Suicidal Ideation and Attempts in Bipolar I and II Disorders

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Objective: Few studies have investigated the prevalence of and risk factors for suicidal ideation and attempts among representative samples of psychiatric patients with bipolar I and II disorders.

Method: In the Jorvi Bipolar Study (JoBS), psychiatric inpatients and outpatients were screened for bipolar disorders with the Mood Disorder Questionnaire from January 1, 2002, to February 28, 2003. According to Structured Clinical Interviews for DSM-IV Axis I and II Disorders, 191 patients were diagnosed with bipolar disorders (bipolar I, N = 90; bipolar II, N = 101). Suicidal ideation was measured using the Scale for Suicidal Ideation. Prevalence of and risk factors for ideation and attempts were investigated.

Results: During the current episode, 39 (20%) of the patients had attempted suicide and 116 (61%) had suicidal ideation; all attempters also reported ideation. During their lifetime, 80% of patients (N = 152) had had suicidal behavior and 51% (N = 98) had attempted suicide. In nominal regression models, severity of depressive episode and hopelessness were independent risk factors for suicidal ideation, and hopelessness, comorbid personality disorder, and previous suicide attempt were independent risk factors for suicide attempts. There were no differences in prevalence of suicidal behavior between bipolar I and II disorder; the risk factors were overlapping but not identical.

Conclusion: Over their lifetime, the vast majority (80%) of psychiatric patients with bipolar disorders have either suicidal ideation or ideation plus suicide attempts. Depression and hopelessness, comorbidity, and preceding suicidal behavior are key indicators of risk. The prevalence of suicidal behavior in bipolar I and II disorders is similar, but the risk factors for it may differ somewhat between the two.

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Numerous studies have documented an association between suicidal behavior—completed suicide, suicide attempt, and suicidal ideation—and bipolar disorder. A meta-analysis[1] and 2 recent nationwide studies from Scandinavia[2,3] indicate a standardized mortality ratio of about 20 for bipolar disorder sufferers. It is commonly estimated that 25% to 50% of patients with bipolar disorder attempt suicide at least once,[4–6] and 30% to 40% have suicidal ideation.[7–9]

Studies of nonfatal suicidal behavior among bipolar disorder patients have focused mainly on risk factors for suicide attempts. Clinical risk factors for suicide attempts include a past suicide attempt,[10–13] suicidal ideation,[14–16] comorbid alcohol dependence or abuse,[6,17–22] any comorbid disorder in bipolar II patients,[23] comorbid personality disorder in bipolar I patients,[24] Axis II comorbidities based on self-rated questionnaire,[14] hopelessness among hospitalized bipolar I patients,[15] severe depression,[14,15,19] long duration of illness,[14,16] family history of suicide,[19] adversity,[14,25] and early age at onset.[6,19,25,26] Suicide attempts have been associated most strongly with depressive illness phases but also with mixed states.[4,15,17,22] Unfortunately, few studies[6,14,17,19,22] have used multivariate statistics, which makes it difficult to differentiate independent risk factors from confounded associations. A particularly controversial issue is the prevalence of suicide attempts in bipolar I and bipolar II disorders.[27–29]

Few studies have examined risk factors for suicidal ideation in bipolar disorder patients. Positive family history for affective disorder, severe depression, psychotic symptoms,[8] past suicide attempt,[8,30] comorbid alcohol abuse or dependence,[30] comorbid personality disorders in

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bipolar II disorder,[23] panic spectrum symptoms in bipolar I disorder,[31] and earlier age at onset[32] have been associated with suicidal ideation. Two studies comparing bipolar I and II disorders[9,27] found no significant differences in suicidal ideation.

