understand the impact that certain ICDs have on the phenomenology of OCD. The hypothesis is that OCD that co-occurs with GD may constitute a specific subgroup that could be important in the assessment, management, and prognosis.

2. Methods

2.1. Sample

This was a cross-sectional study involving 901 individuals who participated in the Brazilian Research Consortium on Obsessive-Compulsive Spectrum Disorders (BRC-OCSD) project between 2005 and 2009 [28]. The BRC-OCSD project involves 7 university hospitals in 6 different Brazilian cities. All 7 hospitals are dedicated to OCD treatment and research.

We applied the following inclusion criteria: having received a primary diagnosis of OCD, as defined in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), and being enrolled at any of the 7 BRC-OCSD centers. We used the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), to confirm the diagnosis [29]. Patients who met the DSM-IV diagnostic criteria for schizophrenia were excluded. Individuals were referred to the project from health care clinics (primary or secondary), private psychiatric services, Web sites, media announcements, self-help groups, and the Brazilian Association for Tourette Syndrome, Tics, and Obsessive-Compulsive Disorder. Additional details regarding BRC-OCSD procedures are available in the study conducted by Miguel et al. [28].

The present study was approved by the institutional review boards at each BRC-OCSD center. All participants gave written informed consent.

2.2. Assessment

The study protocol included sociodemographic data and a review of academic, professional, medical, and psychiatric histories. The following instruments were used [29-34]: the SCID-I, with additional modules for tics and ICDs [30]; the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS); the Dimensional Yale-Brown Obsessive-Compulsive Scale (DY-BOCS); the Beck Depression Inventory; and the Beck Anxiety Inventory. Researchers at each of the BRC-OCSD centers were trained to use the SCID-I, Y-BOCS, and DY-BOCS, all of which have excellent interrater reliability, as described by Miguel et al. [28].

2.3. Statistical analysis

The patients were divided into three groups: OCD without any ICD (pure OCD), OCD with at least one GD (OCD+GD), and OCD with another ICD but without any GD (OCD+ICD/noGD). Patients with multiple ICDs were excluded if one of those ICDs was a GD. The categorical variables were expressed as absolute and relative frequencies. The continuous variables were expressed as mean ± standard deviation or as median (range), depending on the distribution of data (normality assessed by the Kolmogorov-Smirnov test).

To compare categorical variables among the three groups, we used the Χ² test and post hoc multiple comparisons with Tukey honestly significant difference test. For continuous variables, we used analysis of variance and Scheffé post hoc test, as necessary. The Kruskal-Wallis test and Dunn test were used for continuous variables with non-normal distribution.

Using previous analysis, we then compared the OCD+GD and OCD without GD groups. Variables with a value of P < .10 in this step were included in a multiple logistic regression model to determine the factors independently associated with GD.

The program Statistical Package for the Social Sciences, version 17.0 (SPSS Inc, Chicago, IL) was used. The level of significance was set at P < .05.

3. Results

3.1. Demographics characteristics and comorbidities

Of the 901 patients studied, 516 (57.3%) were women, 380 (42.2%) were single or divorced, and 555 (61.6%) worked or...
studied. The mean age was 34.4 ± 12.7 years. For comorbid
ICDs, 614 (68.1%) presented with OCD only, 121 (13.4%)
had OCD+GD, and 114 (12.7%) had OCD+ICD/noGD. The
overall prevalence of ICDs was 31.9%. Of the 901 patients
with OCD, 52 (5.8%) had a GD and another ICD, and those
patients were excluded from the statistical analysis. The ICDs
were distributed as follows: PSP in 147 (16.3%), impulsive
buying disorder in 73 (8.1%), intermittent explosive disorder
in 58 (6.4%), trichotillomania in 44 (4.9%), and video game addiction in 4 (0.4%).

