


ORIGINAL ARTICLE

Assessing suicide risk in patients with obsessive-compulsive disorder: a dimensional approach

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Objectives: Although an association has been found recently between obsessive-compulsive disorder and an increased risk of suicide, the prevalence of both suicidal ideation and attempts vary considerably and are generally assessed categorically. Our aims were to evaluate the prevalence of suicidal ideation and behaviors using a dimensional approach.

Methods: The sample included 129 patients with obsessive-compulsive disorder. Suicidality was assessed by administering the Columbia-Suicide Severity Rating Scale. Logistic and linear regressions were used to examine predictors of suicidal ideation, severe suicidal ideation, and suicidal behavior.

Results: The lifetime prevalence of suicidal ideation and behaviors were 64.3% and 16.3%, respectively. Lifetime suicidal ideation was associated with the number of stressful life events, duration of illness, Hamilton Rating Scale for Depression scores, and family history of mood disorders. A family history of obsessive-compulsive disorder was associated with a lower probability of lifetime suicidal ideation. Severe suicidal ideation was related to greater severity of the most stressful life event, Hamilton Rating Scale for Depression scores, and longer duration of untreated illness. The probability of lifetime suicidal behavior was related to Hamilton Rating Scale for Anxiety scores, symmetry obsessions, and washing and checking compulsions. The probability of lifetime non-suicidal self-injurious behaviors was related to Hamilton Rating Scale for Anxiety scores.

Conclusions: Recognizing predictors of suicidal ideation/behavior is crucial to identifying patients at greater risk.

Keywords: Obsessive-compulsive disorder; suicidal ideation; suicidal behavior; suicide attempts; risk factors

Introduction

The World Health Organization reports suicide as the eighteenth leading cause of death. It is often claimed that most individuals who die by suicide have mental disorders.¹ Among psychiatric disorders, obsessive-compulsive disorder (OCD) has been traditionally considered to involve a relatively low suicide risk; this assumption has been based mainly on the typical secrecy/shame associated with obsessive-compulsive symptoms² and on its lower impulsive and higher inhibited behaviors.³ Recent systematic reviews, however, have challenged this assumption and pointed out that individuals with OCD should be actually considered at risk for suicidal behaviors (SB) and suicidal ideation (SI)⁴; the pooled prevalence of suicide attempts and lifetime SI are 13.5% and 47.3%, respectively.⁵ These rates, however, involve

considerable variability: lifetime suicide attempt rates range from 2 to 86%, while lifetime SI rates range from 26.3 to 73.5% and current SI rates range from 6.4 to 75%.^{5,6} Fewer data are available regarding completed suicide: Fernández de la Cruz et al.⁷ found that patients with OCD had a greater risk of dying by suicide during a 44-year study period (odds ratio [OR]: 9.83) compared to matched controls, with an incidence rate of 1.48%.

Some authors have investigated risk factors associated with SB, finding that more severe obsessive and depressive symptoms, less severe compulsions, and comorbid substance use disorders were related to an increased prevalence of suicide attempts. Increased lifetime or current SI was associated with more severe obsessions, lower education, higher unemployment rates, lifetime alcohol use disorders, personality disorders, and family history of completed suicide. In contrast, possible

protective factors for SI included the taboo thoughts dimension and lifetime presence of an anxiety disorder.⁵

However, some methodological limitations should be mentioned to indicate the variability of findings and the need for further research on this topic. For example, some of these studies enrolled patients with OCD and schizophrenic or bipolar disorders and mainly analyzed the contribution of comorbid OCD symptoms to suicide risk of the primary non-OCD diagnosis. Other investigations involve partially overlapping samples. Moreover, a significant proportion of studies did not use adequate statistical analyses to evaluate the independent contribution of each postulated risk factor for SB. Another potential limitation is that each study examined a different set of demographic and clinical features as potential contributors to suicidality; as a consequence, for some variables (such as comorbid mood disorders, severity of OCD, severity of depressive symptoms) we have enough information to tentatively conclude that these actually contribute to increased SB risk, while data are scarce for other variables.

The most relevant issue to the way suicide has been studied is how suicidality has been conceptualized. Suicide is a complex and dynamic phenomenon that goes from SI to suicide death and requires specific instruments of evaluation, such as the Columbia-Suicide Severity Rating Scale (C-SSRS),⁸ which allows dimensional analysis of SB. However, the vast majority of studies have used open-ended questions as part of the clinical interview to obtain information about suicidality, or questionnaires that are neither specifically designed nor validated; other studies have used single items from more complex rating scales not specifically designed to investigate suicidality (e.g., the Hamilton Rating Scale for Depression [HAM-D]).