Research on suicidal behavior in bipolar disorder has suffered from several methodological limitations, particularly selection bias. Cohorts have been sampled from tertiary-level treatment centers,[33] clinical trials excluding overtly suicidal cases,[31] and only bipolar I[19,34] or hospitalized patients.[8,15] The generalizability of findings to the larger pool of patients treated in ordinary secondary-level community psychiatric settings may therefore be limited. Moreover, with few exceptions,[9] suicide attempters are compared with nonattempters, who may still have high levels of suicidal ideation. If ideation and attempts share common risk factors, this weakens a study's ability to recognize risk factors. In addition, with few exceptions,[15,35] suicidal ideation has usually been measured with a single item from a depression symptom scale such as the Hamilton Rating Scale for Depression (HAM-D) or the Beck Depression Inventory (BDI). Finally, although hopelessness is an essential risk factor for suicidal behavior, its role has been rarely investigated in bipolar disorder.

We aimed to investigate the prevalence of suicidal behavior—both suicide attempts and suicidal ideation—in a representative secondary-level sample of psychiatric inpatients and outpatients. We expected, first, to find suicidal behavior more prevalent in bipolar II than bipolar I disorder due to illness course more dominated by depressive phases.[36] Second, we hypothesized that severe depressive episode, hopelessness, and psychiatric comorbidity would each independently contribute to both types of nonfatal suicidal behavior. Third, we expected to find differences in risk factors between ideation and attempts (with preceding ideation) more quantitative than qualitative, i.e., risk factors overlapping but accumulating in the latter group.

METHOD

The Jorvi Bipolar Study (JoBS) is a collaborative bipolar research project between the Department of Mental Health and Alcohol Research of the National Public Health Institute (Helsinki, Finland) and the Department of Psychiatry, Jorvi Hospital, Helsinki University Central Hospital (HUCS) (Espoo, Finland). The Department of Psychiatry of Jorvi Hospital provides secondary care psychiatric services to all citizens of Espoo, Kauniainen, and Kirkkonummi (261,116 inhabitants in 2002). The ethical committee of HUCS approved the study protocol.

The JoBS methodology is detailed elsewhere.[37] In brief, the first phase of patient sampling for the JoBS cohort study involved screening all inpatients and outpatients at the Department of Psychiatry at Jorvi Hospital who currently had a possible new episode of DSM-IV bipolar disorder from January 1, 2002, to February 28, 2003. Attending mental health professionals in the department screened every patient aged 18 to 59 years who was (1) seeking treatment, (2) being referred, or (3) already receiving care and currently showing signs of deteriorating clinical state for the presence of bipolar disorder using the Mood Disorder Questionnaire.[38] After a positive screen or suspected bipolar disorder, the patient was fully informed about the study project and their written informed consent requested. Altogether, 1630 patients were screened, of whom 546 were positive; 49 of these refused a face-to-face interview, and 7 could not be contacted.

In the second phase of sampling, 490 patients were interviewed face-to-face by a researcher (O.M., H.V., P.A., K.S., S.L., and Marita Pippingsköld, M.D.) using the Structured Clinical Interview for DSM-IV Axis I Disorders, research version with psychotic screen (SCID-I/P).[39] Two hundred one patients were diagnosed with DSM-IV bipolar disorder and had a current episode of bipolar disorder. Ten patients refused to participate, leaving 191 patients in the bipolar cohort study. Interrater reliability was assessed via videotaped interviews, which were blindly assessed by another rater (20 interviews; kappa for bipolar disorder = 1.0, bipolar I = 1.0, bipolar II = 1.0). The Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II)[40] was also used in the JoBS to assess diagnoses on Axis II. Bipolar II depressive mixed states were defined according to Benazzi and Akiskal[41] (3 or more simultaneous intra-episode hypomanic symptoms present for at least 50% of the time during a major depressive episode).