3.2. Sociodemographic and clinical characteristics of 3
groups: OCD, OCD+GD, and OCD+ICD/noGD

Table 1 shows the sociodemographic and clinical character-
istics of the patients in the pure OCD, OCD+GD, and OCD
+ICD/noGD groups. Compared with patients in the pure OCD
group, those in the OCD+GD group were more often women,
single (unmarried or divorced), and younger, as well as having
been younger at the onset of OCS and of compulsions; scoring
higher for obsessions on the Y-BOCS; scoring higher for
aggression, symmetry, and hoarding on the DY-BOCS; more
often presenting with body dysmorphic disorder (BDD); having
more often attempted suicide; and scoring higher on the
Beck Depression Inventory and Beck Anxiety Inventory.

After the logistic regression, the following factors
continued to be associated with OCD+GD (Table 2):

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Pure (n = 614)</th>
<th>With GD (n = 121)</th>
<th>With ICD/no GD (n = 114)</th>
<th>Statistical test (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female sex, n (%)</td>
<td>332 (54.1)*</td>
<td>88 (72.7)**</td>
<td>57 (50.0)*</td>
<td>$\chi^2 = 16.34 (&lt;.001)$</td>
</tr>
<tr>
<td>Unemployed, n (%)</td>
<td>305 (49.8)</td>
<td>69 (57.0)</td>
<td>52 (46.0)</td>
<td>$\chi^2 = 3.07 (.216)$</td>
</tr>
<tr>
<td>Single or divorced, n (%)</td>
<td>367 (59.8)*</td>
<td>90 (74.4)***</td>
<td>71 (62.3)</td>
<td>$\chi^2 = 9.17 (.010)$</td>
</tr>
<tr>
<td>Age, y, mean ± SD</td>
<td>35.0 ± 13.1*</td>
<td>31.0 ± 11.8***</td>
<td>35.7 ± 11.7*$a$</td>
<td>$F_{2,85} = 5.37 (.005)$</td>
</tr>
<tr>
<td>Schooling, y, mean ± SD</td>
<td>14.4 ± 5.1</td>
<td>15.3 ± 4.4</td>
<td>14.1 ± 5.2</td>
<td>$F_{2,85} = 1.81 (.164)$</td>
</tr>
<tr>
<td>Age at OCS onset, y, mean ± SD</td>
<td>13.13 ± 7.68*</td>
<td>10.12 ± 4.82*</td>
<td>12.02 ± 6.41*</td>
<td>$F_{2,85} = 10.19 (&lt;.001)$</td>
</tr>
<tr>
<td>Age at compulsions onset, y, mean ± SD</td>
<td>13.79 ± 8.25*</td>
<td>10.27 ± 4.78*</td>
<td>12.35 ± 6.43*</td>
<td>$F_{2,85} = 11.20 (&lt;.001)$</td>
</tr>
<tr>
<td>Total score, mean ± SD</td>
<td>24.82 (8.23)</td>
<td>26.29 (6.31)</td>
<td>25.77 (7.23)</td>
<td>$F_{2,85} = 2.01 (.135)$</td>
</tr>
<tr>
<td>Obsessions score, mean ± SD</td>
<td>12.30 (4.29)*</td>
<td>13.36 (4.16)*</td>
<td>12.88 (3.60)</td>
<td>$F_{2,85} = 3.62 (.027)$</td>
</tr>
<tr>
<td>Compulsions score, mean ± SD</td>
<td>12.52 (4.49)</td>
<td>12.93 (4.44)</td>
<td>12.90 (4.15)</td>
<td>$F_{2,85} = 0.69 (.505)$</td>
</tr>
<tr>
<td>Y-BOCS</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Aggressiveness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence, n (%)</td>
<td>393 (64.0)</td>
<td>91 (75.2)</td>
<td>78 (68.4)</td>
<td>$\chi^2 = 5.96 (.051)$</td>
</tr>
<tr>
<td>Severity, median (range)</td>
