

Suicidal Behavior in Obsessive-Compulsive Disorder

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Objective: There are limited data on suicidal behavior in obsessive-compulsive disorder (OCD). This study examines suicidal behavior and its clinical correlates in OCD subjects.

Method: One hundred consecutive DSM-IV OCD subjects attending the specialty OCD clinic and the inpatient services of a major psychiatric hospital in India from November 1, 2003, to October 31, 2004, formed the sample of this study. Subjects were assessed systematically by using structured interviews and various rating scales. The Scale for Suicide Ideation-worst ever (lifetime) and -current measured suicidal ideation. The 24-item Hamilton Rating Scale for Depression (HAM-D) measured severity of depression, and the Beck Hopelessness Scale (BHS) measured hopelessness. We performed assessments at study entry. We employed binary logistic regression (Wald) forward stepwise analysis for prediction of suicidal ideation and suicide attempt, and we used structural equation modeling for identifying the potential factors contributing to suicidal ideation.

Results: The rates of suicidal ideation, worst ever and current, were 59% and 28%, respectively. History of suicide attempt was reported in 27% of the subjects. For past suicide attempt, worst ever suicidal ideation ($p < .001$) was the only significant predictor, with an overall prediction of 89%, and accounted for 60% of the variance. For worst ever suicidal ideation, major depression ($p = .043$), HAM-D score ($p = .013$), BHS score ($p = .011$), and history of attempt ($p = .009$) were significant predictors, with an overall prediction of 82% and variance of 56%. Somewhat similar predictors emerged as significant for current suicidal ideators, with an overall prediction of 85% and variance of 50%. In the structural equation model, too, presence of depression and high BHS score contributed to suicidal ideation.

Conclusions: OCD is associated with a high risk for suicidal behavior. Depression and hopelessness are the major correlates of suicidal behavior. It is vital that patients with OCD undergo detailed assessment for suicide risk and associated depression. Aggressive treatment of depression may be warranted to modify the risk for suicide. Future studies should examine suicidal behavior in a prospective design in larger samples to examine if severity of OCD and treatment nonresponse contribute to suicide risk.

(*J Clin Psychiatry* 2007;68:1741-1750)

Received May 4, 2006; accepted Feb. 28, 2007. From the National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore, India.

The authors report no financial affiliation or other relationship relevant to the subject of this article.

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Suicides in the general population are associated with male gender, older age, widowed status, serious and painful physical illnesses, hopelessness, and poor social support.¹ It is well known that certain mental illnesses carry with them a remarkably high risk of suicide. More than 90% of all suicides are attributed to an emotional or psychiatric illness.² Psychiatric diagnoses associated with completed suicide include major mood disorders, schizophrenia, and addiction disorders.³ Moreover, 2 or more psychiatric disorders may interact synergistically to increase the risk of suicide to a level higher than what either diagnosis alone might reach.^{2,4}

Although certain psychiatric conditions are associated with high suicide risk, the risk of suicide in anxiety disorders is not well studied. Data about suicide risk in anxiety disorders come mainly from studies⁵⁻⁷ that explore diagnostic comorbidity in suicidal patients and from studies⁸⁻¹² of panic disorder. Surprisingly, there are very limited data on suicidal behavior in obsessive-compulsive disorder (OCD), considering it is a common psychiatric condition that often runs a chronic course¹³⁻¹⁵ with high rates of comorbidity¹⁶⁻¹⁸ and treatment nonresponse.¹⁹⁻²² OCD also has a significant negative impact on the sufferer, his or her family and social life, and health-related quality of life.^{23,24} In addition, OCD is associated with lower rates of marriage and high rates of divorce.²³⁻²⁵

Most of the studies have examined suicidal patients and looked at the diagnostic comorbidity. In a study by Rudd and colleagues,²⁶ 6.7% of suicidal patients received a diagnosis of OCD. In the National Institute of Mental Health Epidemiologic Catchment Area Study, OCD was associated with enhanced risk for suicide attempts even after the removal of those subjects with major depression or agoraphobia.²⁷ However, in a study²⁸ of adolescents, patients with OCD did not differ from other adolescent patients in levels of suicidal behavior, and the actual number of attempts was much lower in adolescents with OCD. The study found an inverse correlation between

suicidal behavior and depression and argued that depression had a protective effect.

It is evident that there are very limited data on suicidal behavior in OCD. In this study, we estimated the prevalence of suicidal behavior (ideations [current and worst ever] and attempts) and the sociodemographic and clinical correlates of suicidal behavior in OCD subjects attending the specialty OCD clinic and the inpatient services of a major psychiatric hospital in India.