In addition to SCID-I and SCID-II, the cohort baseline measurements included the following observer scales: Young Mania Rating Scale (YMRS), 17-item HAM-D, Scale for Suicidal Ideation (SSI), and Social and Occupational Functioning Assessment Scale of DSM-IV (SOFAS). The self-report scales included the 21-item BDI, Beck Anxiety Inventory (BAI), Beck Hopelessness Scale (BHS), and Perceived Social Support Scale-Revised (PSSS-R).[37]

Suicidal behavior—comprising suicidal ideation and suicide attempts—was examined in several ways. Current suicidal ideation was first investigated using the SSI,[42] a 19-item observer-rated scale designed to quantify the intensity of current conscious suicide ideation in various dimensions of self-destructive thoughts or wishes—the extent of the wish to die, the desire to make an actual suicide attempt, details of any plans, as well as internal deterrents to an active attempt and subjective feelings of control and/or "courage" regarding a proposed attempt. Each item consists of 3 alternative statements graded in intensity from 0 to 2, with the maximum total score being 38. Patients were then asked whether they had ever seriously considered suicide during the current episode of bipolar disorder. Unless otherwise stated, suicidal ideation refers to patients who either scored ≥ 6 on the SSI or had seri-

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ously considered suicide during the index episode. In addition, the occurrence of a suicide attempt during the current episode of bipolar disorder was investigated, based on both the interview and psychiatric records. Furthermore, the information on lifetime suicidal behavior was recorded according to interview and psychiatric records. By definition, a suicide attempt had to involve at least some degree of intent to die; self-harm with no such intent did not count.

Multivariate nominal regression models were created, classifying suicidal behavior as the dependent variable into 3 mutually exclusive categories: nonsuicidal patients (reference group), suicidal ideators without suicide attempts, and suicide attempters. The predetermined independent variables comprised sex, age, bipolar I and II disorders, comorbid alcohol dependence or abuse, and variables found significant in univariate analysis. However, comorbid alcohol dependence or abuse, comorbid anxiety disorders, comorbid eating disorders, duration of illness, subtype of bipolar disorder, and rapid cycling were not significantly associated with the dependent variable in the multivariate nominal regression model and were omitted from final analysis. To avoid circularity, we omitted the suicidality items of the depression rating scales. The statistical methods included nonparametric and parametric analyses, and for univariate analysis we used a χ^2 test with Yates correction, analysis of variance, and the Kruskal-Wallis test. Post hoc subgroup differences were tested using Tukey's method, t test, and the Mann-Whitney U test.

RESULTS

Suicidal Behavior During the Index Episode

Overall, 116 (61%) of the 191 patients reported suicidal ideation during the index episode (66 females, 65% vs. 50 males, 56%; $\chi^2 = 1.5$, df = 1, p = .2). During the index episode, 39 (20%) of the patients had attempted suicide, females more often than males (27 females, 27% vs. 12 males, 13%; $\chi^2 = 4.5$, df = 1, p = .04). Of those who attempted suicide, 36% (14/39) were referred to an emergency room, and 33% (13/39) were hospitalized; the majority (11/13) were followed up for less than 24 hours at the hospital. Most (30/39, 77%) suicide attempters used nonviolent methods. Of patients (N = 77) with suicidal ideation alone (no suicide attempt) during the current episode, the majority (N = 47, 61%) had depressive phase, 23 (30%) had mixed phase, and 7 (9%) had hypomanic/manic phase of illness.

Differences Between Patients With Suicide Attempts, Suicidal Ideation, and Nonsuicidal Behavior

