Article

Comorbidity of Axis I and Axis II Disorders in Patients Who Attempted Suicide

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Objective: The authors compared the characteristics of suicide attempters with and without comorbid psychiatric and personality disorders to identify factors that explain the high suicide risk associated with psychiatric comorbidity.

Method: A representative group of 111 patients who had attempted suicide (72 female and 39 male) was assessed for psychiatric and personality disorders according to ICD-10 criteria. The characteristics of patients with both types of disorder were compared with those of patients without comorbid disorders. A semistructured interview schedule and standardized questionnaires were used to investigate patients' background characteristics, the circumstances of the suicide attempts, psychological characteristics, and outcome after 12–20 months.

Results: Comorbidity of psychiatric and personality disorders was present in 49 patients (44%). More patients with comorbid disorders had made previous suicide attempts (N=41 [84%] versus N=28 [45%]) and repeated attempts during the follow-up period (N=25 [51%] versus N=9 [15%]). Differences in precipitants and motives for the index episode were also found: patients with comorbid disorders were more depressed and hopeless, reported more episodes of aggression, were more impulsive, and had lower self-esteem and poorer problem-solving skills. Differences in self-esteem and problem-solving skills distinguished between the groups in a stepwise discriminant function analysis. More of the patients with comorbid disorders reported not being loved by their parents and parental suicidal behavior.

Conclusions: Suicide attempters with comorbid psychiatric and personality disorders show marked differences from those without both of these disorders. Comorbidity may contribute to greater suicide risk. Some of the characteristics of patients with comorbid disorders pose major clinical challenges that should be addressed in an effort to reduce suicide risk.

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Historically, suicide has been associated with axis I psychiatric disorders (1). It has become increasingly apparent that axis II personality disorders are also very relevant, especially when comorbid with axis I disorders (2). In two studies of subjects who committed suicide compared with subjects from the general population, comorbidity of psychiatric and personality disorders was the largest risk factor for suicide (3–5). Such comorbidity is also common in patients who attempt suicide (6–10) and adds to their general risk of eventual suicide (11).

The reasons why extreme personality characteristics increase suicide risk, particularly when combined with psychiatric disorders, have received little research attention (10). Personality traits thought to increase the risk of suicidal behavior include aggression (10, 12), impulsivity (10, 13), and poor problem-solving skills (14). Mann and colleagues (10) proposed a stress-diathesis model, including such characteristics as vulnerability factors, to explain the propensity for suicidal behavior across psychiatric diagnoses.

In a representative group of patients who had attempted suicide we compared those with and without comorbid axis I and axis II disorders in terms of the nature of their suicide attempts, their backgrounds, psychological characteristics, and outcome to identify factors that might explain the greater risk of suicide in patients with comorbid psychiatric and personality disorders. These factors might then be targeted in treatment and prevention.

Method

Subjects

The subjects were patients 15 years old or older who were seen in the general hospital in Oxford following a suicide attempt between February and December 1997. The definition of an attempt was the same as the definition of "parasuicide" in the World Health Organization (WHO)/EURO Multicentre Study on Parasuicide (15), which includes acts of self-poisoning (overdose) and self-injury but excludes repetitive minor self-injury (self-cutting, burns, etc.). Patients were also excluded if they lived outside Oxford District, could not understand the nature of the study and give informed consent, or were too ill to participate.

Of 217 potential patients on recruitment days, 150 (69%) agreed to participate. The reasons for nonparticipation were 1) refused (N=42), 2) no reply to contact letter (those who left the hospital early) (N=16), and 3) did not attend arranged appointment (N=9).