<td>4 (0-9)*</td>
<td>7 (0-10)*</td>
<td>7 (0-10)*</td>
<td>$\chi^2 (KW) = 13.72 (.001)$</td>
</tr>
<tr>
<td>Sexual/religious</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence, n (%)</td>
<td>321 (52.3)</td>
<td>71 (58.7)</td>
<td>67 (58.8)</td>
<td>$\chi^2 = 2.84 (.242)$</td>
</tr>
<tr>
<td>Severity, median (range)</td>
<td>0 (0-9)</td>
<td>4 (0-9)</td>
<td>6 (0-9)</td>
<td>$\chi^2 (KW) = 6.42 (.040)$</td>
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<tr>
<td>Symmetry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence, n (%)</td>
<td>524 (85.3)</td>
<td>111 (91.7)</td>
<td>103 (90.4)</td>
<td>$\chi^2 = 4.99 (.042)$</td>
</tr>
<tr>
<td>Severity, median (range)</td>
<td>8 (3-11)*</td>
<td>9 (6-11)*</td>
<td>9 (5-12)</td>
<td>$\chi^2 (KW) = 8.68 (.013)$</td>
</tr>
<tr>
<td>Contamination</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence, n (%)</td>
<td>446 (72.6)</td>
<td>89 (73.6)</td>
<td>86 (75.4)</td>
<td>$\chi^2 = 0.40 (.820)$</td>
</tr>
<tr>
<td>Severity, median (range)</td>
<td>7 (0-11)</td>
<td>8 (0-11)</td>
<td>9 (2-12)</td>
<td>$\chi^2 (KW) = 5.83 (.054)$</td>
</tr>
<tr>
<td>Hoarding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present, n (%)</td>
<td>287 (46.7)*</td>
<td>73 (60.3)*</td>
<td>66 (57.9)</td>
<td>$\chi^2 = 10.60 (.005)$</td>
</tr>
<tr>
<td>Severity, median (range)</td>
<td>0 (0-6)*</td>
<td>3 (0-7)*</td>
<td>3 (0-8)*</td>
<td>$\chi^2 (KW) = 12.35 (.002)$</td>
</tr>
<tr>
<td>Family history of OCD, n (%)</td>
<td>304 (49.6)</td>
<td>72 (59.5)*</td>
<td>49 (43.0)*</td>
<td>$\chi^2 = 6.65 (.036)$</td>
</tr>
<tr>
<td>Family history of tics, n (%)</td>
<td>110 (19.1)</td>
<td>29 (25.0)</td>
<td>32 (28.8)*</td>
<td>$\chi^2 = 6.31 (.043)$</td>
</tr>
<tr>
<td>Tic disorders, n (%)</td>
<td>164 (26.7)</td>
<td>40 (33.1)</td>
<td>39 (34.2)</td>
<td>$\chi^2 = 4.01 (.135)$</td>
</tr>
<tr>
<td>Body dysmorphic disorder, n (%)</td>
<td>42 (6.8)*</td>
<td>26 (21.5)*</td>
<td>21 (18.4)$a$</td>
<td>$\chi^2 = 31.95 (&lt;.001)$</td>
</tr>
<tr>
<td>Suicidality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current ideation, n (%)</td>
<td>196 (33.7)*</td>
<td>46 (39.3)</td>
<td>53 (47.7)*</td>
<td>$\chi^2 = 8.38 (.015)$</td>
</tr>
<tr>
<td>Previous attempt, n (%)</td>
<td>49 (8.4)*</td>
<td>14 (12.0)*</td>
<td>19 (17.1)$a$</td>
<td>$\chi^2 = 8.22$</td>
</tr>
<tr>
<td>Beck Depression Inventory, mean ± SD</td>
<td>14.8 ± 11.5*$a$</td>
<td>17.7 ± 11.3*$a$</td>
<td>19.7 ± 11.5*$a$</td>
<td>F = 10.48 (&lt;.001)</td>
</tr>
<tr>
<td>Beck Anxiety Inventory, mean ± SD</td>
<td>14.3 ± 11.5*$a$</td>
<td>17.5 ± 11.6*$a$</td>
<td>18.4 ± 10.8*$a$</td>
<td>F = 8.64 (&lt;.001)</td>
</tr>
</tbody>
</table>

* indicates analysis of variance followed by Scheffé post hoc test; KW, Kruskal-Wallis test.