METHOD

Subjects

One hundred consecutive OCD subjects fulfilling the inclusion criteria were recruited from November 1, 2003, to October 31, 2004, from the specialty OCD clinic and the inpatient services of the National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore, India. All the participants gave written informed consent. We conducted the study as per the ethical guidelines of the NIMHANS. The inclusion criteria were the following: (1) satisfying DSM-IV criteria for OCD, (2) having at least 1 year of illness, and (3) having a total score of 16 or greater for mixed subtype of OCD and 8 or greater for predominantly obsessive or compulsive subtype of OCD on the Yale-Brown Obsessive Compulsive Scale (Y-BOCS).²⁹ We used the cutoff scores of 16 and 8 on the Y-BOCS in addition to DSM-IV criteria to ensure that the study included subjects who were clinically ill. All the subjects sought consultation primarily for OCD, and obsessive-compulsive symptoms were the most prominent.

Assessments

Initially, a clinical diagnosis of OCD was made after a detailed assessment using a proforma checklist specially devised to assess OCD patients. A qualified psychiatrist (P.K.) administered the Structured Clinical Interview for DSM-IV Axis I and II disorders.^{30,31} We made the principal diagnosis of OCD and other comorbidities by consensus opinion of the authors (P.K. and Y.C.J.R.). The subjects were also administered the following scales: the 24-item Hamilton Rating Scale for Depression (HAM-D),³² the Y-BOCS checklist and severity rating scale, the tic disorders subsection of the Schedule for Tourette and Other Behavioral Syndromes,³³ the Clinical Global Impressions-Severity of Illness (CGI-S) and -Improvement (CGI-I) subscales,³⁴ the Global Assessment of Functioning (GAF) Scale,³⁵ and the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q).³⁶ We assessed insight into OCD using item 11 on the Y-BOCS. All the assessments were done at study entry by a single rater who was not blind to the study objectives.

We assessed suicidal ideation using the Scale for Suicide Ideation (SSI).³⁷ The SSI is a 19-item clinician-administered instrument used during the course of a semi-

structured interview. Each item has 3 alternative statements graded in severity from 0 to 2; the total score is computed by adding the individual item scores. The SSI measures both current (in the past 1 week of assessment) and worst ever suicidal ideation (a report of the suicidal ideation at any time in life which the patient reports to be the worst). The SSI-worst ever is, in a way, a measure of lifetime suicidal ideation. It includes either current or past ideation, whichever is worse. For example, many current ideators may not have had suicidal ideas in the past but could well rate the current as their worst. Some could have had suicidal ideation both current and past but were asked to choose the worst. In essence, if they ever had suicidal ideation, either current or in the past, they were asked to tell us their worst ever. The term essentially means worst ever lifetime suicidal ideation.

Subjects who scored 5 or less on SSI were considered suicide nonideators, and subjects having any score greater than 5 were considered suicidal ideators.³⁸ We elicited history of suicide attempt by asking the patient, "In your lifetime, did you ever make a suicide attempt?" We defined suicide attempt as an act of deliberate self-harm with non-fatal outcome. The definition included deliberate ingestion of drugs in excess of the prescribed dosage with the intention to harm oneself. It excluded accidental poisoning and overdose. Hopelessness was assessed by using the Beck Hopelessness Scale (BHS).³⁹ The scale includes 20 items, with response being 0 or 1. Of the 20 items, 9 are keyed false and 11 are keyed true. The total score ranges from 0 to 20. In a different study,⁴⁰ a cutoff score of 9 or greater identified 94% of patients who eventually committed suicide, a finding that indicates its high predictive value.

Statistical Analysis

Suicidal ideators versus nonideators and attempters versus nonattempters were compared by using the independent sample t test and the χ^2 /Fisher exact test for continuous variables and categorical variables, respectively. We used binary logistic regression (Wald) forward stepwise analysis for prediction of suicide attempt and suicidal ideation. All variables that were significant ($p < .01$) or showed a trend toward significance ($p \leq .05$) on univariate analyses were included for regression analyses (details of included variables are provided in the Results section).

We examined the effect of potential risk factors on suicidal ideation through a structural equation model using all the important variables (details in the Results section). For structural equation modeling, the statistical package Amos (SPSS, Inc., Chicago, Ill.) was used. Structural equation modeling is a technique to study the interdependence between different variables by combining multiple regression and latent factor analysis to estimate the relationship simultaneously.⁴¹ This method uses the correlation matrix between variables and constructs a structural model in which even a dependent variable becomes an independent

Table 1. Demographic and Illness Characteristics of Obsessive-Compulsive Disorder Patients (N = 100)