TABLE 1. Psychiatric and Personality Disorders in 111 Patients Who Attempted Suicide

	Male Patients (N=39)		Female Patients (N=72)		Total (N=111)	
Disorder and ICD-10 Code	N	%	N	%	N	%
Psychiatric disorder diagnosed at initial interview[a]	35	89.7	65	90.3	100	90.1
Affective disorders: F30–39	29	74.4	53	73.6	82	73.9
Substance abuse						
Alcohol: F10	16	41.0	11	15.3	27	24.3
Drugs: F11–19	3	7.7	1	1.4	4	3.6
Neurotic, stress-related, and somatoform disorders: F40–48	10	25.6	19	26.4	29	26.1
Eating disorders: F50	2	5.1	12	16.7	14	12.6
Schizophrenia and nonaffective psychoses: F20–29	2	5.1	3	4.2	5	4.5
Conduct disorder: F91–92	2	5.1	1	1.4	3	2.7
Personality disorder diagnosed 12–20 months after initial interview[a]	20	51.3	31	43.1	51	45.9
Anxious: F60.6	7	17.9	16	22.2	23	20.7
Anancastic: F60.5	10	25.6	12	16.7	22	19.8
Paranoid: F60.0	6	15.4	11	15.3	17	15.3
Histrionic: F60.4	7	17.9	7	9.7	14	12.6
Dependent: F60.7	4	10.3	10	13.9	14	12.6
Emotionally unstable: F60.3	5	12.8	7	9.7	12	10.8
Dissocial: F60.2	3	7.7	3	4.2	6	5.4
Schizoid: F60.1	3	7.7	3	4.2	6	5.4
Comorbidity of psychiatric and personality disorders	19	48.7	30	41.7	49	44.1

[a] Many patients had more than one disorder. Diagnoses based on the ICD-10 diagnostic schedule and the Personality Assessment Schedule.

Written informed consent was obtained following explanation of the study. Most interviews (N=107) took place within 7 days of the suicide attempt, 39 between 1 week and 1 month later, and four later than this. The patients who did participate did not differ from those who did not in terms of age, sex, employment status, previous suicide attempts, and previous and current psychiatric treatment. They were representative of all patients who attempted suicide who were seen in the hospital during the study period in terms of age, sex, previous suicide attempts, and current psychiatric care but included fewer self-injury patients because we excluded repetitive self-mutilators (15).

Research Instruments

Interview schedule and additional measures. The interview schedule from the WHO/EURO Multicentre Study on Parasuicide (16) was administered at the initial assessment. The schedule includes questions on demographic characteristics, nature of current and previous suicide attempts, life events, precipitants and motives for the attempts, social support, contact with health professionals, physical and mental health, family history of psychiatric and suicidal behavior, parental characteristics, attitude toward upbringing, and relationships with parents. It also includes the Beck Depression Inventory (17), Rosenberg Self-Esteem Scale (18), Beck Hopelessness Scale (19), Spielberger State-Trait Anger Expression Inventory (20) and the Suicide Intent Scale (21). The following scales were also completed: irritability and assault subscales of the Buss-Durkee Hostility Inventory (22), Impulsivity Scale (23), Self-Rated Problem Solving Scale (24), and a shortened version of the Brown-Goodwin Life History of Aggression (25). The estimated consequences of each suicide attempt if untreated were rated by three independent physicians using a 4-point scale ranging from certain survival to certain death (26).

ICD-10 diagnostic schedule. Current and past psychiatric symptoms and signs were identified by using a structured interview schedule based on ICD-10 research diagnostic criteria (27). Psychiatric diagnoses were made at consensus meetings on the basis of this information and psychiatric case notes (where necessary). There was good diagnostic reliability (9).

Personality Assessment Schedule. Personality disorder was assessed by using the self-report version of the Personality Assessment Schedule (28), updated by the original authors according to ICD-10 criteria. It was completed at the follow-up interview, which allowed personality to be assessed when psychiatric disorder was usually less prominent (29).

Follow-Up Interview

Follow-up interviews were conducted 12–20 months after the index suicide attempts. In addition to the ICD-10 diagnostic schedule and the Personality Assessment Schedule, the patients also completed the Beck Depression Inventory, Beck Hopelessness Scale, Impulsivity Scale, Self-Rated Problem Solving Scale, and Rosenberg Self-Esteem Scale. They were scored on the Scale for Suicide Ideation (30), and suicidal thoughts in the week before the interviews were recorded.

Statistical Analyses

The Statistical Package for the Social Sciences (31) and EpiInfo (32) were used to conduct analyses. The statistical tests included chi-square with Yates's correction, Fisher's exact, Mann-Whitney U (for skewed continuous data), Spearman's rank order correlation, discriminant function, and logistic regression. A Bonferroni correction (33) was applied where appropriate.