Only two Indian studies have used the C-SSRS. Gupta et al.⁹ assessed the prevalence of lifetime suicide attempts in 130 patients: 10 individuals (7.7%) had a history of lifetime suicide attempts, while the majority had current and lifetime comorbid depression. Chaudhary et al.¹⁰ studied 50 patients, in whom SI was found in 52%, SB in 24%, and a history of actual suicide attempt in 18%. However, these studies did not report the prevalence of different types of SI according to C-SSRS, different types of SB, or non-suicidal self-injurious behavior (NSSIB).

Therefore, this study investigated suicide in OCD using a dimensional approach and a validated and internationally recognized instrument for assessing suicidality. The primary aim was to evaluate the prevalence of SI and SB with the C-SSRS in a sample of Italians with a principal diagnosis of OCD. The second objective was to examine sociodemographic and clinical features associated with increased risk of SI and SB.

Methods

Sample

The data were derived from a prospective observational study of patients with OCD. The sample consisted of adults (≥ 18 years of age) with a principal diagnosis of

OCD (DSM-5) and total Yale-Brown Obsessive Compulsive Scale scores ≥ 16 who were referred to the Department of Neuroscience, University of Turin.

Assessment

Data were obtained through a systematic face-to-face interview and a semi-structured interview employed by our research group in previous studies.¹¹ The interview's format covered the following areas:

Sociodemographic data

Age, sex, marital status, education level and occupational status.

Clinical features of OCD

Up to three primary obsessions and compulsions were listed for each subject through the Yale-Brown Obsessive Compulsive Scale Symptom Checklist. Age at symptom onset was defined as the age when the first obsessive and/or compulsive symptoms were noticed by the patient. Age at disorder onset was dated within 1 month of the first occurrence of obsessive and compulsive symptoms that caused marked distress, were time consuming (more than 1 h a day) or interfered with the patient's normal daily functioning. Onset was considered abrupt when the symptoms reached a clinically significant intensity within 1 week of onset. All other types of onset were considered insidious. The course of the disorder was considered episodic when at least one circumscribed symptom-free interval (6 months) had occurred; all other types were considered chronic. Duration of untreated illness (DUI) was defined as the interval between onset and the first adequate treatment (appropriate medication at minimally effective dosages for an adequate period of time) according to international guidelines.¹²

Psychiatric comorbidities

Psychiatric comorbidities were determined according to the Italian version of the Structured Clinical Interview for DSM-5 Axis I Disorders. Personality status was assessed using the Italian version of the Structured Clinical Interview for DSM-5 Axis II Disorders. Diagnoses made with DSM-IV criteria were updated to meet the DSM-5 criteria.

Life events (LE)

The raters had to decide whether an event that occurred in the 12 months preceding OCD onset would fit in any of the 61 items described in the list of Paykel et al.¹³ Each LE reported was carefully investigated to determine the exact time of occurrence. To facilitate accurate dating, a calendar for the investigated year was made, and the participants were asked to show their geographical, work, and school positions throughout that year and to recall any circumstances that might serve as anchor points. A subject was considered to have experienced a severe event when any of the top 20 events on Paykel et al.'s list¹³ had occurred.

Suicidality

All the patients were assessed using the Italian version of the C-SSRS Lifetime/Recent version,⁸ a semi-structured clinical interview consisting of four subscales that assesses SI severity, SI intensity, and SB. The first subscale, the severity scale, is a 5-point ordinal scale ranging from 1 (wish to be dead) to 5 (active suicidal ideation with specific plan and intent). Individuals who denied ideation received a 0. The second subscale, which measures the intensity of ideation (intensity subscale), consists of five items: frequency, duration, controllability, deterrents, and reasons for ideation, each of which is rated on an ordinal scale (with total scores ranging from 2 to 25). These five items are completed only by individuals who endorse at least one of the severity items. The third scale, the behavior subscale, investigates actual, aborted, and interrupted suicide attempts, preparatory behavior for a suicide attempt, and NSSIB. The fourth subscale, lethality, assesses actual attempts; actual lethality is rated on a 6-point scale, and if actual lethality is 0, the potential lethality of attempts is rated on a 3-point scale. For the purpose of the present study, suicidality was assessed regarding SI and SB. Lifetime SI was considered a score ≥ 1 in the severity subscale. Lifetime severe SI (SSI) was considered a lifetime SI score ≥ 4 in the severity subscale (high-risk patients). This dichotomization has been used previously¹⁴ and is based on indications that the intent to act (the extent to which one is ready to act on thoughts of killing oneself) could be a clinically meaningful threshold for future SB.⁸ Lifetime SB was considered a score ≥ 1 in the behavior subscale. Again, the method of dichotomizing any SB vs. no SB has been used in previous studies^{8,14} and was based on findings that engaging in suicidal acts is associated with an increased risk of subsequent suicide attempts.¹⁵ NSSIB was assessed with a specific item in the behavior subscale.