The characteristics of patients without suicidal behavior, with suicidal ideation, or with suicide attempts during the index episode are presented in Table 1. We found significant differences between the 3 groups in quality of affective state; severity of current episode (HAM-D and BDI scores); intensity of suicidal ideation; prevalences of rapid cycling, personality disorders, anxiety disorders, and eating disorders; degree of anxiety and hopelessness; and age at onset. Comparing attempters, ideators, and nonsuicidal patients, we found differences between the 3 groups regarding current social phobia (attempters, N = 9 [23%] vs. ideators, N = 18 [23%] vs. nonsuicidal, N = 7 [9%]; $\chi^2 = 6.5$, df = 2, p = .04), current simple phobia (N = 5 [13%] vs. N = 9 [12%] vs. N = 1 [1%], respectively; $\chi^2 = 9.1$, df = 2, p = .01), current posttraumatic stress disorder (N = 7 [18%] vs. N = 10 [13%] vs. N = 3 [4%], respectively; $\chi^2 = 6.7$, df = 2, p = .04), generalized anxiety disorder (N = 12 [31%] vs. N = 13 [17%] vs. N = 4 [5%], respectively; $\chi^2 = 13.4$, df = 2, p = .001), current bulimia nervosa (N = 5 [13%] vs. N = 3 [4%] vs. N = 1 [1%], respectively; $\chi^2 = 6.7$, df = 2, p = .04), cluster A personality disorder (N = 7 [18%] vs. N = 9 [12%] vs. N = 3 [4%], respectively; $\chi^2 = 6.3$, df = 2, p = .04), cluster B personality disorder (N = 16 [41%] vs. N = 24 [31%] vs. N = 14 [19%], respectively; $\chi^2 = 6.9$, df = 2, p = .03), and cluster C personality disorder (N = 20 [51%] vs. N = 10 [13%] vs. N = 14 [19%], respectively; $\chi^2 = 20.5$, df = 2, p < .001).

Suicidal Ideation

The overlap between the 2 types of suicidal behavior is presented in Figure 1. Among the 191 bipolar patients, 116 (61%) had some suicidal behavior during the current episode. Suicidal ideation on the SSI (score ≥ 6) was current in 81 patients (42%), while 105 patients (55%) reported it at some point during the index episode. Of the 39 patients (20%) who had attempted suicide, none had done so without suicidal ideation during the index episode.

Lifetime Suicidal Behavior

Only 39 (20%) of 191 patients reported no suicidal behavior during their lifetime. During either the index episode or the preceding episodes, 147 patients (77%) had had suicidal ideation and 98 patients (51%) had attempted suicide. Before the index episode, 130 patients (68%) had had serious suicidal ideation, mainly during a previous depressive episode (N = 114, 88%). Of the 85 patients (45%) who attempted suicide before the index episode, the majority (66, 78%) of suicide attempts had occurred during a depressive episode, 8 (9%) during a mixed episode, 5 (6%) during a manic episode, and 6 (7%) between illness episodes. The total lifetime number of suicide attempts was 1 in 34 (18%), 2 in 23 (12%), and 3 or more in 41 (21%) of the 191 patients.

Suicidal Ideators Versus Suicide Attempters

In post hoc subgroup comparisons, patients with current suicide attempts had a greater prevalence of comor-

Table 1. Characteristics of 191 Patients With Bipolar Disorder According to Suicidal Behaviors

