Characteristics of Opiate Dependent Patients Who Attempt Suicide

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Objective: To describe the characteristics of opiate dependent patients who attempt suicide.

Method: Opiate dependent patients (DSM-IV criteria) who had (N = 105) or had not (N = 141) attempted suicide were compared for family history of suicide, childhood trauma, personality traits, and experience of comorbidity with cocaine and/or alcohol dependence, major depressive disorder, and physical disorder.

Results: Significantly more opiate dependent patients who had attempted suicide were female ($p < .0001$) and unemployed ($p < .0006$). Patients who had attempted suicide reported significantly more family history of suicide and more childhood trauma; scored significantly higher for introversion, hostility, and neuroticism; and had experienced significantly more comorbidity with lifetime cocaine and alcohol dependence, major depressive disorder, and current physical disorder ($p < .05$ for all).

Conclusion: Suicidal behavior in opiate dependent patients may involve risk factors from the family, childhood, personality, psychiatric, and physical domains.

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The risk for suicidal behavior among opiate dependent patients is increased. For example, Harris and Barraclough[1] in their meta-analysis of the literature on follow-up studies found that opiate dependent patients had a standardized mortality ratio for suicide that was 14 times higher than expected. The risk for an attempt at suicide is also increased among opiate dependent patients. A review reported that 8% to 67% of opiate dependent patients attempt suicide at some time.[2]

The most generally accepted model of suicide risk is the risk factor model. Risk factors may be distal or proximal. Distal risk factors affect the threshold for suicide and indirectly increase an individual's risk when he or she experiences a proximal risk factor. Proximal, or trigger, factors are more closely related to the suicidal behavior and often act as precipitants. Distal, or threshold, risk factors include developmental, psychological, personality, biological, genetic, and social variables. Proximal, or trigger, risk factors may include life events, stress, acute episodes of mental illness, and acute alcohol or substance abuse. Suicidal individuals are different from nonsuicidal individuals in distal, or threshold, risk factors, e.g., impulsivity and specific genetic factors, and may be moved toward suicidal behaviors by proximal, or trigger, risk factors (reviewed in references 3 and 4).

In the present study, it was hypothesized that opiate dependent patients who had attempted suicide, compared with nonattempters, would report significantly more distal risk factors of childhood trauma, family history of suicide, and personality traits as well as significantly more of the proximal risk factors of comorbidity with cocaine and/or alcohol dependence, major depressive disorder, and current physical disorder.

METHOD

A consecutive series of 246 opiate dependent patients was examined; 164 were seen in the Substance Abuse Treatment Program at the Department of Veterans Affairs (DVA), New Jersey Healthcare System, East Orange Campus, and 82 were seen in a community mental health center in East Orange, N.J. Inclusion criteria were that the patient met DSM-IV criteria for opiate dependence and identified heroin as his or her illicit drug of first choice. Exclusion criteria were a lifetime history of schizophrenia or other psychosis or mental retardation.

A semistructured interview was conducted about sociodemographic variables, opiate dependence history, any lifetime alcohol and/or cocaine dependence meeting DSM-IV criteria, current treatment for a medical disorder, lifetime history of attempts at suicide, and suicidal behavior in first- and second-degree relatives. The information from the patient was supplemented by collateral information from mental health program staff, medical records, the program internist and physician's assistant, and, where possible, from mental health professionals who previously treated the patient. A suicide attempt was

Table 1. Sociodemographic Data of Opiate Dependent Patients Who Had or Had Never Attempted Suicide[a]

Variable	Attempted Suicide (N = 105)	Never Attempted Suicide (N = 141)
Male	82	133
Female[b]	23	8
Employed[b]	9	30
Age, mean ± SD, y	43.8 ± 7.0	44.6 ± 8.3
Age at onset of heroin abuse, mean ± SD, y	22.9 ± 8.2	23.7 ± 8.8
African American	59	100
Hispanic	8	5
White	38	36
Married	14	31
Single	40	47
Separated, divorced, or widowed	51	63
Receiving methadone	16	31

[a]All values shown as Ns unless otherwise noted. Abbreviations: CI = confidence interval, OR = odds ratio.
[b]Significantly more of the patients who had attempted suicide were female ($\chi^2 = 12.96$, $p < .0001$, OR = 4.66, 95% CI = 1.99 to 10.90) and unemployed ($\chi^2 = 7.58$, $p < .0006$, OR = 2.88, 95% CI = 1.31 to 6.38). Chi-square test was used; df = l.