The Hamilton Rating Scale for Anxiety (HAM-A) and the 17-item HAM-D were used to assess patients with OCD.

Statistical analysis

The sociodemographic and clinical features of the patients were summarized as mean and SD for continuous variables and as frequency and percentage for categorical variables. We tested the distribution of continuous variables with the Kolmogorov-Smirnov test. Because the data were not normally distributed, we reported also the medians.

Suicidal ideation

The sample was divided into two subgroups according to the lifetime presence or absence of SI: OCD with SI (score ≥ 1 on the suicidal severity subscale) vs. OCD without SI (score = 0). To analyze the sociodemographic and clinical features associated with lifetime SI, Student's *t*-test and the χ^2 test were used. A second level of analysis (Student's *t*-test and χ^2 tests) was performed to determine associations between the participants' sociodemographic and clinical features with lifetime SSI (high-risk patients):

OCD with SSI (score ≥ 4 on the suicidal severity subscale) vs. OCD without SSI (score < 4). Binary logistic regression was used to identify explanatory variables associated with lifetime SI (or lifetime SSI), considering the presence of lifetime SI (or lifetime SSI) as the dependent variable. Significant variables were selected using a forward stepwise procedure. A probability of 0.05 was required for inclusion in the equation. Finally, the mean value of the SI intensity subscale was evaluated among participants with lifetime SI. Student's *t*-test, the Spearman correlation coefficient, and linear regression were used to assess predictors of more intense SI.

Suicidal behavior

The sample was divided into two subgroups according to lifetime presence or absence of SB: OCD with SB (any SB, i.e., preparatory acts, aborted attempts, interrupted attempts, and actual attempts) vs. OCD without SB. To analyze the sociodemographic and clinical features of patients with lifetime SB, Student's *t*-test, the χ^2 test, and binary logistic regression were used, considering the presence of lifetime SB as the dependent variable. Moreover, the sociodemographic and clinical features of patients with OCD and NSSIB were evaluated, comparing OCD with NSSIB and OCD without NSSIB using Student's *t*-test, the χ^2 test, and binary logistic regression. Significant variables were selected using a forward stepwise procedure. A probability of 0.05 was required for inclusion in the equation.

The group comparison results were presented as two-sided *p*-values (< 0.05). All statistical analyses were performed in IBM SPSS Statistics 25.0.

For each logistic regression analysis, we tested collinearity (variable inflation factor) between potential explanatory variables (those significantly explaining the dependent variable). We considered a variable inflation factor > 2.5 as indicative of potential multicollinearity.

Ethics statement

All participants who presented at our inpatient and outpatient services provided written informed consent (the form was reviewed by our ethics committee) to allow use of their clinical data for research purposes (assuming anonymous handling). A specific request was made to our ethics committee (Comitato Etico Interaziendale Azienda Ospedaliera-Universitaria San Luigi Gonzaga di Orbassano) for access to the clinical records of all patients with OCD who provided consent; the protocol was approved by the institutional ethics committee (protocol number 0007375).

Results

A total of 129 patients with a principal diagnosis of OCD were enrolled in the study. The sample's demographic and clinical features are shown in Table 1. The lifetime prevalence of SI and SB were 64.3% ($n=83$) and 16.3% ($n=21$), respectively. Figures 1 and 2 show the severity of lifetime SI and the different types of lifetime SBs in the sample.

Table 1 Sociodemographic and clinical characteristics of the total sample (n=129)

Sex	
Male	82 (63.6)
Female	47 (36.4)
Age, mean (SD)	36.3 (13.3) (median: 34.0)
Marital status	
Single	78 (60.5)
Married	43 (33.3)
Separated	6 (4.7)
Widowed	2 (1.6)
Education (years), mean (SD)	13.5 (3.7) (median: 13.0)
Paid employment	
Yes	69 (53.5)
No	60 (46.5)
Family history of	
OCD	23 (17.8)
Mood disorders	42 (32.6)
Anxiety disorders	23 (17.8)
Age at symptom onset, mean (SD)	17.1 (7.5) (median: 15.0)
Age at disorder onset, mean (SD)	22.1 (8.3) (median: 20.0)
Onset	
Abrupt	23 (17.8)
Insidious	106 (82.2)
Course	
Chronic	115 (89.1)
Episodic	14 (10.9)
Duration of illness (months), mean (SD)	173.3 (136.6) (median: 144.0)
DUI	
DUI (months), mean (SD)	90.4 (99.9) (median: 60.0)
Brief (\leq 24 months)	40 (31.0)
Long ($>$ 24 months)	89 (69.0)
YBOCS, mean (SD)	
Total score	24.1 (4.7) (median: 24.0)
Obsessions subscore	12.2 (2.5) (median: 12.0)
Compulsions subscore	11.9 (2.8) (median: 12.0)
Stressful LEs prior to onset,	
LEs (\geq 1)	50 (38.8)
Severe LEs (\geq 1)	19 (14.7)
Number LEs, mean (SD)	0.6 (0.9) (median 0.0)
Total score (all events), mean (SD)	6.9 (11.2) (median 0.0)
Single highest event score, mean (SD)	4.6 (6.2) (median 0.0)
HAM-D, mean (SD)	10.2 (6.1) (median 9.0)
HAM-A, mean (SD)	10.8 (6.3) (median 10.0)
Lifetime psychiatric comorbidities	
Any lifetime comorbid disorder	90 (69.8)
Any mood disorders	64 (49.6)
Major depressive disorder	45 (34.9)
Bipolar disorder type I	8 (6.2)
Any anxiety disorders	28 (21.7)
Any eating disorders	3 (2.3)
Any substance use disorder	9 (7.0)
Any personality disorders	30 (23.3)
Type of obsessions	
Aggressive	84 (65.1)
Contamination	53 (41.1)
Sexual	22 (17.1)