Characteristic	Nonsuicidal (N = 75)	Suicidal Ideation (no attempt) (N = 77)	Suicide Attempters (N = 39)	All Patients (N = 191)	χ^2	F	p
Diagnosis of bipolar disorder, N (%)							
Bipolar I	40 (53)	36 (47)	14 (36)	90 (47)			
Bipolar II	35 (47)	41 (53)	25 (64)	101 (53)			
Sex, N (%)							
Male	40 (53)	38 (49)	12 (31)	90 (47)			
Female	35 (47)	39 (51)	27 (69)	101 (53)			
Age, mean ± SD, y	38.7 ± 12.8	38.7 ± 11.5	33.7 ± 11.9	37.7 ± 12.2			
Anxiety disorder/any current, N (%)	21 (28)	40 (52)	24 (62)	85 (45)	14.9		.001
Eating disorder/any current, N (%)	2 (3)	7 (9)	6 (15)	15 (8)	6.3		.04
Psychotic symptoms current, N (%)	13 (17)	13 (17)	5 (13)	31 (16)			
Alcohol dependence/abuse current, N (%)	13 (17)	13 (17)	7 (18)	33 (17)			
Substance dependence/abuse current, N (%)	2 (3)	2 (3)	1 (3)	5 (3)			
Smoking, N (%)[a]	35 (47)	42 (56)	20 (54)	97 (52)			
Personality disorder, N (%)	24 (32)	29 (38)	29 (74)	82 (43)	20.5		< .001
Last episode, N (%)					47.6		< .001
Monophasic episode	47 (63)	36 (47)	10 (26)	93 (49)	14.7		.001
Major depressive episode	15 (20)	22 (29)	5 (13)	42 (22)			
Manic episode	18 (24)	2 (3)	0 (0)	20 (11)			
Hypomanic episode	10 (13)	1 (1)	0 (0)	11 (6)			
Mixed episode (depressive and manic)	1 (1)	4 (5)	2 (5)	7 (4)			
Mixed episode (mixed depressive)	3 (4)	7 (9)	3 (8)	13 (7)			
Polyphasic episode	28 (37)	41 (53)	29 (74)	98 (51)	14.7		.001
Rapid cycling, N (%)	16 (21)	27 (35)	19 (49)	62 (33)	9.2		.01
Duration of last episode, mean ± SD, y[b]	0.6 ± 1.3	1.8 ± 3.0	1.5 ± 2.6	1.3 ± 2.4	16.2		< .001
Duration of illness, mean ± SD, y	13.3 ± 10.7	15.4 ± 10.7	12.5 ± 9.0	14.0 ± 10.4			
Previous suicide attempts, N (%)	25 (33)	34 (44)	26 (67)	85 (45)	11.7		.003
Previous suicidal ideation, N (%)	36 (48)	60 (78)	34 (87)	130 (68)	24.3		< .001
Early age at onset (before 18 years of age), N (%)	15 (20)	27 (35)	16 (41)	58 (30)	6.9		.03
BDI score, mean ± SD[c,d]	14.9 ± 9.6	25.1 ± 8.9	25.3 ± 11.5	21.3 ± 10.9		24.0	< .001
BAI score, mean ± SD[c]	17.6 ± 11.9	25.3 ± 10.8	26.7 ± 14.7	22.7 ± 12.7		9.9	< .001
HAM-D score, mean ± SD[c,e]	13.8 ± 6.6	19.3 ± 6.2	18.7 ± 7.6	17.1 ± 7.1		13.8	< .001
YMRS score, mean ± SD	9.9 ± 11.2	5.9 ± 6.5	5.4 ± 5.9	7.3 ± 8.7			
BHS score, mean ± SD[c]	7.4 ± 4.3	11.1 ± 4.7	11.8 ± 5.4	9.8 ± 5.1		14.8	< .001
SSI score, mean ± SD[b]	0.6 ± 1.3	9.2 ± 7.4	13.2 ± 9.6	6.7 ± 8.2	72.7		< .001
PSSS-R score, mean ± SD	43.9 ± 11.7	40.4 ± 13.1	41.1 ± 12.2	41.9 ± 12.4			
SOFAS score, mean ± SD	50.8 ± 13.1	47.1 ± 10.3	48.0 ± 13.5	48.7 ± 12.1			

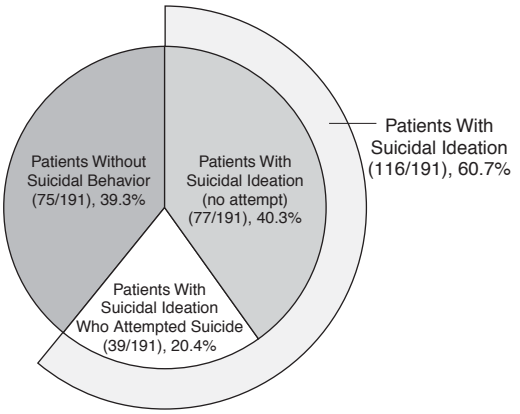
[a]Data missing for 4 (2%) of the 191 patients (suicidal ideation [no attempt] group, N = 2; suicide attempters, N = 2).
[b]Kruskal-Wallis test.
[c]Analysis of variance.
[d]BDI items 2 and 9 were omitted.
[e]HAM-D item 3 was omitted.
Abbreviations: BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, BHS = Beck Hopelessness Scale, HAM-D = Hamilton Rating Scale for Depression, PSSS-R = Perceived Social Support Scale-Revised, SOFAS = Social and Occupational Functioning Assessment Scale, SSI = Scale for Suicidal Ideation, YMRS = Young Mania Rating Scale.

