# Prevalence and correlates of current suicide risk in an international sample of OCD adults: A report from the International College of Obsessive-Compulsive Spectrum Disorders (ICOCS) network and Obsessive Compulsive and Related Disorders Network (OCRN) of the European College of Neuropsychopharmacology

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ABSTRACT

*Introduction:* Obsessive-compulsive disorder (OCD), characterized by repetitive anxiety-inducing intrusive thoughts and compulsive behaviors, is associated with higher suicide ideation and suicide attempts than the general population. This study investigates the prevalence and the correlates of current suicide risk in adult outpatients in an international multisite cross-sectional sample of OCD outpatients.

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Disability
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*Methods:* Data were derived from the International College of Obsessive-Compulsive Spectrum Disorders (ICOCS) network's cross-sectional data set (N = 409). Current suicide risk (assessed by Item C of the MINI) and diagnoses of psychiatric disorders were based on DSM-IV. Chi-squared test for categorical variables and *t*-test for continuous variables were used to make statistical inferences about main features associated with current suicide risk. $P < .05$ was considered as statistically significant.

*Results:* The prevalence of current suicidal risk was 15.9%, with equal likelihood in sociodemographic variables, including age and gender. Increased rates of major depression and generalized anxiety disorder were associated to higher current suicide risk. Current suicide risk was also associated with higher severity of OCD, depressive comorbidity, and higher levels of disability. There were no significant differences in treatment correlates—including type of treatment and psychiatric hospitalizations—between the groups of individuals with and without current suicide risk.

*Conclusion:* Our findings suggest that current suicide risk is common in patients with OCD and associated with various forms of pathology. Our work also provides further empirical data to support what is already known clinically: a worse clinical picture characterized by a high severity of OCD, high distress related to obsessions and compulsions, and the presence of comorbidities such as major depression and generalized anxiety disorder should be considered as relevant risk factors for suicide risk.

## 1. Introduction

Suicide is a major cause of death worldwide (Nock et al., 2008), cutting across diagnostic categories, including Obsessive-Compulsive Disorder (OCD), which is characterized by repetitive, anxiety-inducing intrusive thoughts (obsessions) and compulsive behaviors (compulsions) (American Psychiatric Association, 2013). These individuals experience distress, impaired functioning, social isolation (Hollander et al., 1996), delayed access to adequate pharmacological treatment (Dell'osso et al., 2013a), and poor quality of life (Bobes et al., 2001). Emerging data shows a link between OCD and suicide attempts (Dell'Osso et al., 2017; Hollander et al., 1996). Indeed, Torres and colleagues reported nearly one in nine OCD Brazilian adults and one in four OCD United Kingdom adults attempted suicide at least once in their lifetime (Torres et al, 2007, 2011). We recently reported that approximately one in seven OCD adults (international sample) attempted suicide at least once in their lifetime (Dell'Osso et al., 2017). A recent exploratory study with machine-learning analysis identified previous suicide planning, previous suicidal thoughts, lifetime depressive episode, and intermittent explosive disorder as predictors of suicide attempts in OCD patients (Agne et al., 2020). Given that approximately 60% of individuals completing suicide do so on their first attempt (Bostwick et al., 2016), proactively identifying suicidal ideation and other behaviors associated with risk of suicide is critical to prevent completed suicide in OCD individuals.

Suicidal ideation in OCD has been the focus of previous research. Comparisons across studies are challenging due to heterogeneity of samples, assessment tools, and diagnostic criteria. Several studies have focused on prevalence of past suicidal thoughts in OCD (Albert et al., 2019; Breet et al., 2019; Fernández de la Cruz et al., 2016). Other studies have focused on risk factors associated with increased suicidal risk in OCD patients, including comorbidity with mood disorders (Fontenelle et al., 2012; Torres et al., 2013); comorbidity with tic disorders (Benatti et al., 2020); severity of depressive symptoms (Balci and Sevincok, 2010; Kamath et al., 2007); alexithymia, an affect-avoiding interpersonal pattern behavior (De Berardis et al., 2008; 2014; 2015; 2017); higher severity of OCD symptoms and higher frequencies of obsessive-compulsive symptoms that are aggressive or harm-related (Balci and Sevincok, 2010), sexual/religious (Dell'Osso et al., 2012), and/or of a symmetry/ordering nature (Alonso et al., 2010). None of these have examined current suicidal ideation in an international multisite sample of OCD outpatients.