Characteristic	Value
Demographic variables	
Age, mean \pm SD, y	27.03 \pm 9.92
Sex, N	
Male	59
Female	41
Marital status, N	
Married	33
Single	67
Religion, N	
Hindu	92
Others	8
Domiciliary status, N	
Urban	75
Rural	25
Education, N	
Illiterate	3
< 5 y	1
5–12 y	28
> 12 y	68
Illness characteristics	
Age at onset, mean \pm SD, y	17.90 \pm 8.25
Duration of illness, mean \pm SD, mo	108.04 \pm 99.95 ^a
Duration of untreated illness, mean \pm SD, mo	68.52 \pm 75.27 ^b
Y-BOCS score, mean \pm SD	
Obsessions	14.31 \pm 2.95
Compulsions	12.14 \pm 5.87
Total	26.40 \pm 7.48
Insight	1.24 \pm 1.05 ^c
HAM-D score, mean \pm SD	16.10 \pm 7.77
BHS score, mean \pm SD	6.67 \pm 5.95 ^d
CGI-S score, mean \pm SD	4.79 \pm 0.95
CGI-I score, mean \pm SD	4.03 \pm 1.10
GAF score, mean \pm SD	54.25 \pm 7.79
Q-LES-Q score, mean \pm SD	45.76 \pm 7.87
Total score on SSI-current, mean \pm SD	3.64 \pm 5.87 ^e
Total score on SSI-worst ever, mean \pm SD	9.97 \pm 9.16 ^f

^aMedian value = 84.0.^bMedian value = 48.0.^cMedian value = 1.0.^dMedian value = 5.0.^eMedian value = 0.0.^fMedian value = 7.5.

Abbreviations: BHS = Beck Hopelessness Scale, CGI-I = Clinical Global Impressions-Improvement scale, CGI-S = Clinical Global Impressions-Severity of Illness scale, GAF = Global Assessment of Functioning, HAM-D = Hamilton Rating Scale for Depression, Q-LES-Q = Quality of Life and Satisfaction Questionnaire, SSI = Scale for Suicide Ideation, Y-BOCS = Yale-Brown Obsessive Compulsive Scale.

variable in other relationships. Structural equation modeling determines whether data are consistent with the constructed model. We could construct structural modeling for suicidal ideators but not for suicide attempters. The SSI score for suicidal ideators enabled use of Pearson correlation matrix, whereas for suicide attempters, attempt is a categorical variable that requires biserial correlation. For biserial correlation to yield meaningful results, a larger sample size would be required.

The Statistical Package for Social Sciences 11 (SPSS Inc., Chicago, Ill.) was used for the other statistical analyses. Statistical significance was set at $p < .01$, and all tests were 2-tailed. We did not use any correction despite

Table 2. Symptom Profile and Comorbidity (N = 100)

Variable	Current, N	Past, N
Obsessions		
Contamination	63	65
Aggression	42	45
Sexual	33	32
Religious	28	28
Hoarding	18	22
Pathological doubt	54	59
Symmetry	31	39
Miscellaneous	42	45
Compulsions		
Washing	60	65
Checking	42	11
Repeating	53	28
Hoarding	9	11
Ordering	25	52
Reassurance seeking	14	19
Miscellaneous	61	56
	Current	Remission
Axis I comorbidity		
Major depressive disorder	26	27
Dysthymia	28	7
Generalized anxiety disorder	10	1
Panic disorder	7	1
Social phobia	6	3
Bipolar disorder	0	8
Psychosis	0	1
Substance use disorder	0	3
Axis II personality disorders		
Any personality disorder	38	
Anxious avoidant	13	
Obsessive compulsive	18	
Dependent	2	
Passive aggressive	1	
Paranoid	1	
Schizotypal	2	
Narcissistic	4	
Borderline	2	
Antisocial	3	

multiple comparisons since our study was exploratory and we did not want undue correction. Instead, we have employed a somewhat conservative significance level of .01.

RESULTS

The demographic and illness characteristics of the 100 OCD subjects are provided in Table 1. A majority of the subjects were single men, had an urban background, and were well educated. They were suffering from moderate to severe OCD for a median duration of 7 years and had moderate global dysfunction. The obsessive-compulsive symptom profile according to the Y-BOCS and a comorbidity profile are shown in Table 2. Any Axis I comorbidity (lifetime) was present in 64 subjects. Depression was the most common comorbid condition, and the sample had no subjects with current and very few with past diagnosis of substance/alcohol dependence. Of the Axis II diagnoses, obsessive-compulsive personality disorder was the most common, followed by anxious

Table 3. Clinical Characteristics in Suicide Attempters (N = 27) and Nonattempters (N = 73)