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Table 1 (continued)

Hoarding/saving	13 (10.1)
Religious	24 (18.6)
Symmetry or exactness	46 (35.7)
Somatic	32 (24.8)
Type of compulsions	
Cleaning/washing	60 (46.5)
Checking	85 (65.9)
Repeating	59 (45.7)
Counting	21 (16.3)
Ordering/arranging	39 (30.2)
Hoarding/collecting	15 (11.6)

Data presented as n (%).

DUI = duration of untreated illness; HAM-A = Hamilton Anxiety Rating Scale; HAM-D = Hamilton Depression Rating Scale; LE = life event; OCD = obsessive-compulsive disorder; YBOCS = Yale-Brown Obsessive-Compulsive Scale.

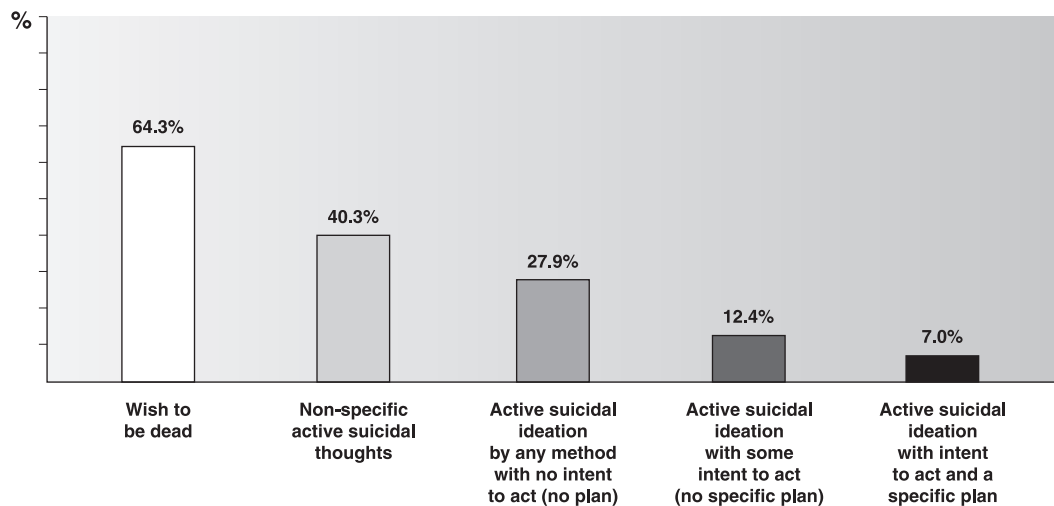


Figure 1 Cumulative distribution of the severity of suicidal ideation in individuals with obsessive-compulsive disorder (n=129).

Suicidal ideation

The statistically significant differences between OCD patients with and without SI are summarized in Table S1, available as online-only supplementary material. Table S2, also available online, shows the significant differences between the groups with and without SSI.

The results of the binary logistic regression models are described in Tables 2 and 3. A higher probability of lifetime SI was positively related to the number of stressful LE ($p = 0.047$, OR 1.660, 95%CI 1.007-2.737), illness duration ($p = 0.025$, OR 1.004, 95%CI 1.001-1.008), higher total HAM-D scores ($p = 0.004$, OR 1.135, 95%CI 1.042-1.237), and a positive family history of mood disorders ($p = 0.011$, OR 3.689, 95%CI 1.356-10.035). A positive family history of OCD was associated with a 0.27 times lower probability of lifetime SI ($p = 0.022$, OR 0.271, 95%CI 0.088-0.831) (Table 2).