bid personality disorder ($p < .001$) and cluster C disorders ($p < .001$) and had more previous suicide attempts ($p = .04$) and more suicidal ideation according to the SSI ($p = .02$) than patients with suicidal ideation alone. Specifically, several item scores were higher among the suicide attempters, including (item 8) attitude toward ideation (attempters, median = 1.0 vs. ideators, median = 1.0; $Z = –2.0$, $p = .04$), (item 9) control over suicidal action (attempters, median = 1.0 vs. ideators, median = 0.0; $Z = –2.2$, $p = .03$), and (item 17) suicidal note (attempters, median = 0.0 vs. ideators, median = 0.0; $Z = –2.2$, $p = .03$). There were no significant differences between patients with suicide attempts and suicidal ideation in severity of depression (measured by the HAM-D) or hopelessness. Patients with suicidal ideation had significantly higher levels of depression (HAM-D, $p < .001$; BDI, $p < .001$), hopelessness ($p < .001$), and anxiety ($p < .001$) and fewer symptoms of mania (YMRS, $p = .02$), longer duration of last episode ($p < .001$), and greater prevalence of current comorbid anxiety disorders ($p = .004$) than nonsuicidal patients.

Prevalence of Suicidal Behavior in Bipolar I and Bipolar II Disorders

There were no statistically significant differences in the prevalence of suicidal behavior—attempts or ideation—between bipolar I and bipolar II patients before or during the index episode. Moreover, there were no significant differences between bipolar I and bipolar II patients regarding the number of suicide attempts. Bipolar II patients had higher levels of hopelessness (BHS score; mean ± SD = 10.5 ± 5.1) versus bipolar I patients

Figure 1. Suicidal Behavior During the Index Episode Among Bipolar Patients (N = 191)



(mean ± SD = 9.0 ± 4.9; t = –2.1, df = 177, p = .04). There were no significant differences with regard to endorsed items on the SSI between bipolar I and II disorders.

Nominal Regression Models Predicting Suicidal Ideation and Suicide Attempt

The nominal regression models predicting various types of suicidal behavior during the index episode are presented in Table 2. The factors most strongly independently associated with suicidal ideation were severe depressive episode and hopelessness. Suicide attempt was associated with hopelessness, comorbid personality disorder, and a previous suicide attempt. Since a previous suicide attempt is not a plausible causal risk factor for current suicide attempt, we omitted it from an alternative model. This had no effect on the significance of the remaining risk factors; no new variable emerged as significant.

Risk Factors for Suicidal Behavior in Bipolar I and Bipolar II Disorder

Hopelessness predicted both suicidal ideation and suicide attempts in bipolar I disorder. Moreover, severe depressive episode predicted suicidal ideation and a previous suicide attempt predicted suicide attempt in bipolar I disorder. Severe depressive episode predicted suicidal ideation among bipolar II patients. Personality disorder predicted suicide attempt in bipolar II disorder (Table 2).

DISCUSSION

The JoBS cohort is a representative sample of ordinary secondary-level community psychiatric bipolar inpatients and outpatients from 3 Finnish cities. Therefore, the finding that 80% of all patients had had serious suicidal ideation or ideation plus attempts over their lifetime is remarkable. While numerous factors were associated with suicidal behavior in univariate analyses, hopelessness, comorbid personality disorder, severe depression, and a previous suicide attempt, with minor differences between ideation and attempts, were the main independent risk factors in the multivariate models. There were no differences in suicidal behavior prevalence between bipolar I and II disorders. However, the risk factors for suicidal behavior in bipolar I and II disorders were not identical.