Variable	Attempters	Nonattempters	χ^2/t	p
Age, mean (SD), y	25.11 (8.76)	27.73 (10.28)	1.178	.240
Sex, N (%)			0.001	.974
Male	16 (59)	43 (59)		
Female	11 (41)	30 (41)		
Marital status, N (%)			3.508	.061
Single	22 (81)	45 (62)		
Married	5 (19)	28 (38)		
Domiciliary status, N (%)			2.858	.091
Rural	10 (37)	15 (21)		
Urban	17 (63)	58 (79)		
Educational status, N (%)			2.831	.418
Illiterate	1 (4)	2 (3)		
< 5 y	1 (4)	0		
5–12 y	7 (26)	21 (29)		
> 12 y	18 (67)	50 (69)		
Illness-related variables, mean (SD)				
Age at onset, y	16.81 (6.42)	18.30 (8.83)	0.798	.420
Duration of illness, mo	97.55 (86.36)	111.91 (104.82)	0.636	.520
Y-BOCS score				
Obsessions	15.51 (2.27)	13.86 (3.1)	-2.554	.012
Compulsions	12.81 (6.23)	11.89 (5.8)	-0.696	.488
Total	28.22 (7.59)	25.72 (7.4)	-1.49	.139
Item 11 (insight)	1.11 (1.20)	1.28 (1.03)	0.741	.460
CGI-S score	5.18 (0.96)	4.64 (0.91)	-2.583	.011
CGI-I score	4.40 (1.18)	3.89 (1.04)	-2.113	.037
HAM-D score ^a	19.88 (6.64)	14.69 (7.73)	-3.088	.003
BHS score	9.07 (5.97)	5.78 (5.73)	-2.522	.013
GAF score	51.29 (8.50)	55.34 (7.28)	2.356	.020
Q-LES-Q score	43.00 (7.30)	46.78 (7.87)	2.172	.032
Suicide ideation score, mean (SD)				
SSI-current	7.51 (6.95)	2.20 (4.71)	-3.668	.001
SSI-worst ever	20.14 (6.86)	6.20 (6.72)	-9.156	< .001
History of hospitalization, N (%)	14 (52)	49 (67)	1.972	.160
Family history, N (%)				
Any psychiatric disorder	13 (48)	33 (45)	0.069	.793
OCD	5 (19)	16 (22)	0.137	.711
Psychotic illness	4 (15)	5 (7)	0.709	.400
Mood disorders	3 (11)	5 (7)	0.080	.778
Suicide	3 (11)	2 (3)120
Obsessive compulsive symptoms, N (%) ^b				
Religious (current)	12 (44)	16 (22)	4.961	.026
Reassurance seeking (current)	7 (26)	7 (10)	4.369	.037
Reassurance seeking (past)	9 (33)	10 (14)	4.937	.026
Repeating	20 (74)	36 (49)	4.904	.027
Axis I comorbidity, N (%) ^c				
Any comorbidity	20 (74)	44 (60)	1.629	.202
MDD (current)	10 (37)	16 (22)	2.342	.126
MDD (past)	13 (48)	14 (19)	8.393	.006
Any depression, lifetime	21 (78)	38 (52)	5.391	.020
Axis II comorbidity, N (%) ^d	11 (41)	27 (37)	0.118	.731

^aDifferences remain significant even after suicide item is excluded ($t = -2.517$, $p = .014$).

^bOnly significant symptoms are shown.

^cOnly depression data are shown; other comorbid conditions are nonsignificant.

^dDetails of Axis II comorbidity not shown since none were statistically significant.

Abbreviations: BHS = Beck Hopelessness Scale, CGI-I = Clinical Global Impressions-Improvement scale, CGI-S = Clinical Global Impressions-Severity of Illness scale, GAF = Global Assessment of Functioning, HAM-D = Hamilton Rating Scale for Depression, MDD = major depressive disorder, OCD = obsessive-compulsive disorder, Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire, SSI = Scale for Suicide Ideation, Y-BOCS = Yale-Brown Obsessive Compulsive Scale.

avoidant personality disorder. The sample had 27 subjects who had attempted suicide sometime in their life. There were 28 current ideators and 59 worst ever ideators. We compared suicide attempters versus nonattempters (Table 3) and suicidal ideators versus nonideators, worst ever and current, on demographic and illness variables, symptom profile, and comorbidity (Table 4).

Suicide Attempters

Suicide attempters differed significantly from non-attempters with respect to prevalence of major depressive disorder (MDD [past]) and scores on HAM-D and SSI (Table 3). There was a trend toward significance with respect to scores on Y-BOCS-obsessions, CGI-S and -I, BHS, GAF, and Q-LES-Q as well as certain obsessions

Table 4. Clinical Characteristics of Worst Ever Suicidal Ideators (N = 59) and Nonideators (N = 41)^a