One previous study examined current suicide risk with specific questions in a sample of Brazilian patients with OCD (Torres et al., 2011). Thirty-six percent of the patients reported lifetime suicidal thoughts, 20% had made suicide plans, 11% had already attempted suicide, and 10% presented current suicidal thoughts. Lifetime major depressive disorder and posttraumatic stress disorder were independently associated with all aspects of suicidal behaviors (Torres et al., 2011).

A recent systematic review and meta-analysis by Pellegrini and colleagues aimed to determine sociodemographic and clinical factors associated with greater risk of suicidal ideation and suicidal attempts in OCD patients (Pellegrini et al., 2020). In this review, 61 studies were analyzed involving over 80,000 patients with OCD; most studies were conducted in Europe, Brazil, and to a lesser extent the USA. Studies investigating suicide attempts reported a pooled prevalence of 0.135, while studies on current suicidal ideation reported a pooled prevalence of 0.273; lifetime suicidal ideation reports highlighted a pooled prevalence of 0.473 (Pellegrini et al., 2020). An increased prevalence of suicide attempts was associated with severity of obsessions, comorbid substance use and depressive/anxious symptoms, whereas compulsions had a comparatively protective effect. In contrast, increased suicidal ideation was associated with severity of obsessions, lower education, higher unemployment rates, lifetime alcohol use disorders, personality disorders, and family history of completed suicide (Pellegrini et al., 2020).

As a complement to those findings and to evaluate the extent of current suicidal thinking for those with OCD at a global level, we conducted a post-hoc analysis of international multisite cross-sectional data from the ICOCS network (Dell'Osso et al., 2013b; Lochner et al., 2014; Van Ameringen et al., 2014). We aimed to: 1) estimate the prevalence of current suicide risk in adults with OCD and 2) examine the correlates of comorbid conditions, disability, treatment type, and psychiatric hospitalizations between individuals with and without current suicide risk.

## 2. Methods

### 2.1. Sample

The international multisite cross-sectional sample included data from 409 OCD outpatients (57.4% female; mean age 39.1 ± 13.8 years) who participated in the International College of Obsessive-Compulsive Spectrum Disorders (ICOCS) network (Dell'Osso et al., 2016). This network includes a multisite collaborative network of OCD experts spanning academic and tertiary clinics from across the globe, including the Americas (Canada, the United States, and Mexico), Africa (Libya and South Africa), Europe (Spain, Italy, Turkey, Bulgaria, and the United Kingdom), and the Middle East (Israel). Consecutive patients at different stages of treatment were recruited at the ICOCS clinic sites between 2008 and 2010 (details are provided elsewhere; Dell'Osso et al., 2013b; Lochner et al., 2014; Van Ameringen et al., 2014). Local institutional review boards approved the protocol. Patients provided written informed consent.

### 2.2. Diagnostic assessment

The sociodemographic measures included age, gender, years of education, marital status, living status (i.e., patients living alone or with family/partner), professional status, and employment (see Table 1). Comorbidity of associated mood and anxiety disorders (e.g., major depression, generalized anxiety disorder) was assessed using a Structured Clinical Interview based on the DSM–IV criteria (SCID–I and –II) (First et al., 1997, 2002). Medical comorbidities were elicited by clinician interview.

OCD illness severity was assessed by the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) (Goodman et al., 1989). Distress from compulsions and distress from obsessions were respectively assessed as single items on the Y-BOCS (Goodman et al., 1989). Severity of comorbid depressive symptoms was assessed using the Montgomery-Asberg Depression Rating Scale (MADRS) (Montgomery and Asberg, 1979). Interference with work/school, social life/leisure activities, and family life/home responsibilities was measured with the Sheehan Disability Scale (SDS) (Sheehan, 1983).