Results

Study Patients

Of the 150 patients, 92 (61%) were female and 58 (39%) male. The majority were Caucasian (N=146 [97%]). Attempted suicide was by self-poisoning in 144 cases (96%). Ninety-eight patients (65%) had a history of previous suicide attempts.

Follow-up interviews were conducted with 118 patients (79%). Reasons for noninterview were refusal (N=10) could not be contacted (N=14), did not attend interview (N=7), and committed suicide (N=1). The Personality Assessment Schedule was completed for 111 patients at follow-up. These patients did not differ from those not followed up in terms of age, sex, method of attempted suicide, previous attempts, and psychiatric disorder. Personality Assessment Schedule scores were not obtained for two patients who were too unwell to provide reliable information and five who did not complete the full interview.

TABLE 2. Demographic Characteristics of 111 Patients With and Without Comorbid Psychiatric and Personality Disorders Who Attempted Suicide

Demographic Characteristic	Patients With Comorbid Disorders (N=49)		Patients Without Comorbid Disorders (N=62)	
	N	%	N	%
Gender				
Male	19	38.8	20	32.3
Female	30	61.2	42	67.7
Age (years)				
15–24	22	44.9	26	41.9
25–34	12	24.5	15	24.2
35–54	11	22.4	19	30.6
≥55	4	8.2	2	3.2
Marital status				
Single	29	59.2	33	53.2
Married	9	18.4	14	22.6
Widowed/divorced/ separated	11	22.4	15	24.2
Cohabiting				
No	35	71.4	43	69.4
Yes	14	28.6	19	30.6
Living circumstances				
With others	40	81.6	54	87.1
Alone	9	18.4	8	12.9
Employment status				
Employed	12	24.5	33	53.2
Unemployed	7	14.3	11	17.7
Sick/disabled	18	36.7	9	14.5
Otherwise not employed (student, retired, housewife)	12	24.5	9	14.5

Axis I and Axis II Disorders

The findings regarding psychiatric and personality disorders are restricted to the 111 patients who had the Personality Assessment Schedule administered at the follow-up interview (Table 1). Psychiatric disorders were present at the initial interview in 100 patients (90%), and personality disorders were diagnosed at the follow-up interview in 51 (46%). In Table 1, related DSM-IV diagnoses for some of the personality disorders where this is not obvious are obsessive-compulsive (anancastic), borderline (emotionally unstable), and antisocial (dissocial).

Forty-nine patients (44%) had comorbid psychiatric and personality disorders; male and female patients did not differ in rates of comorbidity. The psychiatric disorders most frequently combined with personality disorders for both male and female patients were depression (N=15 [79%] and N=25 [83%], respectively), neurotic disorders (N=8 [42%] and N=11 [37%]), and alcohol dependence/abuse (N=10 [53%] and N=6 [20%]). Alcohol dependence/abuse were more common in male patients (χ^2=4.25, df=1, p<0.05). Only two of the 51 patients with a personality disorder did not have a psychiatric disorder as well.

Characteristics of Patients With and Without Comorbid Disorders

Demographic characteristics. The patients with and without comorbid psychiatric and personality disorders were broadly similar in terms of gender, age, marital status, and living situation, with the exception of employment status (Table 2). When the variables in Table 2 were entered into stepwise logistic regression, employment status alone (employed versus unemployed) differentiated between the groups (Exp(β)=0.29, 95% confidence interval [CI]=0.13–0.65).

Circumstances of suicide attempts. More patients with comorbid disorders had made previous suicide attempts, including multiple attempts; 37% versus 8% had a history of five or more suicidal episodes (Table 3). There was no significant difference in suicidal intent scores or in the estimated consequences of the attempts if untreated.

Regression analysis of the patient-reported precipitants for suicide attempts showed that not being able to make friends (Exp(β)=3.35, 95% CI=1.45–7.65) and addiction (Exp(β)=2.62, 95% CI=1.10–6.24) significantly differentiated between the groups: both were more frequent in the patients with comorbid disorders. (Other variables excluded from the model were problem with partner, parent, or child; loneliness; rejection by partner; physical illness/disability; mental illness/symptoms; and unemployment.)