Variable	Ideators	Nonideators	χ^2/t	p
Age, mean (SD), y	28.69 (8.59)	27.22 (11.68)	0.158	.874
Sex, N (%)			3.954	.047
Male	30 (51)	29 (71)		
Female	29 (49)	12 (29)		
Marital status, N (%)			0.053	.819
Single	39 (66)	28 (68)		
Married	20 (34)	13 (32)		
Domiciliary status, N (%)			1.116	.291
Rural	17 (29)	8 (20)		
Urban	42 (71)	33 (80)		
Educational status, N (%)			1.156	.764
Illiterate	2 (3)	1 (2)		
< 5 y	1 (2)	0 (0)		
5–12 y	15 (25)	13 (32)		
> 12 y	41 (69)	27 (66)		
Illness-related variables, mean (SD) ^a				
Age at onset, y	18.66 (7.53)	16.80 (9.16)	-1.108	.271
Duration of illness, mo	97.83 (80.9)	122.73 (121.92)	1.228	.222
Y-BOCS score				
Obsessions	14.88 (2.41)	13.48 (3.46)	-2.372	.020
Compulsions	12.01 (6.30)	12.31 (5.27)	0.250	.803
Total	26.84 (7.73)	25.75 (7.14)	-0.176	.476
Item 11 (insight)	1.11 (1.05)	1.41 (1.04)	1.386	.169
CGI-S score	4.91 (0.95)	4.60 (0.94)	-1.583	.117
CGI-I score	4.15 (1.17)	3.85 (0.98)	-1.335	.185
HAM-D score ^b	19.06 (7.20)	11.82 (6.50)	-5.130	< .001
BHS score	8.74 (6.40)	3.68 (3.70)	-5.024	< .001
GAF score	53.55 (7.88)	55.24 (7.66)	1.063	.290
Q-LES-Q score	43.61 (7.28)	48.85 (7.73)	3.453	.001
Suicide ideation score, mean (SD)				
SSI-current	5.66 (6.55)	0.73 (2.89)	-5.100	< .001
SSI-worst ever	16.15 (6.82)	1.07 (1.66)	-16.294	< .001
History of suicide attempt, N (%)	26 (44)	1 (2)	21.268	< .001
History of hospitalization, N (%)	24 (41)	13 (32)	0.835	.361
Family history, N (%)				
Any psychiatric disorder	27 (46)	19 (46)	0.003	.954
OCD	9 (15)	12 (29)	2.864	.091
Psychotic illness	6 (10)	3 (7)	0.018	.893
Mood disorders	4 (7)	4 (10)713
Suicide	5 (9)	0 (0)076
Axis I comorbidity, N (%) ^c				
Any comorbidity	44 (75)	20 (49)	6.986	.008
MDD (current)	22 (37)	4 (10)	9.530	.001
MDD (past)	23 (39)	4 (10)	10.48	.001
Any depression, lifetime	41 (69)	18 (44)	6.540	.011
Axis II comorbidity, N (%) ^d	19 (32)	19 (46)	2.052	.152

^aObsessive-compulsive symptom distribution is not presented; none are statistically significant.

^bDifferences remain significant even after exclusion of suicide item ($t = -4.006$, $p < .001$).

^cOnly depression data are shown in the table; other comorbid conditions are nonsignificant.

^dDetails of Axis II comorbidity not shown since none are statistically significant.

Abbreviations: BHS = Beck Hopelessness Scale, CGI-I = Clinical Global Impressions-Improvement scale, CGI-S = Clinical Global Impressions-Severity of Illness scale, GAF = Global Assessment of Functioning, HAM-D = Hamilton Rating Scale for Depression, MDD = major depressive disorder, OCD = obsessive-compulsive disorder, Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire, SSI = Scale for Suicide Ideation, Y-BOCS = Yale-Brown Obsessive Compulsive Scale.

(religious [current] and reassurance seeking [current and past]) and repeating compulsions (Table 3). We examined whether those with and those without religious obsessions differed with regard to severity of guilt by comparing the guilt item scores on the HAM-D since we wanted to explore if guilt may have contributed to suicidal behavior, but there was no significant difference between the 2 groups (mean \pm SD = 0.535 ± 0.744 vs. 0.361 ± 0.612 , respectively; $t = -1.204$; $p = .607$). There was also no

statistically significant difference between attempters and nonattempters on the guilt item score of HAM-D (mean \pm SD = 0.481 ± 0.752 vs. 0.383 ± 0.615 , respectively; $t = -0.667$; $p = .508$). We examined whether or not those with reassurance-seeking compulsions differed from those without with regard to CGI-I scores since our previous study²² had demonstrated some association between reassurance-seeking compulsions and treatment nonresponse. There was no statistically significant differ-

ence between those with and those without reassurance-seeking compulsions, both current (mean \pm SD = 4.142 \pm 0.949 vs. 4.011 \pm 1.132, respectively; $t = -0.410$; $p = .682$) and past (mean \pm SD = 4.052 \pm 1.129 vs. 4.024 \pm 1.106, respectively; $t = -0.099$; $p = .922$).

Worst Ever Suicidal Ideators

Worst ever ideators differed significantly from non-ideators with respect to MDD (current and past), any Axis I comorbidity, history of suicide attempt, and scores on the HAM-D, BHS, and Q-LES-Q (Table 4). There was a trend toward significance with respect to severity of obsessions (Y-BOCS-obsessions) and predominance of women.