Current suicide risk (SR) was assessed with the suicide module (C) of the Mini-International Neuropsychiatric Interview (M.I.N.I.) (Sheehan et al., 1998); current suicide risk (low, moderate, high) included any "yes" response to the following questions: (In the past month did you) a) "Think that you would be better off dead or wish you were dead?" b) "Want to harm yourself?" c) "Think about suicide?" d) "Have a suicide plan?" and e) "Attempt suicide?" as well as f) "In your lifetime, did you ever make a suicide attempt?" Individuals who answered "no" to all questions were classified as "no suicide risk" per module C of the M.I.N.I.

Treatment correlates included: current pharmacological treatment, monotherapy with antidepressants vs augmentation therapy, cognitive behavioral treatment (CBT), other psychological treatments, and psychiatric hospitalization.

### 2.3. Statistical analyses

Descriptive statistics for key sociodemographic characteristics, disease, and treatment outcomes were compared between patients with and without current SR. For continuous variables, Cohen's d was used for effect size estimate and *t*-test was used to calculate P-values. For categorical variables, proportion difference was used for effect size estimate. The Chi-square test was used to make statistical inferences about categorical variables when expected cell counts are all larger than 5; Fisher's exact test was used when any expected cell counts were less than 5. All the analyses were conducted through R (version 3.2.3). $P < .05$ was considered as statistically significant.

## 3. Results

### 3.1. Overall prevalence

The prevalence of current SR in the whole ICOCS sample of OCD outpatients was 15.9%. When stratified for risk severity, the current SR was 10.8% low risk, 2.7% moderate risk, and 2.4% high risk.

### 3.2. Sociodemographic characteristics

Table 1 shows sociodemographic characteristics of OCD outpatients with and without current SR. There were no significant differences between groups for gender, marital status, living status, professional status, employment, current age, and years of education. Regarding the geographical distribution of current SR, the most represented countries were Italy (30.8%), South Africa (16.9%), Israel (9.2%), Canada (7.7%), and the United Kingdom (6.2%).

### 3.3. Current prevalence of associated psychiatric disorders

A significantly larger percentage of individuals with current SR showed comorbidity with a current major depressive episode (proportion difference: 27.8%; $p < .001$) and with a current generalized anxiety disorder (proportion difference: 14.3%; $p = .003$) compared to patients without current SR. No significant differences were found regarding comorbid current social anxiety disorder, current panic disorder, current tic disorder, current substance use, and current medical comorbidities between OCD patients with and without current SR (Table 2).

**Table 1**
Sociodemographic characteristics of OCD outpatients with and without current suicide risk.

| | Current suicide risk (N = 65) | | No current suicide risk (N = 344) | | Proportion Difference | P-value* |
|---|---|---|---|---|---|---|
| | N | % | N | % | | |
| Gender | | | | | | |
| Females | 41 | (65.1%) | 194 | (57.4%) | 7.7% | 0.319 |
| Marital status | | | | | | |
| Married | 17 | (32.1%) | 133 | (44.9%) | −12.9% | 0.112 |
| Living status | | | | | | |
| Alone | 11 | (17.5%) | 51 | (15.1%) | 2.4% | 0.773 |
| Professional status | | | | | | |
| Worker | 19 | (32.2%) | 133 | (41.8%) | −9.6% | 0.215 |
| Employment | | | | | | |
| Full-time | 27 | (51.9%) | 164 | (58.6%) | −6.6% | 0.461 |
| | **Current suicide risk (N = 65)** | | **No current suicide risk (N = 344)** | | **Cohen's d** | **P-value*** |
| | **Mean** | **SD** | **Mean** | **SD** | | |
| Age | 39.8 | (14.7) | 38.4 | (12.9) | 0.111 | 0.498 |
| Years of education | 11.8 | (5.0) | 13.1 | (4.4) | −0.291 | 0.093 |

* For continuous variables, p-values were calculated by *t*-test. For binary variables, p-values were calculated from Chi-square test when expected cell count was more than 5; Fisher's exact test was used when expected cell is less than 5.