Similar analysis of motives for the attempts indicated that the patients with comorbid disorders were differentiated from those without comorbid disorders in terms of wanting to make others feel guilty (Exp(β)=12.79, 95% CI=1.50–109.20), finding their situation unbearable (Exp(β)=2.85, 95% CI=1.08–7.55) and wanting to get help (Exp(β)=2.70, 95% CI=1.04–7.02). Loss of control (Exp(β)=0.27, 95% CI=0.10–0.76), however, was more frequent in those without comorbid disorders. (Other motives excluded from the model were thoughts were unbearable, to die, to escape, to express desperation, to manipulate others, to get revenge, to find out if anyone cared, to show love to someone else, to make things easier for others, and to sleep.)

Suicide ideation and repetition of suicide attempts. At the follow-up interview, more of the patients with comorbid disorders had had suicidal thoughts in the week beforehand, and patients with comorbid disorders had higher suicide ideation scores (Table 3). Also, more had attempted suicide again, and more had made two or more further attempts (χ^2=5.40, df=1, p<0.05).

Psychological characteristics. Because several analyses were conducted in comparing the differences in psychological characteristics between the groups (Table 4), a Bonferroni correction was applied, giving a level of statistical significance of p=0.003. When the correction was applied, some of the apparently large differences in median scores shown in Table 4 no longer reached statistical significance. At the time of the initial assessment and especially at follow-up, the patients with comorbid disorders had higher scores on the Beck Depression Inventory and Beck Hopelessness Scale. They also reported more lifetime acts of aggression and feelings of irritability. They had higher impulsivity scores and poorer scores on the problem solving and self-esteem scales. These differences persisted at follow-up.

TABLE 3. Nature of Index Suicide Attempt and Previous and Subsequent Suicidal Behavior of 111 Patients With and Without Comorbid Psychiatric and Personality Disorders Who Attempted Suicide

Suicide Variable	Patients With Comorbid Disorders (N=49)		Patients Without Comorbid Disorders (N=62)		Analysis		
	N	%[a]	N	%[a]	χ^2	df	p
Number of previous attempts					23.64	3	<0.0001
0	8	16.3	34	54.8			
1	9	18.4	13	21.0			
2–4	14	28.6	10	16.1			
≥5	18	36.7	5	8.1			
	N	%[a]	N	%[a]			Fisher's Exact p
Self-poisoning used in index attempt	48	98.0	61	98.4			1.00
	Median[b]	Range[b]	Median[b]	Range[b]	Mann-Whitney U Test z		p
Suicidal intent score	12	0–26	9	0–29	1.58		0.11
	N	%[a]	N	%[a]	χ^2	df	p
Estimated consequences of index attempt without treatment					0.10	2	0.95
Certain survival	10	20.4	13	21.0			
Death unlikely (<50% chance)	30	61.2	39	62.9			
Death probable (>50% chance)	9	18.4	10	16.1			
Death certain	0	0.0	0	0.0			
	Median	Range	Median	Range	Mann-Whitney U Test z		p
Scale for Suicide Ideation score at follow-up assessment[c]	0	0–34	0	0–15	3.22		<0.001
	N	%	N	%	χ^2	df	p
Suicidal thoughts in week before follow-up					8.01	1	<0.005
No	38	77.6	60	96.8			
Yes	11	22.4	2	3.2			
Repeat suicide attempts during follow-up period					17.41	2	<0.001
0	24	49.0	53	85.5			
1	11	22.4	3	4.8			
≥2	14	28.6	6	9.7			

[a] The percentages are based on the total number of subjects in each group.
[b] Medians and ranges are used where the distributions of continuous data are skewed.
[c] The follow-up assessment occurred 12–20 months after the initial interview.

There were associations between scores on most of the psychological variables at the initial assessment. Therefore, after appropriate transformation of the scores to allow parametric analysis, multivariate stepwise discriminate function analysis was conducted to investigate which variables best predicted membership of the groups with and without comorbid disorders. Of the eight variables on which the two groups scored significantly differently, seven were included in the analysis (the hopelessness score could not be transformed). Two variables best distinguished between the two groups: self-esteem (discriminant function coefficient=0.78) and problem solving (discriminant function coefficient=–0.50). This model correctly predicted group membership for 72% of the patients. To include the hopelessness scale scores, stepwise logistic regression was also used to predict group membership. Again, self-esteem (Exp(β)=0.80, 95% CI=0.72–0.90) and problem solving (Exp(β)=1.10, 95% CI=1.01–1.20) were the only variables included in the model.