The probability of being a high suicide risk (lifetime SSI) was related to greater severity of the most stressful LE ($p = 0.005$, OR 1.151, 95%CI 1.044-1.269) and higher total HAM-D scores ($p = 0.001$, OR 1.201, 95%CI 1.079-

1.337). Longer DUI (> 24 months) was associated with an eight-fold higher probability of lifetime SSI ($p = 0.051$, OR 8.731, 95%CI 0.987-77.217) (Table 3).

For individuals with lifetime SI (n=83), the mean SI intensity subscale value was 12.3 (± 4.7). Tables S3 and S4, available as online-only supplementary material, summarize the data of variables significantly associated with a higher SI intensity. The results of the stepwise linear regression analysis confirmed the association between a greater SI intensity and comorbid mood disorders ($p = 0.022$, β 2.07, 95%CI 0.31-3.84), washing compulsions ($p < 0.001$, β 3.63, 95%CI 1.93-5.34), mean HAM-A score ($p = 0.016$, β 0.17, 95%CI 0.03-0.31), and longer DUI ($p = 0.005$, β 2.97, 95%CI 0.90-5.04) (Table 4).

Suicidal behavior

Significant differences between patients with and without SB are summarized in Table S5, available online. Table S6, also available online, shows the significant differences between the patients with and without NSSIB.

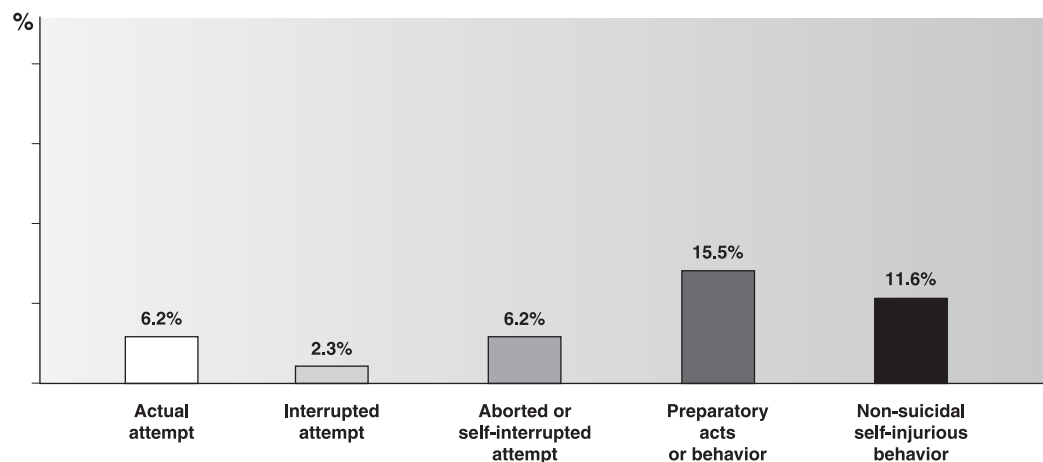


Figure 2 Different types of suicidal behaviors in individuals with obsessive-compulsive disorder (n=129).

Table 2 The relationship between potential explanatory variables and lifetime suicidal ideation: results from the binary logistic regression analysis (n=129)

	B	SE	Wald	p-value	OR	95%CI
N stressful life events	0.507	0.255	3.949	0.047	1.660	1.007-2.737
Duration of illness	0.004	0.002	5.016	0.025	1.004	1.001-1.008
HAM-D	0.127	0.044	8.409	0.004	1.135	1.042-1.237
Family history of OCD	-1.307	0.573	5.210	0.022	0.271	0.088-0.831
Family history of mood disorders	1.305	0.511	6.538	0.011	3.689	1.356-10.035
Constant	-1.636	0.530	9.538	0.002	0.195	-

$\chi^2 = 39.334$, $p < 0.001$, R^2 Nagelkerke = 0.361.

HAM-D = Hamilton Depression Rating Scale; OCD = obsessive-compulsive disorder; OR = odds ratios; SE = standard error.

Variable inflation factor (collinearity) between 1.031 and 1.164, indicating no collinearity. The total number of variables initially entered in the model n=12; variables not retained in the model: sex, age, single highest event score, Hamilton Rating Scale for Anxiety, life events (≥ 1), major depressive disorder lifetime, duration of untreated illness (brief vs. long).

Table 3 The relationship between potential explanatory variables and lifetime severe suicidal ideation (high-risk patients): results from the binary logistic regression analysis (n=129)

	B	SE	Wald	p-value	OR	95%CI
Highest stressful life event	0.141	0.050	8.033	0.005	1.151	1.044-1.269
HAM-D	0.183	0.055	11.187	0.001	1.201	1.079-1.337
DUI > 24 months	2.167	1.112	3.796	0.051	8.731	0.987-77.217
Constant	-7.015	1.503	21.776	< 0.001	0.001	-

$\chi^2 = 28.842$, $p < 0.001$, R^2 Nagelkerke = 0.380

DUI = duration of untreated illness; HAM-D = Hamilton Depression Rating Scale; OR = odds ratios; SE = standard error.