Current Suicidal Ideators

Current ideators differed significantly from non-ideators on many variables: MDD (past) (50% vs. 18%, $p = .001$); history of hospitalization (57% vs. 29%, $\chi^2 = 6.769$, $p = .009$) and suicide attempt (57% vs. 15%, $\chi^2 = 17.927$, $p < .001$); and mean \pm SD scores on the HAM-D (21.4 \pm 6.7 vs. 14 \pm 7.2, $t = -4.699$, $p < .001$), the BHS (10.5 \pm 6.0 vs. 5.1 \pm 5.2, $t = -4.460$, $p < .001$), the CGI-S (5.1 \pm 1.0 vs. 4.6 \pm 0.8, $t = -2.606$, $p = .01$), and the Q-LES-Q (41.5 \pm 7.6 vs. 47.4 \pm 7.3, $t = 3.536$, $p = .001$). There was a trend toward significance in ideators compared to nonideators with respect to the CGI-I (4.4 \pm 1.3 vs. 3.8 \pm 0.9, $t = -1.988$, $p = .054$).

Regression Analysis of Suicidal Ideation and Past Suicide Attempts

Binary logistic regression analysis was used for model prediction of suicide attempt and suicidal ideation. Those variables that were statistically significant or at least showed a trend toward significance in univariate analysis were considered for logistic regression.

For prediction of suicide attempt, we included the following variables: MDD (past); religious obsessions (current); reassurance seeking (current and past) and repeating compulsions; and scores on the HAM-D, BHS, SSI, Y-BOCS-obsessions, CGI, GAF, and Q-LES-Q. Worst ever suicidal ideation score ($\beta = 0.266$, SE = 0.057, Wald = 22.061, $p < .001$) was the only significant predictor, with overall prediction of 89%, and it accounted for 60% of the variance ($R^2 = 0.604$). For prediction of worst ever suicidal ideation, we included the variables Axis I comorbidity (any); MDD (past); history of suicide attempt; HAM-D, BHS, and Q-LES-Q scores; gender; and severity of obsessions (Y-BOCS-obsessions). MDD (past) ($\beta = -1.514$, SE = 0.748, Wald = 4.101, $p = .043$), HAM-D ($\beta = 0.105$, SE = 0.042, Wald = 6.120, $p = .013$), BHS ($\beta = 0.158$, SE = 0.062, Wald = 6.436, $p = .011$), and history of suicide attempt ($\beta = -2.858$, SE = 1.098, Wald = 6.778, $p = .009$) were significant predictors with an overall prediction of 82%. These variables explained

Table 5. Structural Equation Model for Suicidal Ideation

Risk Factor	Estimate	SE	p Value
SSI-worst ever			
Y-BOCS total score	0.014	0.114	.9045
CGI-I score	0.886	0.791	.2631
HAM-D score	0.439	0.119	.0002
BHS score	0.462	0.137	.0008
Any depression (lifetime)	5.178	1.564	.0009
Q-LES-Q score	0.079	0.126	.5326
GAF score	0.107	0.119	.3708
SSI-current			
Y-BOCS total score	-0.024	0.074	.7429
CGI-I score	1.173	0.517	.0231
HAM-D score	0.220	0.078	.0046
BHS score	0.287	0.090	.0014
Any depression (lifetime)	3.160	1.022	.0020
Q-LES-Q score	0.055	0.082	.5029
GAF score	0.023	0.078	.7627

Abbreviations: BHS = Beck Hopelessness Scale, CGI-I = Clinical Global Impressions-Improvement scale, GAF = Global Assessment of Functioning, HAM-D = Hamilton Rating Scale for Depression, Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire, SSI = Scale for Suicide Ideation, Y-BOCS = Yale-Brown Obsessive Compulsive Scale.

56% of the variance ($R^2 = 0.558$). Similarly, for current suicidal ideators, MDD (past), HAM-D, Q-LES-Q, BHS, CGI-S and -I, history of suicide attempt, and hospitalization were included for regression analysis. MDD (past) ($\beta = -1.226$, SE = 0.635, Wald = 3.730, $p = .053$), HAM-D ($\beta = 0.072$, SE = 0.041, Wald = 3.115, $p = .078$), BHS ($\beta = 0.135$, SE = 0.051, Wald = 7.057, $p = .008$), history of suicide attempt ($\beta = -1.354$, SE = 0.601, Wald = 5.072, $p = .024$), and hospitalization ($\beta = -1.321$, SE = 0.616, Wald = 4.593, $p = .032$) were the predictors that explained 50% of the variance ($R^2 = 0.5$). The overall prediction was 85%.