Table 2. Opiate Dependent Patients Who Had or Had Not Attempted Suicide Compared for Scores on the Childhood Trauma Questionnaire

Childhood Trauma Variable	Attempted Suicide (N = 93) Mean	SD	Never Attempted Suicide (N = 117) Mean	SD	Significance[a] t	p
Emotional abuse	14.0	6.4	8.6	3.9	7.49	< .0001
Physical abuse	13.0	6.2	8.9	3.6	5.97	< .0001
Sexual abuse	11.5	7.1	7.7	2.6	5.41	< .0001
Emotional neglect	29.0	10.5	21.0	8.5	6.14	< .0001
Physical neglect	17.3	6.5	13.0	4.6	5.59	< .0001
Weighted total	12.6	4.4	8.6	2.5	8.22	< .0001

[a]Student t test was used; df = 208.

defined as a self-destructive act with some intent to end one's life that was not self-mutilatory in nature. Four patients were included whose attempt involved intent to kill themselves but no completion of the act, e.g., holding a gun to one's head with intent to shoot and to die, or putting one's head in a noose but prevented from hanging.[5,6] Eleven other patients had similarly made aborted attempts but had also made other, nonaborted attempts. Since many opiate dependent patients are unable and/or unwilling to access health care, it was not required that the suicide attempt have led to medical attention.[7] However, 15 of the 31 patients who had made an attempt that did not lead to medical attention had also made other attempts that did lead to medical attention. Accidental heroin overdosage was not counted as a suicide attempt.

Patients were also interviewed by a psychiatrist with the depression section of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I)[8] to determine whether there was a lifetime history of a major depressive episode (MDE) meeting DSM-IV criteria. (MDE criteria were used as a conservative measure, since more depressive symptoms are required than in some other DSM-IV mood disorder diagnoses, e.g., opiate-induced mood disorder or dysthymic disorder.) In addition, patients seen at the DVA hospital were interviewed with the Addiction Severity Index (ASI)[9] by an addiction counselor trained to administer the ASI.

Patients completed 4 questionnaires: the Eysenck Personality Questionnaire (EPQ),[10] which yields neuroticism, extraversion, psychoticism, and lie scores; the Hostility and Direction of Hostility Questionnaire (HDHQ) of Foulds,[11] which yields a total hostility score; the Childhood Trauma Questionnaire,[12,13] 34-item version, which yields scores for emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect; and the Barratt Impulsivity Scale, 7B Version,[14] which yields scores for sensory stimulation, motor impulsivity, interpersonal impulsivity, cognitive impulsivity, and risk taking. After a complete description of the study to the subjects, written informed consent was obtained. Not all patients completed all measures.

Student t and chi-square tests were used in the statistical analysis. Odds ratios (ORs) and 95% confidence intervals (CIs) were also calculated. To examine the strength of the relationship between suicide attempt and various risk factors, multivariate analysis was used in which the putative risk factor was the independent variable and the suicide attempt was the dependent variable.

RESULTS

One hundred five of the 246 opiate dependent patients had attempted suicide at some time. These 105 patients had made a total of 232 suicide attempts (mean = 2.2 attempts; range, 1–16 attempts). Twenty-one patients had attempted suicide by deliberate heroin overdosage with intent to die, and 12 of these had also made additional suicide attempts using other methods. Significantly more of the patients who had attempted suicide were female ($\chi^2 = 12.96$, df = l, $p < .0001$) and unemployed ($\chi^2 = 7.58$, df = l, $p < .0006$) (Table 1).

The opiate dependent patients who had attempted suicide had significantly higher childhood trauma scores for emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect than the opiate dependent patients who had never attempted suicide (all $p < .0001$) (Table 2). Multivariate analysis showed that emotional abuse, sexual abuse, and emotional neglect were all significantly and independently associated with a suicide attempt ($p < .03$ for each variable; OR = 8.9, 95% CI = 1.28 to 68.5; OR = 12.9, 95% CI = 1.47 to 165.2; and OR = 5.70, 95% CI = 1.17 to 28.7, respectively).