Variable inflation factor (collinearity) between 1.022 and 1.047, indicating no collinearity. Total number of variables initially entered in the model n=13; variables not retained in the model: sex, number of life events, life events (≥ 1), severe life events (≥ 1), Hamilton Rating Scale for Anxiety (HAM-A), Beck Depression Inventory (BDI) lifetime, substance use disorder lifetime, duration of illness, family history of mood disorders, DUI.

The results of the binary logistic regression models are shown in Tables 5 and 6. The probability of lifetime SB was related to HAM-A score ($p = 0.002$, OR 1.147, 95%CI 1.050-1.252). Symmetry obsessions were associated with a 2.88 times higher odds of lifetime SB ($p = 0.049$, OR 2.878, 95%CI 1.004-8.248). Washing and checking compulsions were associated with a 3.90 and 4.42 times higher probability of lifetime SB, respectively ($p = 0.019$, OR 3.895, 95%CI 1.246-12.177) ($p = 0.042$, OR 4.422, 95%CI 1.055-18.532) (Table 5). The probability of lifetime NSSIB was significantly associated with HAM-A score ($p < 0.001$, OR 1.219, 95%CI 1.101-1.349) (Table 6).

Discussion

SI and behavior have traditionally been conceived as a unidimensional construct, with passive ideation, active intent, and SB existing on a continuum. We chose to use the C-SSRS since it was designed to quantify the full spectrum of SI and SB. The usefulness of this dimensional approach was demonstrated by this scale's original validation results, suggesting that a history of severe ideation with at least some intent to die confers a greater risk of SB than a history of ideation with no intent to die.⁸ Establishing severity thresholds to evaluate suicide risk of

Table 4 The relationship between potential explanatory variables and greater intensity of suicidal ideation: results from the stepwise linear regression analysis (n=83)

	B	SE	t	95%CI	p-value
Washing compulsions	3.634	0.858	4.237	1.926-5.341	< 0.001
HAM-A	0.171	0.070	2.453	0.032-0.309	0.016
DUI > 24 months	2.974	1.040	2.861	0.904-5.043	0.005
Comorbid mood disorders	2.071	0.887	2.335	0.305-3.837	0.022
Constant	5.002	1.289	3.879	2.435-7.569	< 0.001

Analysis of variance: $F = 10.438$, $p < 0.001$, $R^2 = 0.349$, adjusted $R^2 = 0.315$.

DUI = duration of untreated illness; HAM-A = Hamilton Anxiety Rating Scale; SE = standard error.

Variable inflation factor (collinearity) between 1.008 and 1.068, indicating no collinearity.

Total number of variables initially entered in the model n=13; variables not retained in the model: age, Yale-Brown Obsessive-Compulsive Scale (YBOCS) total score, YBOCS obsessions score, Hamilton Rating Scale for Depression, family history of mood disorders, substance use disorder lifetime, contamination obsessions, symmetry obsessions, ordering/arranging compulsions.

Table 5 The relationship between potential explanatory variables and lifetime suicidal behavior: results from the binary logistic regression analysis (n=129)

	B	SE	Wald	p-value	OR	95%CI
HAM-A	0.137	0.045	9.309	0.002	1.147	1.050-1.252
Symmetry obsessions	1.057	0.537	3.871	0.049	2.878	1.004-8.248
Washing compulsions	1.360	0.581	5.468	0.019	3.895	1.246-12.177
Checking compulsions	1.487	0.731	4.135	0.042	4.422	1.055-18.532
Constant	-5.696	1.175	23.514	< 0.001	0.003	-

$\chi^2 = 24.249$, $p < 0.001$, R^2 Nagelkerke = 0.291.

HAM-A = Hamilton Anxiety Rating Scale; OR = odds ratios; SE = standard error.

Variable inflation factor (collinearity) between 1.015 and 1.043, indicating no collinearity. Total number of variables initially entered in the model n=10; variables not retained in the model: severe life events (≥ 1), single highest event score, Hamilton Rating Scale for Depression, Beck Depression Inventory, family history of mood disorders, counting compulsions.

Table 6 The relationship between potential explanatory variables and lifetime non-suicidal self-injurious behavior: results from the binary logistic regression analysis (n=129)

	B	SE	Wald	p-value	OR	95%CI
HAM-A	0.198	0.052	14.606	< 0.001	1.219	1.101-1.349
Constant	-4.711	0.870	29.311	< 0.001	0.009	

$\chi^2 = 18.748$, $p < 0.001$, R^2 Nagelkerke = 0.264.

HAM-A = Hamilton Anxiety Rating Scale; OR = odds ratios; SE = standard error.