Structural Equation Modeling

We attempted different possible structural equation models to determine the factors that may contribute to suicidal ideation. The tested models included measures of severity of OCD (Y-BOCS scores), depression (HAM-D, BHS, and any depression [lifetime]), global clinical impressions (CGI subscales), functioning (GAF), quality of life (Q-LES-Q), certain obsessional symptoms (that were significant or showed a trend toward significance in univariate analyses), and the guilt item on the HAM-D. We included the guilt item since we wanted to examine the contribution of guilt toward suicidal ideation. Different possible structural equation models were attempted to explain the data. The best parsimonious model we could formulate had 4 latent factors: severity of OCD, depression, global functioning, and quality of life ($\chi^2 = 20.18$, $df = 11$, $p = .043$). The regression weights of each variable toward SSI were estimated (Table 5). It is evident that only measures of depression could explain suicidal ideation.

DISCUSSION

To our knowledge, this is the first study to examine the clinical correlates of suicidal ideation in a group of clinically ill adult OCD subjects. The findings of this study reveal that OCD is associated with high rates of suicide attempt (27%) and suicidal ideation (worst ever, 59%; current, 28%). Depression, hopelessness, and previous history of suicide attempt are associated with suicidal ideation, both current and worst ever. History of suicide attempt in turn is associated with worst ever suicidal ideation. Severity of OCD did not emerge as an independent risk factor for suicidal behavior.

OCD and Suicidal Behavior

There are very few systematic data on suicidal behavior in OCD,^{26,27} but our study demonstrates that OCD is associated with high rates of suicidal ideation and suicide attempt. Our study also shows that the prevalence of suicidal behavior in OCD is no less common than it is in other psychiatric disorders, which indicates the need, often ignored, for routine assessment for suicide risk in patients with OCD. Prevalence of suicidal ideation is 47% to 69% in patients with MDD^{42,43} and up to 80% in patients with schizophrenia.⁴⁴ The rate of suicide attempt in our study is somewhat similar to the rates reported in schizophrenia (9%–15%),^{45–47} unipolar depression (9%–16%),^{48,49} bipolar disorder (25%–50%),^{49,50} alcohol dependence (13%–50%),^{51,52} and personality disorders (1%–19%).^{53,54}

There is conflicting evidence regarding the relationship between anxiety disorders and suicidal behavior. For example, among anxiety disorders, suicidal behavior is extensively studied in those with panic disorder and the findings are conflicting. In few studies,^{8,55} panic disorder was an independent risk factor for attempted suicide while in other studies suicide risk was largely attributable to comorbid depression and personality disorders and not to panic disorder itself.^{9,56–58} Our findings suggest that OCD is associated with high risk for suicidal behavior. Two recent studies have examined the risk for suicidal behavior in anxiety disorder patients and confirm our observation. One study⁵⁹ examined suicide risk by performing a meta-analysis of the U.S. Food and Drug Administration's database of anxiety disorder patients who participated in recent clinical trials that evaluated the efficacy of new anti-anxiety medications. The study concluded that suicide risk in patients with anxiety disorders (including OCD) is significantly higher than it is in the general population. A high risk for suicide was an unexpected finding, considering the fact that patients in clinical trials are often moderately ill with low rates of comorbidity and typically have minimal risk for suicide. In another article,⁶⁰ risk for suicidal ideation and attempt in subjects with anxiety disorders was examined in a large,

population-based longitudinal study. The main purpose of the study was to examine whether anxiety disorders are independently associated with suicidal behavior. After adjusting for sociodemographic factors and all other mental disorders assessed in the survey, the authors found that baseline presence of any anxiety disorder was significantly associated with suicidal ideation and suicide attempts in both the cross-sectional and longitudinal analysis. Examination of individual anxiety disorders demonstrated that each lifetime anxiety disorder was strongly associated with lifetime suicidal ideation and suicide attempt, even after controlling for sociodemographic factors and comorbid conditions. Similarly, social phobia, generalized anxiety disorder, and OCD remained associated with first ever incidence of suicidal ideation; however, simple phobia was the only anxiety disorder associated with first ever incidence of suicide attempt, possibly because of interaction with other comorbid disorders.

We examined whether or not baseline severity of OCD is an independent risk factor for suicidal behavior. In the univariate analysis, it was found that Y-BOCS-obsessions score was higher in ideators (worst ever) and attempters. In the regression analysis and structural equation modeling, severity of OCD did not emerge as significant, possibly because of poor statistical power.

Religious obsessions and repeating and reassurance-seeking compulsions were higher among suicidal attempters compared to nonattempters. We examined whether those with religious obsessions had a higher guilt score compared to those without, but there was no significant difference. There was also no association between guilt and suicide attempt. Interestingly, a few studies have examined the role of religiosity on OCD symptomatology. Two reviews^{61,62} concluded that religious obsessions are more prevalent in clinical populations from countries in which religion is at the central core of the society, particularly in Muslim and Jewish Middle Eastern cultures, compared with clinical populations from the West. However, in another study,⁶³ there was no relationship between religiosity and any other clinical feature of OCD, including the presence of religious obsessions. In a Turkish study,⁶⁴ a vast majority of patients with religious obsessions also had compulsions that included religious practices. The presence of religious and sexual obsessions delayed their seeking professional help. Surprisingly, no study of OCD has examined the relationship between religious obsessions and associated suicide risk despite the well-known strong sanctions against suicide in Judeo-Christian and Muslim religions. Our sample included mainly Hindus. One could speculate that religious beliefs and practices may have influenced the patterns of religious obsessions and their clinical correlates, including suicidal behavior. However, we did not study religious beliefs and practices in our sample, and

this topic could be a focus of further research. In a previous study²² from our center, reassurance seeking was overrepresented in treatment nonresponders. However, those with reassurance seeking compulsions did not differ from those without with regard to CGI-I scores.