Significantly more of the patients who had attempted suicide had a lifetime history of cocaine dependence

Table 3. Opiate Dependent Patients Who Had or Had Not Attempted Suicide Compared on 3 Areas of Comorbidity: Lifetime History of Cocaine and/or Alcohol Dependence, Major Depression, and Currently Treated Physical Disorder[a]

	Attempted Suicide (N = 105)		Never Attempted Suicide (N = 141)		Significance		Odds	
Comorbidity Area	N	%	N	%	χ^2	p	Ratio	95% CI
Lifetime history of cocaine and/or alcohol dependence	82	78.1	89	63.1	5.68	< .017	2.08	1.17 to 3.67
Lifetime history of a major depressive episode	94	89.5	54	38.3	63.77	< .0001	13.8	6.75 to 27.90
Currently treated physical disorder	76	72.4	83	58.9	4.23	< .04	1.83	1.06 to 3.14
No comorbidity in any of these 3 areas	0	0	12	8.5	7.65	< .006	20.3	1.19 to 3.43
Comorbidity in all 3 of these areas	50	47.6	17	12.1	36.60	< .0001	6.63	3.52 to 12.42

[a]Chi-square test was used; df = l. Abbreviation: CI = confidence interval.

Table 4. Opiate Dependent Patients Who Had or Had Not Attempted Suicide Compared for Scores on Personality Variables[a]

	Attempted Suicide (N = 52)		Never Attempted Suicide (N = 97)		Significance	
Personality Variable	Mean	SD	Mean	SD	t	p
EPQ scores						
Psychoticism	6.7	3.7	5.4	3.0	2.32	< .02
Neuroticism	17.8	4.4	13.4	5.7	4.88	< .0001
Extraversion	9.1	5.4	11.5	5.0	2.75	< .007
Lie	6.8	4.2	7.3	3.8		NS
HDHQ total hostility score	26.9	8.7	20.4	8.3	4.12	< .0001

[a]Student t test was used; df = 147. Abbreviations: EPQ = Eysenck Personality Questionnaire, HDHQ = Hostility and Direction of Hostility Questionnaire.

(65 of 105 vs. 67 of 141; $\chi^2 = 4.45$, df = l, p < .035, OR = 1.79, 95% CI = 1.07 to 2.97) and alcohol dependence (49 of 105 vs. 45 of 141; $\chi^2 = 4.94$, p < .026, OR = 1.86, 95% CI = 1.15 to 3.03) compared with the patients who had never attempted suicide. Significantly more patients who had attempted suicide had a lifetime history of alcohol and/or cocaine dependence ($\chi^2 = 5.68$, df = l, p < .017) (Table 3). Significantly more attempters also had a history of major depressive disorder ($\chi^2 = 63.77$, df = l, p < .0001) (see Table 3). Patients who had attempted suicide had significantly higher ASI psychiatry composite scores than patients who had never attempted suicide (0.37 ± 0.29 vs. 0.18 ± 0.23; t = 3.58, df = 101, p < .0005).

Significantly more patients who had attempted suicide had a currently treated physical disorder ($\chi^2 = 4.23$, df = l, p < .04) (see Table 3). There was a trend for more of the attempters to be human immunodeficiency virus (HIV)-seropositive (28 of 105 vs. 25 of 141; $\chi^2 = 2.34$, df = l, p < .12, OR = 1.69, 95% CI = 0.91 to 3.09). However, there were no significant differences for epilepsy or organic brain disease (5 of 105 vs. 7 of 141; NS), cardiovascular disease (4 of 105 vs. 11 of 141; NS), diabetes (4 of 105 vs. 11 of 141; NS), orthopedic problems (4 of 105 vs. 9 of 141; NS), asthma and respiratory disorders (7 of 105 vs. 4 of 141; NS), treatment for hepatitis (11 of 105 vs. 10 of 141; NS), or other miscellaneous physical disorders (12 of 105 vs. 9 of 141; NS).

Thirty-one of the 105 patients who had attempted suicide had a family history of suicidal behavior compared with 11 of the 141 patients who had never attempted suicide ($\chi^2 = 17.91$, df = l, p < .0001, OR = 4.95, 95% CI = 2.33 to 10.37). Twelve of the 105 patients who had attempted suicide had a first- or second-degree relative who had committed suicide, and a further 19 had a first- or second-degree relative who had attempted suicide, compared with 6 and 5, respectively, among the 141 patients who had never attempted suicide (relative who committed suicide: $\chi^2 = 3.57$, df = l, p < .059, OR = 2.90, 95% CI = 1.05 to 7.96; relative who attempted suicide: $\chi^2 = 12.86$, df = l, p < .0001, OR = 6.01, 95% CI = 2.15 to 16.6).