Asterisk (*) and number sign (#) indicate difference between the groups (P < .05).
disorders as ICDs, neither condition is officially listed as an ICD in the DSM-IV-TR. Despite similar findings, there were methodological differences among the aforementioned studies.

Previous studies have suggested that OCD is associated with GDs (including PSP and trichotillomania) but not with other ICDs, such as pathologic gambling and kleptomania [24,35-46]. In the present study, logistic regression analysis revealed that the two factors most strongly associated with OCD+GD were being woman and having comorbid BDD.

We found that women accounted for 72.7% of the patients in the OCD+GD group. Other studies have also found a predominance of women among individuals with PSP and, among those with trichotillomania, women accounting for 87.1% to 94.1% and up to 93.2%, respectively [41,47-49]. However, in the general population, there are no apparent sex differences, or women are only slightly more predominant, in OCD prevalence [50-53]. Sex-related differences in OCS and comorbid disorders have been described and may be a sex-related reflection of the expression of the OCD phenotype [7,54-58].

A diagnosis of BDD also emerged as an independent factor associated with GDs in our OCD sample. We found that BDD was present in 21.5% of patients with OCD with an accompanying GD and in 8.7% of those without. The prevalence of BDD in the general population ranges from 1% to 2% [59-61]. That GDs and BDD are both associated with OCD suggests that these disorders should be considered OCD spectrum disorders. It should be borne in mind, however, that PSP can also be part of the clinical profile of BDD. Grant et al [23] observed secondary PSP in 36.9% of a sample of individuals with BDD, similar to the 26.8% reported by Phillips et al [62]. However, the relationship between PSP and BDD was not evaluated in our sample.

In the present study, we found that patients with OCD and GDs were younger at the onset of compulsive symptoms/ OCS onset (around 10 years) than were those without (approximately 10 years vs approximately 13 years). This leads us to conjecture that the clinical association between GDs and OCD in these patients reflects major early risk factors that contribute to the expression of both disorders during specific periods of development. Repetitive behaviors in GDs resemble those associated with early-onset OCD [6]; that is, instead of being performed to neutralize an obsession, they are frequently performed to relieve a sensation or an uncomfortable feeling or are repeated until the individual achieves the “just right” feeling [63,64].

Other minor findings also retained statistical significance after logistic regression model and might merit discussion as points that warrant further investigation, although the associations did not rise to the level of clinical relevance. Patients in the OCD+GD group were younger than those in the pure OCD group, a finding that could be explained by greater severity and the consequent earlier treatment seeking. For example, PSP usually causes major skin damage, leading to aesthetic problems and dermatologic infections, which require complex, immediate medical treatment [40,65]. A higher level

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**Table 2**

<table>
<thead>
<tr>
<th>Variable</th>
<th>P</th>
<th>OR</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younger (P = .047)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at OCS onset</td>
<td>.007</td>
<td>.521-2.320</td>
<td></td>
</tr>
<tr>
<td>Level of education</td>
<td>.025</td>
<td>1.099</td>
<td></td>
</tr>
<tr>
<td>Family history of OCD</td>
<td>.228</td>
<td>1.317</td>
<td>0.842-2.061</td>
</tr>
<tr>
<td>Sex-related differences</td>
<td>.001</td>
<td>2.538</td>
<td>1.561-4.127</td>
</tr>
<tr>
<td>Prevalence</td>
<td>.007</td>
<td>1.099-2.320</td>
<td></td>
</tr>
<tr>
<td>Severity</td>
<td>.025</td>
<td>1.099-2.320</td>
<td></td>
</tr>
<tr>
<td>Body Dysmorphic Disorder</td>
<td>.004</td>
<td>1.317-2.061</td>
<td></td>
</tr>
<tr>
<td>Beck Anxiety Inventory</td>
<td>.004</td>
<td>1.317-2.061</td>
<td></td>
</tr>
<tr>
<td>Beck Depression Inventory</td>
<td>.040</td>
<td>1.099-2.320</td>
<td></td>
</tr>
</tbody>
</table>