Total number of variables initially entered in the model n=7; variables not retained in the model: live events (≥ 1), severe life events (≥ 1), single highest event score, Hamilton Depression Rating Scale (HAM-D), Beck Depression Inventory, family history of mood disorders.

(dimensional approach) may be more informative than merely asking whether SI is present or not (dichotomous variable). Moreover, we chose to assess lifetime variables (e.g., worst-point ideation), since research has suggested that lifetime SI is a stronger predictor of subsequent suicide than current ideation.^{16,17}

We found that lifetime SI in adult patients with OCD is common: 64.3% of our sample reported wishing to be dead at least once in their life; moreover, 16.3% of the participants reported at least one lifetime SB. Furthermore, a considerable proportion of individuals with OCD are to be considered at high risk for suicide: 12.4% of our sample scored ≥ 4 on the severity scale of the C-SSRS, i.e., presented active SI with a specific plan and intent (7%), or active SI with some intent to act but no specific plan (5.4%). Concerning SB, only a minority of our patients had actually attempted suicide (6.2%); many others, however, engaged in some SBs, such as interrupted attempts (2.3%), aborted or self-interrupted

attempts (6.2%), or in preparatory acts or behaviors (15.5%). A dimensional evaluation of all types of SB, rather than just attempted suicides, is thus necessary and may be more useful for preventing future suicides. Moreover, a considerable proportion of our sample (11.6%) engaged in NSSIB.

The implications of these results are that patients with OCD are at high risk of suicide and that this subject should be actively investigated by clinicians: it is possible that many such patients would not spontaneously report suicidality, since OCD is known to be associated with secrecy and shame.² Moreover, high-risk patients should be carefully monitored to prevent actual suicide attempts. Clinicians should pay particular attention to all possible signs and red flags for suicide risk (through an in-depth clinical interview or a specific, validated, internationally recognized dimensional instrument such as the C-SSRS). Identifying those at greater risk could be a useful approach for prevention interventions aimed at specific

categories of patients. Thus, it is essential to investigate any demographic or clinical factors potentially associated with this increased risk.

We found that lifetime SI was associated with the number of stressful LE prior to OCD onset, the severity of comorbid depressive symptoms, longer illness duration, and a family history of mood disorders. More interestingly, the greater the severity of the LE associated with onset of the disorder, the severity of depressive symptomatology, and the DUI, the higher the risk of severe SI/ high suicide risk. Moreover, longer DUI (> 24 months), more severe comorbid anxiety symptoms, comorbid mood disorders, and washing compulsions were associated with more intense SI. We also found that longer duration of illness and, more importantly, longer DUI (> 24 months) are predictive of lifetime SI, severe SI, and more intense SI. This effect remained significant even after controlling for other potential factors, such as the severity of OCD symptoms. Lifetime SB was associated with the presence of symmetry obsessions, washing and checking compulsions, and a greater severity of comorbid anxiety symptoms. Considering that washing compulsion and anxiety symptom severity were also related to more intense SI, these clinical features could be a marker of the transition from SI to SBs. The severity of anxiety symptoms was also related to lifetime presence of NSSIB.

Among individuals with OCD, a recent meta-analysis found a 47.3% pooled prevalence of lifetime SI and a 13.5% pooled prevalence of suicide attempts.⁵ However, the vast majority of studies included in this meta-analysis did not use a dimensional approach or a specific validated instrument. Other more recent studies have confirmed that OCD patients are at risk of suicide,¹⁸⁻²² but, again, they have not used a dimensional approach to evaluate the phenomenon of suicidality. Furthermore, to our knowledge, we are the first group to specifically investigate NSSIB and evaluate the predictors of NSSIB in OCD. Different authors have pointed out that non-suicidal self-injury should be evaluated as an important risk factor in suicide attempts since they often co-occur.²³ Research concerning the prevalence of NSSIB among individuals with OCD is scant, and clinicians do not consider OCD to be associated with such behaviors. Our study, on the contrary, confirms recent results indicating an association between NSSIB and OCD²⁴ and provides an estimate of the prevalence of the phenomenon. We also found that the severity of comorbid anxiety symptoms was related to the lifetime presence of NSSIB. Previously, NSSIB has been associated with clinical features in psychiatric disorders other than OCD, such as anxiety symptoms,²⁵ depressive symptoms,²⁶ and impulsivity.²⁷ In particular, anxiety seems to play a critical role in NSSIB: self-harmers have reported experiencing a sense of relief after episodes of deliberate self-harm, with a resulting reduction in anxiety level.²⁸ Previous studies have indicated that disorders involving high levels of anxiety and impulsivity predict a transition from SI to SB,²⁹ and such clinical features could play a crucial role in the pathway from suicidal thoughts to suicide attempts.