On the EPQ, patients who had attempted suicide had significantly lower extraversion scores (t = 2.75, df = 147, p < .007) and higher neuroticism (t = 4.88, df = 147, p < .0001) and psychoticism (t = 2.32, df = 147, p < .02) scores (Table 4). Multivariate analysis showed that neuroticism was significantly and independently associated with a suicide attempt (p < .0006). Patients who had attempted suicide also had significantly higher hostility scores on the HDHQ (t = 4.12, df = 147, p < .0001) (see Table 4). However, the attempters did not score significantly higher on any of the subscales of the Barratt Impulsivity Scale (Table 5).

DISCUSSION

One hundred five of the 246 opiate dependent patients had attempted suicide. This large number reflects the fact that individuals with opiate dependence are at increased risk for suicidal behavior.[1] For example, a study[15] of 125

Table 5. Opiate Dependent Patients Who Had or Had Not Attempted Suicide Compared for Scores on the Barratt Impulsivity Scale (BIS)[a]

	Attempted Suicide (N = 42)		Never Attempted Suicide (N = 96)	
BIS Subscale	Mean	SD	Mean	SD
Sensory stimulation	5.14	2.73	5.27	2.68
Motor impulsivity	11.59	4.13	11.54	5.25
Interpersonal impulsivity	4.79	3.00	4.82	3.76
Cognitive impulsivity	19.16	8.03	18.09	7.36
Risk taking	4.14	5.36	3.14	4.34

[a]Student t test was used; df = 136. No significant between-group differences were found for any of the subscales.

drug addicts in Sweden found that 45% had attempted suicide at some time, a percentage similar to the 42.7% found in the present study.

Opiate dependent patients are known to have a high prevalence of additional comorbid substance dependence and psychiatric disorder.[16–20] For example, one study[16] reported that 65% of opiate dependent patients had a lifetime prevalence of comorbid cocaine dependence and 50%, of alcohol dependence, and other studies have found that up to 60% report depressive symptoms in the previous year with up to a third assessed as currently moderately to severely depressed.[17–23] In the present study, comorbidity was found to be particularly associated with suicidal behavior. Opiate dependent patients who had attempted suicide had experienced significantly more comorbidity with lifetime cocaine and/or alcohol dependence, major depressive disorder, and current physical disorder than patients who had never attempted suicide. In fact, none of the patients who had attempted suicide was free of comorbidity in any 1 of these 3 areas, while 12% had comorbidity in all 3 of these areas. Murphy et al.[24] similarly noted that 87% of opiate addicts who had attempted suicide had lifetime dysphoric disorder meeting Research Diagnostic Criteria and that only 4% did not have comorbid psychiatric disorder.

Suicidal behavior frequently involves an interaction between distal risk factors affecting the threshold for attempting suicide and proximal, or trigger, factors—like comorbidity—that precipitate the attempt. In the present study, there were significant differences between the two groups for the 3 distal suicide risk factors studied. First, significantly more opiate dependent patients who had attempted suicide had a family history of both completed suicide and attempted suicide. Second, opiate dependent patients who had attempted suicide reported significantly more childhood emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Both a family history of suicide and childhood trauma have been shown to be risk factors for attempted suicide in other psychiatric diagnoses.[25–28]

A third threshold-affecting factor studied was personality. Opiate dependent patients who had attempted suicide were found to be significantly more introverted, hostile, and neurotic. These personality traits have been shown to be associated with suicidal behavior in general.[29,30] Murphy et al.[24] also found that opiate dependent patients who had attempted suicide had significantly higher introversion and higher neuroticism scores, and Kosten and Rounsaville[31] found that neuroticism predicted suicidality during a 2.5-year follow-up of opiate addicts. Similarly, a recent longitudinal study showed that individuals who had attempted suicide by 21 years of age had significantly higher neuroticism scores at 14 years of age.[32] The results of that study also suggested that early neuroticism was related to later psychiatric disorder, particularly depression, which in turn was associated with suicidal behavior. In opiate dependent patients, higher neuroticism and low extraversion scores have been shown to be associated with psychiatric comorbidity.[16]

Significantly more of the opiate dependent patients who had attempted suicide were female and unemployed, as noted in other studies.[15,24,33–35] Thus, the results of the present study suggest that suicidal behavior may be multidetermined with psychosocial, family, personality, psychiatric, and physical risk factors. A limitation imposed by the length of the 2 semistructured clinical and ASI interviews and 4 questionnaires was that time permitted only the major depressive disorder section of the SCID to be used. Future studies using the complete SCID interview might yield further information about other Axis I and II comorbidities.

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