**Table 2**
Current prevalence (within 1 year) of associated psychiatric disorders in OCD outpatients with and without current suicide risk.

| | Current suicide risk (N = 65) | | No current suicide risk (N = 344) | | Proportion Difference | P-value* |
|---|---|---|---|---|---|---|
| | N | % | N | % | | |
| Current major depressive episode (Yes/No) | 26 | (41.9%) | 48 | (14.1%) | 27.8% | <0.001 |
| Current social phobia (Yes/No) | 13 | (22.4%) | 43 | (12.7%) | 9.7% | 0.080 |
| **Current generalized anxiety disorder (Yes/No)** | **14** | **(23.7%)** | **31** | **(9.4%)** | **14.3%** | **0.003** |
| Current panic disorder (Yes/No) | 2 | (3.8%) | 17 | (5.8%) | −2.1% | 0.749 |
| TIC disorder (Yes/No) | 6 | (11.5%) | 63 | (22.0%) | −10.4% | 0.126 |
| Medical comorbidities (Yes/No) | 10 | (18.2%) | 58 | (19.4%) | −1.2% | 0.981 |

* For continuous variables, p-values were calculated by *t*-test.
For binary variables, p-values were calculated from Chi-square test when expected cell count was more than 5; Fisher's exact test was used when expected cell count was less than 5.

### 3.4. Age of onset and severity of illness

OCD outpatients with and without current SR did not differ significantly in terms of age of OCD onset. OCD patients with current SR showed higher OCD severity measured with Y-BOCS compared to those without SR (Cohen's d: 0.65; $p < .001$) and higher obsessions- and compulsions-related distress scores measured with the Y-BOCS (Cohen's d: 0.53, $p < .001$ and Cohen's d: 0.51, $p < .001$ respectively). Moreover, OCD patients with current SR showed higher severity of depressive symptoms—measured with the MADRS (Cohen's d: 1.08; $p < .001$)—and higher interference with work/school, social life/leisure activities, and family life/home responsibilities (Cohen's d: 0.6; $p < .001$)—compared to patients without current SR (Table 3).

### 3.5. Treatment correlates

No significant differences between OCD outpatients with and without current SR were found in terms of type and presence of pharmacotherapy, monotherapy vs augmentation, past use of CBT and other psychological treatments, nor previous psychiatric hospitalizations (Table 4).

## 4. Discussion

This is the first study to examine the prevalence and characteristics of current suicide risk in an international multisite cross-sectional data set of OCD adult outpatients. We found the prevalence of current SR was 15.9%, with equal likelihood in sociodemographic variables including age and gender. Current SR was associated with increased rates of major depression and generalized anxiety disorder relative to those without current SR. Current SR was also associated with higher severity of OCD and depression and disability than those without SR. There were not significant differences in treatment correlates—including type of treatment and psychiatric hospitalizations—between the proportion of individuals with and without current suicide risk.