Background characteristics. More of the patients with comorbid disorders recalled parental suicidal behavior, mental mistreatment, sexual abuse, and lack of affection (Table 5). All of the variables in Table 5 were entered into a stepwise logistic regression. However, inclusion of sexual abuse made the model unstable because there were no cases of sexual abuse in the group of patients without comorbid disorders; therefore, it was subsequently omitted. Of the remaining variables, only thinking that their parents did not love them significantly differentiated between the groups (Exp(β)=2.68, 95% CI=1.24–5.79).

Discussion

Comorbidity of psychiatric and personality disorders is increasingly recognized as a major factor in suicide (4, 5, 34, 35). Far less attention has been paid to investigating this association in suicide attempters (10). Our finding that 44% of patients who attempted suicide had comorbid

TABLE 4. Psychological Characteristics at the Initial Assessment and at Follow-Up of 111 Patients With and Without Comorbid Psychiatric and Personality Disorders Who Attempted Suicide

	Score of Patients With Comorbid Disorders (N=49)		Score of Patients Without Comorbid Disorders (N=62)		Analysis by Mann-Whitney U Test	
Time of Assessment and Scale	Median	Range	Median	Range	z	p
Initial assessment						
Beck Depression Inventory	31	6–57	25	2–47	2.83	0.005
Beck Hopelessness Scale	17	1–20	11	0–18	4.00	<0.001
Brown-Goodwin Life History of Aggression Scale (modified)	9	0–28	6	0–19	2.44	0.02
Buss-Durkee Hostility Inventory						
Irritability	8	2–11	6	0–11	2.59	0.01
Assault	3	0–10	3	0–9	0.03	0.98
Impulsivity Scale	38	21–53	34	21–47	2.67	0.008
Self-Rated Problem Solving Scale	39	25–50	35	16–48	3.56	<0.001
Rosenberg Self-Esteem Scale	20	11–26	24	10–38	4.93	<0.001
Spielberger State-Trait Anger Expression Inventory						
State	12	10–37	11	10–36	1.10	0.27
Trait	22	10–38	19	11–38	1.76	0.08
Follow-up assessment at 12–20 months						
Beck Depression Inventory	25	1–49	7	0–47	4.33	<0.001
Beck Hopelessness Scale	13	1–20	5	0–20	3.60	<0.001
Impulsivity Scale	36	25–49	31	21–43	3.61	<0.001
Rosenberg Self-Esteem Scale	23	10–36	30	12–40	5.27	<0.001

TABLE 5. Aspects of Their Upbringing and Parental Characteristics During Childhood and Early Adolescence of Patients With and Without Comorbid Psychiatric and Personality Disorders Who Attempted Suicide

	Patients With Comorbid Disorders (N=49)		Patients Without Comorbid Disorders (N=62)		Analysis	
Childhood Variable	N	%	N	%	χ^2 (df=1)	p
Parent had psychiatric hospital admission	6	12.2	2	3.2	2.12	0.15
Parent was addicted	13	26.5	11	17.7	0.78	0.38
Parent had suicidal behavior					4.50	<0.05
Attempted suicide	12	24.5	5	8.1		
Suicide	0	0.0	1	1.6		
Parents had marital problems	29	59.2	29	46.8	1.23	0.27
Patients thought parents did not love them	30	61.2	23	37.1	5.45	<0.05
Parent physically mistreated patient	17	34.7	14	22.6	1.44	0.23
Parent mentally mistreated patient	27	55.1	20	32.3	4.95	<0.05
Parent sexually abused patient	7	14.3	0	0.0	—[a]	0.002
Patients hated parent	33	67.3	32	51.6	2.18	0.14

[a] Fisher's exact test.

psychiatric and personality disorders is similar to the rate found in a study of Finnish suicide attempters (6) that used DSM-III-R criteria. Emotionally unstable personality disorder (which includes borderline disorder) was not prominent in our patients, probably because of the exclusion of individuals with repetitive minor self-injury based on the recognition that as a group they differ from suicide attempters. Our finding of more cases of anxious personality disorder is similar to the finding in suicide attempters in South Africa (36).