The present study is one of the few involving a relatively large and unselected sample of both inpatients and outpatients with bipolar I and II disorder. We carefully diagnosed and evaluated comorbidity using SCID-I and SCID-II interviews, which have excellent reliability for diagnosing bipolar I and II disorders (kappa = 1.0 and 1.0, respectively). Furthermore, the patients' symptomatic status and other characteristics were assessed with a number of standardized observer scales and questionnaires.[37] The present study is also among the few[15,35] using a psychometric scale to measure current suicidal ideation, as well as suicidal ideation during the whole current episode. Nevertheless, some methodological features require consideration. First, the cross-sectional nature of the study limited our ability to make causal inferences. Second, we report here suicidal ideation based on an aggregate variable (either having a current SSI score ≥ 6 or having seriously considered suicide earlier during the index episode). However, the findings were essentially the same when analyses were conducted separately based on only the SSI score or ideation during the episode. Third, the temporal association between suicidal ideation and attempts is complex. The fact that suicide attempts could occur at any time during the whole index episode, but symptoms were measured at the time of the first interview,[37] may have caused an underestimate of psychopathology at the time of attempt.

The prevalence of suicide attempts between bipolar I and II disorders is a controversial issue.[27–29] Some studies[9,22,43,44] have reported higher rates of suicide attempts for bipolar II disorder, whereas the Stanley Foundation Bipolar Network study[14] and other studies[45,46] found no difference. In theory, bipolar II disorder could carry a higher risk if the longitudinal symptomatic course of bipolar II disorder was more dominated by the depressive phase of illness,[36] implying more time at risk for suicidal acts. Alternatively, possible differences related to illness episodes, such as different severity of depression, lability of mood, or level of hopelessness, or other characteristics, such as comorbidity, could result in risk disparities between bipolar I and II. While the index episode in our sample was more often depression in bipolar II than in bipolar I,[37] we found no significant difference in level of ideation or proportion of cases with attempts. Furthermore, there was no support for the hypothesis that during depressive or mixed episodes, either type of illness would be related to higher level of suicidal behavior or hopelessness. However, it appears that the role of comorbidity is

Table 2. Nominal Regression Models for Different Suicidal Behaviors in Patients With Bipolar Disorder

Variable	Nonsuicidal[a] OR	Suicidal Ideation OR	95% CI	Wald	p	Suicide Attempt OR	95% CI	Wald	p
Total population (N = 191)									
Female sex	1.0	0.81	0.39 to 1.68	0.324	.57	0.50	0.19 to 1.28	2.101	.15
Age	1.0	1.00	0.97 to 1.03	0.104	.75	1.00	0.94 to 1.02	1.286	.26
HAM-D score[b]	1.0	1.10	1.04 to 1.17	11.010	.001	1.05	0.97 to 1.13	1.589	.21
BHS score	1.0	1.12	1.04 to 1.22	7.940	.005	1.16	1.04 to 1.28	7.746	.005
Previous suicide attempt	1.0	1.40	0.67 to 2.93	0.786	.38	3.35	1.09 to 7.58	6.397	.011
Personality disorder	1.0	0.80	0.37 to 1.72	0.333	.56	2.99	1.14 to 7.86	4.578	.032
Subpopulation of bipolar I disorder (N = 90)									
Female sex	1.0	2.76	0.80 to 9.60	2.564	.11	0.84	0.17 to 4.27	0.044	.84
Age	1.0	0.98	0.93 to 1.04	0.413	.52	0.99	0.92 to 1.06	0.168	.68
HAM-D score[b]	1.0	1.17	1.05 to 1.31	8.202	.004	1.13	0.98 to 1.30	2.784	.10
BHS score	1.0	1.20	1.03 to 1.40	5.515	.019	1.31	1.08 to 1.60	7.555	.006
Previous suicide attempt	1.0	2.55	0.76 to 8.51	2.306	.13	5.44	1.10 to 26.85	4.321	.038
Subpopulation of bipolar II disorder (N = 101)									
Female sex	1.0	0.43	0.17 to 1.13	2.900	.09	0.42	0.13 to 1.37	2.073	.15
Age	1.0	1.00	0.96 to 1.04	0.010	.92	0.98	0.94 to 1.04	0.379	.54
HAM-D score[b]	1.0	1.08	1.00 to 1.15	4.329	.037	1.04	0.96 to 1.13	0.785	.38
Personality disorder	1.0	1.06	0.37 to 3.04	0.012	.92	7.85	2.18 to 28.21	9.961	.002