That 15.9% of OCD adults in the ICOCS international cross-sectional data set had current suicidal risk is consistent with earlier studies of suicidal risk in OCD. To provide context, we first provide background of suicidal ideation and suicidal risk in other psychiatric populations. One study reported 40.8% suicidal ideation (BPRS item 4 cutoff score of $\geq 3$) in help-seeking individuals in their first episode of psychosis (Pelizza et al., 2020). In bipolar disorder, suicidal ideation varies from 14% to 59% depending on illness characteristics and suicide risk can vary depending on phase of illness (e.g., depressive episodes are associated with the highest risk) (Miller and Black, 2020). Patients with major depression, in comparison with healthy subjects, showed a 20-fold increased suicide risk (Bachmann, 2018). In 2005 a population-based, prospective, longitudinal examination of the impact of anxiety disorders on suicidal ideation using data from the Netherlands Mental Health and Incidence Survey showed that each lifetime anxiety disorder was strongly associated with lifetime suicidal ideation (odds ratio, 3.74–10.57) (Sareen et al., 2005). Taken together, due to heterogeneity in research methods and the reality that suicidality is complex and multi-determined, we are unable to speculate where prevalence of suicidal ideation in OCD patients falls within the spectrum of other psychiatric disorders. We can, however, describe studies specifically examining current suicidal risk and suicidal ideation in OCD. Angelakis and colleagues report a meta-analysis of prevalence of current suicide risk in OCD patients ranging widely from 10% to 63.5% (Angelakis et al., 2015). Torres and colleagues found a prevalence of 10% having current suicidal thoughts in a large Brazilian sample of 582 OCD patients (Torres et al., 2011) using a single-item yes/no question ("And currently, do you have suicidal thoughts?") within six questions about lifetime suicidal behavior. A more recent meta-analysis of 61 independent studies involving 84,434 patients with OCD reported a pooled prevalence rate of current suicidal ideation of 27.3% (Pellegrini et al., 2020). Sampling and methodological differences may explain the difference in findings between our study (15.9%) and the Pellegrini et al. meta-analysis (27.3%) (Pellegrini et al., 2020). First, comorbidity (and severity of comorbid symptoms) might influence current suicide risk. The ICOCS sample showed a relatively low rate of comorbid psychiatric disorders. Second, the samples in the meta-analysis included a mix of single country and international samples, whereas our study included an international multisite sample. Third, how suicidality was assessed was heterogeneous. The studies within the meta-analysis employed a range of assessments for current suicide risk ranging from open-ended to single item questions to standardized suicidality measures, whereas our study used a single measure.

Our data show that current suicide risk, in and of itself, is not associated with sociodemographic variables such as age, gender, years of education, and marital/living/professional/employment status. A recent population-based study on 36,788 Swedish patients showed that higher parental education and being a woman were protective factors for death by suicide in OCD patients (Fernández de la Cruz et al., 2016), while another study on 496 participants showed a higher proportion of suicidal ideation and suicide attempts in female OCD patients (Breet et al., 2019). This heterogeneity could be due to different assessment measures, sampling, and comorbidity rates, as well as the severity of the

**Table 3**
Age of onset and severity of illness of OCD outpatients with and without current suicide risk.

| | Current suicide risk (N = 65) | | No current suicide risk (N = 344) | | Cohen's d | P-value* |
|---|---|---|---|---|---|---|
| | Mean | (SD) | Mean | (SD) | | |
| Age at OCD onset | 20.1 | (11.1) | 19.1 | (10.1) | 0.094 | 0.573 |
| YBOCS | **26.2** | **(6.8)** | **21.8** | **(7.0)** | **0.646** | **<0.001** |
| YBOCS: Obsessions distress | **2.7** | **(0.9)** | **2.3** | **(0.9)** | **0.527** | **<0.001** |
| YBOCS: Compulsions distress | **2.7** | **(0.9)** | **2.2** | **(1.0)** | **0.513** | **<0.001** |
| MADRS | **21.3** | **(9.7)** | **12.9** | **(7.4)** | **1.076** | **<0.001** |
| SDS total | **20.6** | **(6.1)** | **16.1** | **(7.7)** | **0.601** | **<0.001** |

* For continuous variables, p-values were calculated by *t*-test.
For binary variables, p-values were calculated from Chi-square test when expected cell count was more than 5; Fisher's exact test was used when expected cell count was less than 5.