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4. **Discussion**

In the present study, we found that 287 (31.9%) of the 901 adult patients with OCD evaluated had at least one current ICD. This is similar to the 35.5% and 29.0% reported by Fontenelle et al and Matsunaga et al, respectively [21,22]. In our sample, the most common ICD was PSP (in 16.3%), followed by compulsive buying (in 8.1%) and intermittent explosive disorder (in 6.4%). There were 173 patients (19.2%) with at least one GD: 17 (16.3%) with PSP, 44 (4.9%) with trichotillomania, and 18 (2.0%) with both. Fontenelle et al found that the prevalence of PSP and trichotillomania was 13.3% and 6.6%, respectively [21], whereas Matsunaga et al found that 12% of their patients exhibited self-injurious behaviors (including PSP) and 5% had trichotillomania [22]. In another study, Flessner et al [25] studied a sample of pediatric patients with OCD and found that 21.3% also had GDs (15.9% with PSP and 5.3% with trichotillomania). Our results differ from those of a study conducted by Grant et al [23], who identified ICDs in only 11% of their sample, 7.8% with PSP, and 1% with trichotillomania. Those authors did not include compulsive buying and intermittent explosive disorder, conditions that, together, accounted for 14.5% of ICDs observed in our sample. Although Fontenelle et al [21] included alcohol abuse as an ICD and Matsunaga et al [22] listed personality...
of education, as was also observed for patients with OCD+GD, might also result in early treatment seeking behavior.

The present study has certain limitations. The cross-sectional study design, and that we did not establish the chronology among OCD, GDs, and BDD in their onset, prevents us from making any causal inferences about which disorders are primary and which are secondary. Although the subjects of our study were recruited from multiple treatment sites, a large percentage were recruited from treatment studies conducted at referral centers or private offices. In addition, we did not collect any data regarding severity or clinical outcomes related to trichotillomania and PSP. A further limitation is that we did not include a group of healthy controls. However, on the basis of the reported prevalence of ICDs/GDs in community samples, that observed in our OCD sample (31.9%) seems relatively high. In a population-based sample, Kessler et al [66] found that the prevalence of ICDs was 8.9%. In nonclinical samples (of scholars, dermatologic subjects, and general populations), the reported prevalence of PSP is 2.7% to 5.4% [67-69]. The reported prevalence of trichotillomania in the general population is 1.0% to 3.5% [70,71], also lower than the 4.9% found in our study.

In conclusion, we found a high prevalence of GDs (primarily PSP and trichotillomania) in a sample of adult patients with OCD. The patients with OCD and GDs were predominantly young women in whom the onset of compulsive symptoms had occurred early in life, and the principal comorbidity was BDD. These data suggest that the combination of OCD and GD constitutes an OCD subgroup with definite sociodemographic and clinical features. Future studies should investigate the genetics, neurobiology, and treatment responses of such patients, to confirm our findings.

Q4

References


[28] Miguel EC, Ferrão YA, Rosário MC, de Mathis MA, Torres AR, Fontenelle LF, et al. The Brazilian Research Consortium on Obsessive-


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<tr>
<td>Q4</td>
<td>As per journal specific instructions, reference citations should be arranged sequentially. In this case, references were arranged accordingly. Reference lists and their corresponding citations were renumbered. Also, References [46] and [71] have similar entries, the latter was deleted. Please check.</td>
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</table>

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