[a]Reference group.
[b]HAM-D item 3 was omitted.
Abbreviations: BHS = Beck Hopelessness Scale, HAM-D = Hamilton Rating Scale for Depression.

more important as a risk factor for patients with bipolar II disorder.

We found numerous factors to be associated with suicide attempts. Many single risk factors for attempted suicide have been investigated in previous studies, but a comprehensive view of risk factors related to suicide attempts in bipolar disorder, particularly bipolar II, is still emerging. In accordance with previous studies, we found anxiety disorders,[14] personality disorders,[14,23,24] eating disorders,[14] severity of depressive episode,[14,15,19,34] earlier age at onset,[6,14,25,26] and suicidal ideation[15] to be significant predictors of suicide attempts in univariate analysis. In contrast to some[6,17–22] but not all[14,15] studies, we found alcohol or substance abuse or dependence to be unrelated to suicide attempts; finding rapid cycling related to suicide attempts in univariate analysis is convergent with some[33,47] but not all studies.[25,48,49] In our sample, females attempted suicide more often than males, unlike in 3 recent studies.[14,15,19] However, in multivariate models, level of hopelessness, comorbid personality disorder, and a history of preceding suicide attempts were the major independent risk factors for suicide attempts. Thus, the factors most effectively indicating risk for suicide attempts in bipolar disorder are not much different from those in unipolar depression.

Suicidal ideation is highly prevalent in bipolar disorder. Over three fourths of patients with bipolar disorder reported suicidal ideation during their lifetime. All suicide attempters also reported suicidal ideation, so suicidal ideation appears to be a precondition and a highly sensitive indicator of risk of suicide attempts. Furthermore, in a psychological autopsy study,[50] a significant proportion of suicide victims were found to have died in their lifetime first suicide attempt, after having had communicated about suicidal ideation. Ideators and attempters are an overlapping population in a lifetime perspective, as nearly half of those with suicidal ideation during the current episode had attempted suicide during previous episodes. Suicide attempters had a significantly higher level of suicidal ideation than the mere ideators, which supports a continuum view of nonfatal suicidal behavior. Unexpectedly, despite the higher level of ideation, the overall level of psychopathology was otherwise not different between the 2 groups. In our univariate analyses, comorbid anxiety disorders were related to suicidal ideation, whereas in contrast to previous studies, psychotic symptoms,[8] past suicide attempts,[8,30] and personality disorders[23] were not associated. However, in multivariate models, hopelessness and greater severity of depressive episode were independent predictors of suicidal ideation. Thus, suicidal ideation appears largely a reflection of depressive aspects of the illness, with few other factors besides hopelessness being important.

In conclusion, the vast majority (80%) of psychiatric patients with bipolar disorders have either suicidal ideation or ideation plus suicide attempts during their lifetime. Depression and hopelessness, comorbidity, and preceding suicidal behavior are key indicators of risk. The prevalence of suicidal behavior in bipolar I and II disorders is similar, but the risk factors for it may differ somewhat between the two.

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