The study subjects were generally representative of patients who attempted suicide seen in the general hospital where the study was based (9). Personality was assessed at the follow-up interview, a time when psychiatric disorder is usually less prominent (29). Although assessment at follow-up also meant that some patients could not be assessed, the patients who were available were representative of the overall initial patient group. Assessment of personality was based on information provided by the subjects themselves because other informants were often not available.

It could be argued that grouping together separate categories of psychiatric and personality disorders is simplistic, but it seems to distinguish two substantially different groups of suicide attempters. Comorbidity of psychiatric and personality disorders, rather than personality disorder alone, appears to be the important factor in determining risk because, as in this study, personality disorder is rarely found by itself in patients who attempt (9) or complete (34) suicide.

There was little difference in the sociodemographic characteristics of patients with and without comorbid psychiatric and personality disorders, except that fewer of the patients with both disorders were employed. However, more of the suicide attempts of the patients with comorbid disorders were precipitated by difficulty making friends and problems related to addiction, and more were associated with wanting to make others feel guilty, finding their situation unbearable, and wanting to get help.

The patients with and without comorbid disorders differed markedly in their psychological characteristics, and most of these differences persisted at follow-up. These included characteristics associated with risk of both attempted and completed suicide, such as persistent depression and suicidal ideas, hopelessness, aggression, impulsivity, and low self-esteem. The greater risk of suicide in the patients with comorbid disorders was also underlined by the greater frequency of previous attempts, particularly multiple attempts, and the more frequent repetition of attempts during the follow-up period.

Multivariate analysis indicated that the key factors distinguishing the patients with and without comorbid disorders were lower self-esteem and poorer self-rated problem-solving skills. Such traits may be exacerbated by psychiatric disorders and increase the likelihood of a suicidal act when an individual is feeling hopeless because of depression or other disorders and is facing seemingly insurmountable problems. This paradigm is in keeping with the stress-diathesis model of Mann and colleagues (10). Other important factors, such as aggression, a factor known to be important in suicidal behavior (10), might be secondary to low self-esteem and frustration over difficulties in problem solving.

Upbringing, especially feeling unloved by parents, is also likely to have been important in shaping some of the specific characteristics of the patients with comorbid disorders. Genetic influences might also be relevant and may explain the trend for more parental suicidal behavior in the comorbid group.

Comorbidity of personality and psychiatric disorders characterizes an important subgroup of suicide attempters who have a particularly high risk of repeated suicidal behavior. The risk of completed suicide in this subgroup is indicated not only by the frequency of repetition but also by the presence of other risk factors, including persistent depression, suicide ideation, and hopelessness. This risk is underlined by the extent (3, 34, 35) and relative risk (4, 5) of this type of comorbidity among individuals who committed suicide compared with control subjects. The impact of comorbidity on risk of suicidal behavior (including repetition) may be attributable to specific characteristics, such as aggression and impulsivity, that increase the likelihood of suicidal behavior as well as the deleterious effects that personality disorders may have on the nature and prognosis of psychiatric disorders.

Prevention of suicidal behavior in individuals with comorbid psychiatric and personality disorders presents a considerable challenge. Clearly, treatment of psychiatric disorders most influencing the immediate suicide risk (e.g., reducing levels of depression and/or substance abuse) must be the first priority. It remains uncertain how best to influence the longer-term psychological characteristics of these individuals, which appear from the present study to include poor problem-solving skills and low self-esteem. Psychological treatments include dialectical behavior therapy, which has promising results for female patients with borderline personality disorders (37). Mood stabilizers, selective serotonin reuptake inhibitor antidepressants, or low-dose neuroleptics may ameliorate of some of the characteristics that contribute to risk (38). Multiple therapeutic agencies are often necessarily involved in management, especially where substance abuse is prominent. Intensive treatment may be required to overcome the reluctance of some patients to engage or persist in treatment.

Comorbidity of psychiatric and personality disorders represents one of the major challenges for suicide prevention.

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