**Table 4**
Treatment correlates of OCD outpatients with and without current suicide risk.

| | Current suicide risk (N = 65) | | No current suicide risk (N = 344) | | Proportion Difference | P-value* |
|---|---|---|---|---|---|---|
| | N | % | N | % | | |
| Pharmacotherapy (Yes/No) | 4 | (9.5%) | 39 | (15.0%) | −5.5% | 0.481 |
| OCD Treatment Type (Monotherapy/Augmentation) | 23 | (60.5%) | 116 | (52.5%) | 8.0% | 0.458 |
| CBT used in the past (Yes/No) | 20 | (36.4%) | 117 | (38.9%) | −2.5% | 0.841 |
| Other psychological treatment (Yes/No) | 21 | (36.8%) | 93 | (30.8%) | 6.0% | 0.457 |
| Psychiatric hospitalizations (Yes/No) | 8 | (15.1%) | 58 | (18.8%) | −3.7% | 0.654 |

* For continuous variables, p-values were calculated by *t*-test.
For binary variables, p-values were calculated from Chi-square test when expected cell count is more than 5; Fisher's exact test was used when expected cell count is less than 5.

OCD samples included in the studies.

Our data also suggest that current SR is associated with high rates of psychiatric disorders, including major depression and generalized anxiety disorders. These results are consistent with many previous studies showing a 3- to 4-fold higher risk of suicide in OCD patients who are comorbid with major depression when compared to an OCD without comorbidities group (Breet et al., 2019; Viswanath et al., 2012). In regard to comorbidity with anxiety disorders, Angelakis et al. (2015) reported that the elevated levels of suicidality in OCD tend to coexist with comorbidity of anxiety symptoms. Moreover, anxiety disorders themselves are associated with a higher risk of suicidal behaviors (Kanwar et al., 2013). The meta-analysis by Pellegrini and colleagues reported that a lifetime diagnosis of comorbid anxiety disorder has a protective effect against suicidal ideation, however the severity of comorbid anxiety symptoms (measured with the Beck Anxiety Inventory total score) was related to higher suicidal ideation (Pellegrini et al., 2020).

Our study identified higher severity of OCD and depression symptoms and disability in individuals with current risk of suicide compared to those without. In this respect, in a previous study Velloso et al. (2016) analyzed factors associated with suicide risk in a sample of OCD patients; in particular, they considered suicidality as a severity continuum from "no suicidality" to "suicidal ideation" and eventually "suicidal attempt." Those OCD patients revealing a worse suicidality profile showed higher severity of depressive symptoms and higher severity of some OCD dimensions (Velloso et al., 2016).

Our sample did not show any difference in SR in terms of age of onset. This is in line with prior studies showing no differences in terms of age and age at onset in OCD patients with SR vs without SR (Balci and Sevincok, 2010; Storch et al., 2017).

Finally, with respect to treatment correlates, we did not find in our sample any difference in terms of SR in OCD patients with/without current pharmacotherapy nor on monotherapy vs augmentation. In the current literature, there is only few data on the influence of specific psychopharmacological treatments on current risk in OCD patients. Balci and Sevincok compared two groups of OCD patients with and without suicidal ideation and found no differences in terms of psychopharmacological treatments (Balci and Sevincok, 2010).

Taken together, our results on the prevalence and correlates of current SR have important clinical implications. Our findings suggest current suicide risk is common and associated with various forms of pathology, providing an international multisite network perspective. Our work also provides further empirical data to support what is already known clinically—a worse clinical picture characterized by a high severity of OCD, high distress related to obsessions and compulsions, and the presence of comorbidities such as major depression and generalized anxiety disorder should be considered as relevant risk factors for suicide risk.