Insight in OCD patients is generally associated with outcome,^{65,66} although the association is not consistently reported.⁶⁷ Poor insight OCD has been associated with high rates of major depression⁶⁸ and suicidal ideation.⁶⁹ In psychotic disorders, development of insight is generally associated with suicide attempt because of the distress and humiliation. In this background, we evaluated the association between suicidal behavior and insight and found no association.

Depression and Suicidal Behavior

Our study found depression and hopelessness to be the major correlates of suicidal behavior. The positive correlation between depression, hopelessness, and suicidal ideation is consistent with the findings of previous studies.⁷⁰⁻⁷² That suicidal ideation was a strong predictor of attempt, too, is in accordance with the findings of previous studies,^{37,73,74} which examined the risk factors for suicide. In a recent community study,⁶⁰ risk for suicidal behavior was greater if anxiety disorders and mood disorders coexisted, further emphasizing the possible mediating effects of mood disorders in the risk for suicidal behavior in those with anxiety disorders.

Curiously, in a previous study²⁸ of adolescent OCD, there was an inverse correlation between suicidal behavior and depression; it was argued that depression had a protective effect. The study pointed out that the inverse relationship between suicidal behavior and depression could possibly be attributed to the confounding effect of a high correlation between antisocial behavior and suicidal behavior. In addition, it was not clear that the subjects suffered from a primary diagnosis of OCD. On the contrary, in our study, all the subjects had sought consultation primarily for OCD, and only 3 subjects had antisocial personality disorder. It is, however, possible that suicidal behavior and depression could be qualitatively different in adolescents with OCD compared to that in adults.

Given the distress and associated interference in functioning due to OCD, high rates of suicidal behavior are understandable. A high rate of comorbidity, especially secondary depression and hopelessness, seems to further contribute to suicidal behaviors significantly. It is possible that depression may mediate the relationship between OCD and suicide variables. Our findings do provide support for this hypothesis.

Implications of the Study

Our study demonstrates that suicidal behavior is highly prevalent in OCD. Many patients with OCD may

seek escape from their suffering by considering or attempting suicide. Nevertheless, this aspect is largely ignored in the current psychiatric literature and in the routine clinical assessment of patients with OCD. Our findings emphasize the need for detailed assessment of suicide risk and appropriate intervention in patients with OCD. Future clinical trials of drugs and psychosocial therapies should explore whether or not early intervention and treatment of OCD modifies the risk for subsequent suicidal behavior.

Depression and hopelessness are strongly associated with suicidal behavior in OCD. It is well known that depression is a common complication in those suffering from OCD. Therefore, identification and aggressive treatment of comorbid secondary depression are vital to modify the risk for suicide.

Limitations

The findings of our study have to be interpreted in the background of some limitations. It is a cross-sectional study. Suicidal behavior may vary in a given patient; thus, repeated assessments and a prospective design may be more reliable than cross-sectional assessments. This is a hospital-based study, and the patients were selected from specialized services for OCD or from the inpatient setting. Therefore, the results may not be generalizable to general psychiatric services. The suicide attempters were not current attempters. We only recorded history of suicide attempts anytime in their life, which may limit our conclusion regarding the relationship between OCD and suicide risk. It could well be argued that other factors too could have contributed to suicide risk. Our study did not study the lethality of attempts; therefore, this issue needs to be studied in a prospective design. Similarly, the relationship between worst ever suicidal ideation and other illness variables may be tenuous as many other unmeasured factors could explain the relationship considering the cross-sectional nature of the study. Social support and life events were not assessed in detail in this study. The sample was also heterogeneous with regard to treatment response, and we did not specifically address the relationship between treatment response and suicide risk.

CONCLUSION

In conclusion, our study has demonstrated that OCD is associated with a high risk of suicidal behavior and that the risk is similar to the risk in patients with other major psychiatric illnesses. Our study has identified depression and hopelessness as the major risk factors for suicidal behavior in OCD. The univariate analyses showed that severity of obsessions and certain types of obsessions may be associated with suicide attempt. Whether certain types of obsessions are associated with suicide attempt warrants

further research in larger samples. However, since depression is a common comorbid condition in OCD, an immediate clinical implication of our study is that depression has to be treated aggressively to reduce the suicide risk.

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