Regarding sociodemographic and clinical features related to different thresholds of SI (lifetime SI or lifetime

SSI), our findings are supported by the literature, which shows a relationship between comorbid mood disorders, greater severity of depressive and/or anxiety symptoms, and current/lifetime SI.⁵ In recent years, some authors have suggested that comorbid disorders, such as mood disorders, could be a mediating factor between OCD and suicidality due to the greater OCD severity, distress, and functional impairment of such patients.^{30,31} However, it is not clear whether the depressive symptoms act as a confounder or a factor in the causal pathway between OCD and suicide.

Moreover, higher rates of SI in patients with OCD and comorbid disorders could be attributed not only to depression but to other relevant disorders, such as post-traumatic stress disorder, which has also been associated with SB in patients with OCD.³² Childhood trauma and adverse social relationships in childhood have been associated with more severe OCD symptoms³³ and suicidality in adulthood.³⁴ Stress may also serve as both a triggering and aggravating factor, meaning it can prompt symptoms to appear while also contributing to their exacerbation.³⁵ To our knowledge, this is one of the few studies to show a specific association between the occurrence and severity of recent stressful LE and SI in OCD. A recent cross-sectional study found some interesting associations between LE and specific OCD features: self-reported race (non-White); comorbidities involving separation anxiety, attention deficit hyperactivity disorder, and post-traumatic stress disorder; the presence of any sensory phenomena; and lifetime psychiatric hospitalization. The authors suggested that the association between LE, comorbid post-traumatic stress disorder, and lifetime psychiatric hospitalization in OCD patients could be explained by the higher risk of SBs in patients with post-traumatic stress disorder, in whom traumatic LE are necessary to fulfill the diagnostic criteria.³² Our research group has already found a relationship between environmental stressor, abrupt OCD onset, and some specific clinical features, such as somatic obsessions, symmetry obsessions, repeating, ordering/arranging, counting, and checking compulsions,³⁶ while other authors have shown that stressful LE at onset are associated with a distinct clinical pattern (later OCD onset, less family history of OCD, and the washing dimension).³⁷ The present study highlights the clinical importance of evaluating whether disorder onset was associated with a stressful LE (severe ones in particular), since this association may predict greater severity of SI, which in turn may predict the occurrence of suicide attempts. It appears then that both childhood trauma and recent stressful LE result in a higher suicide risk in individuals with OCD.

Regarding DUI and suicide, we are not aware of any prior study linking DUI to higher suicide risk. A longer duration of illness and/or DUI have been previously associated with poorer outcomes in terms of response to serotonin reuptake inhibitors and remission from OCD over the years,³⁸⁻⁴⁰ which highlights the unmet global need for early intervention services for OC related disorders.^{41,42} Our study also suggests that measuring DUI during the initial evaluation of individuals with OCD may be useful in personalizing treatment (e.g., more

frequent visits, aggressive treatment, and active inquiry about SI with a dimensional approach).

Concerning OCD symptom profiles, the majority of the studies have found an association between the unacceptable thought symptoms dimension and SI,^{30,43} while only Gupta et al.⁹ found that the washing dimension was related to SI. In our sample, washing compulsions were associated with a greater intensity of SI/lifetime SB. Differences between our findings and previous studies could be explained by the use of a specific dimensional instrument to assess suicidality, which can determine not only the presence or absence of SI, but also its intensity. Patients with washing compulsions could experience more intense SI due to their higher level of perceived distress: a higher level of time-consuming rituals, family accommodation, and medical comorbidities.

Our study has several strengths, including a well-characterized clinical sample and the use of standardized validated assessments. Evaluating suicidality in OCD through a dimensional approach allowed us to investigate this phenomenon in a more multifaceted and dynamic way. However, our study should be considered in light of some limitations. First, the cross-sectional design does not allow causal relationships to be inferred or etiological factors to be assessed. The sample did not include completed suicides, meaning that we are unable to test whether the results are generalizable to suicide deaths. Since the sample consisted of patients from a tertiary referral center for OCD (i.e., presumably more severe cases), the results may not be generalizable to all patients with OCD. Another study limitation is the sample size; although we were able to enroll and characterize 129 primary OCD patients, the sample did not have the statistical power to substantiate our results in some of the regression analyses (e.g., only 15 of the 129 enrolled patients had NSSIB; thus, the results about potential predictors of NSSIB should be viewed as preliminary). Moreover, some other relevant clinical elements, such as religiosity and psychosocial isolation, were not evaluated in this study. Despite these limitations, our findings are noteworthy since they suggest that a significant proportion of patients with OCD have lifetime SI/SB, which contradicts the traditional notion that OCD entails a relatively low risk of suicide. It is important to determine which patients should be considered at higher risk to guide preventive pharmacological/psychological treatments and psychoeducational interventions.

Disclosure

The authors report no conflicts of interest.

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