This study has limitations that are common to all large-scale studies as well as those that are study-specific. First, information was based on self-report of a heterogeneous sample of OCD patients. Second, because the ICOCS network relies on clinicians working in busy outpatient clinics, more detailed information would have required placing a burden on the clinician to obtain what was not collected (i.e., OCD symptom domains, duration of illness and duration of untreated illness, dose, titration and duration of pharmacotherapy and psychological treatments). Third, the study is a post-hoc analysis on data from the ICOCS network's cross-sectional data, which did not have investigation of suicidality as a primary aim; therefore, the study relies on the M.I.N.I. Module C to assess current suicide risk rather than standardized suicidality measures. Suicide assessment measures, including the Columbia Suicide Severity Rating Scale, Beck Suicidal Intent Scale, and Scale for Suicide Ideation-Current would be able to quantify and validate suicidal ideation (e.g., intensity including duration) and attempts (e.g., ranging from desire, preparation, ideation, to lethality) in order to refine suicidal risk further (Beck et al, 1975, 1979; Posner et al., 2011). This is important to note because risk assessment and cross-validation are needed with multiple suicidal scales. Fourth, current suicide risk was considered as a whole (yes/no) to questions on the M.I.N.I., ranging from generic thought that life is not worth living to specific suicidal plans with intention to act on them. Fifth, alexithymia and insight measures were not collected, but will be considered for future studies given alexithymia has been reported to be associated with higher suicide risk - especially in OCD patients with poor or absent insight (De Berardis et al., 2008; 2017).

Our study illustrates that current suicidal risk is a common phenomenon in OCD adults—based on an international sample—and may be associated with more severe OCD symptoms, distress, and comorbidities like major depression and general anxiety disorder. When these factors are elicited in a clinical interview, clinicians should consider a more thorough investigation of suicidal risk in their patients with OCD.


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## CRediT authorship contribution statement

**Beatrice Benatti:** Conceptualization, Data curation, Formal analysis, Study Design, Data Extraction, Data Analysis, Manuscript Preparation and Finalization, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Bernardo Dell'Osso:** Conceptualization, Data curation, Formal analysis, Study Design, Data Extraction, Data Analysis, Manuscript Preparation and Finalization, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Hanyang Shen:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Maria Filippou-Frye:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Andrea Varias:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Catherine Sanchez:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Booil Jo:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Eric Hollander:** Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Naomi A. Fineberg:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Dan J. Stein:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Humberto Nicolini:** Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Nuria Lanzagorta:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Donatella Marazziti:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Stefano Pallanti:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Michael Van Ameringen:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Christine Lochner:** Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Oguz Karamustafalioglu:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Luchezar Hranov:** Data curation, Formal analysis, Study Design, Data Analysis, Data Collection, Data Entry, Quality Review, and Manuscript Preparation. **Martin Figee:** Study Design, Data Analysis, Data Collection, Data Entry,

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## Declaration of competing interest

CR in the last 3 years, has served as a consultant for Epiodyne and received research grant support from Biohaven Pharmaceuticals and a stipend from APA Publishing for her role as Deputy Editor at The American Journal of Psychiatry.

BDO has received lecture honoraria from Angelini, Jansen, Lundbeck, Livanova, Arcapharma, and Neuraxpharm.

BB has received lecture honoraria from Lundbeck.

[1]NF declares that in the past 3 years she has held research or networking grants from the ECNP, UK NIHR, EU H2020 (COST Action), University of Hertfordshire; she has accepted travel and/or hospitality expenses from the BAP, ECNP, RCPsych, CINP, International Forum of Mood and Anxiety Disorders, World Psychiatric Association, Indian Association for Biological Psychiatry, Sun; she has received payment from Taylor and Francis and Elsevier for editorial duties. In the past 3 years, she has accepted a paid speaking engagement in a webinar sponsored by Abbott. Previously, she has accepted paid speaking engagements in various industry-supported symposia and has recruited patients for various industry-sponsored studies in the field of OCD treatment. She leads an NHS treatment service for OCD. She holds Board membership for various registered charities linked to OCD. She gives expert advice on psychopharmacology to the UK MHRA.

LP has no financial relationships with commercial interests to declare.

MVA has been on the advisory board of Allergan, Almatica, Brainsway, Lundbeck, Myriad Neuroscience, Otsuka, Purdue Pharma. He has received research support from Janssen-Ortho Inc., Purdue Pharma (Canada), the Canadian Foundation for Innovation, and Hamilton Academic Health Sciences Organization (HAHSO).

## Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpsychires.2021.05.054.

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