A Profile of Medically Serious Suicide Attempts

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Background: This study identified factors associated with medically serious suicide attempts (requiring medical hospitalization).

Method: Demographic information, current psychiatric mental state, suicide attempt and psychiatric history characteristics, and DSM-IV diagnoses were compared between 65 patients hospitalized for a medically serious suicide attempt (MSSA) and 32 patients seen in the emergency room for suicide attempt but not medically hospitalized (NMSSA).

Results: Those with MSSAs had a higher rate of substance-induced mood disorder (but not substance abuse or dependence), while those with NMSSA had more attempts, more years since first attempt, and a higher rate of sexual and physical abuse, traumatic life events, borderline personality disorder, and bipolar disorder.

Conclusion: Substance-induced mood disorder is an important diagnosis in the evaluation of suicidal patients. The vulnerability of mood effects caused by substance abuse may lead to a more serious suicide attempt despite less extensive psychiatric problems. The most important early psychiatric intervention may be the immediate recognition and aggressive treatment of an individual's affective and substance use disorders.

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ndividuals who attempt suicide in contrast to those who complete suicide represent distinct but overlapping populations. There are eight to ten times as many suicide attempts as completed suicides.¹ While making an attempt constitutes a major risk factor for completed suicide,² within this large group of suicide attempters, the risk of completed suicide is highly variable.³⁻⁶ There have been a number of efforts to better characterize the suicide attempter group and separate those that might be at greater risk for completed suicide. Retrospective studies of suicide attempters have used regression analyses to identify factors that would predict completed suicide.^{4,7,8} While these studies have shown that demographic variables (age and male gender), attempt characteristics (intent, seriousness, and repetition), and psychiatric (having a mental disorder) and social (isolation, divorce) risk factors are related to subsequent suicide, these risk factors had poor sensitivity and specificity (predictive power). Ameliorating factors (i.e., those that might decrease risk) have received less attention. While psychiatric treatment is thought to be of value,⁹ one time psychiatric consultation may be less helpful.¹⁰

Among suicide attempt characteristics, the medical severity of the attempt, measured in a number of ways, has been associated with both high suicide intent^{2,11,12} and subsequent completed suicide.⁷ One measure of medical severity is the need for hospitalization and medical or surgical support to prevent progression of attempt sequelae to a more serious outcome. This definition may identify a subgroup most likely to have a successful suicide attempt. For example, one study¹³ showed that only 10% of suicide attempters required medical hospitalization, a figure similar to the proportion of attempters who go on to complete suicide in 3- to 10-year follow-ups,^{14,15} although this similarity may be coincidental rather than correlational.

Although the subgroup requiring medical hospitalization for a medically serious suicide attempt (MSSA) has been subdivided to examine differences between attempters with different psychiatric diagnoses,¹⁶ no studies have contrasted this subgroup with suicide attempters not requiring medical hospitalization (NMSSA). This study compares the two groups of suicide attempters (requiring and not requiring hospitalization) to identify specific demographic, psychiatric mental state, and suicide attempt psychiatric characteristics as well as diagnostic factors that are unique in the MSSA group and which might constitute, by implication, additional risk factors for completed suicide.

METHOD

Subjects

The sample consisted of 65 suicide attempters who were admitted to the medical service after medical evalu-

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	MSSA (N = 65)		NMSSA (N = 32)	
	Mean or	SD or	Mean or	SD or
Characteristic	Number	Percent	Number	Percent
Method of <i>current</i> attempt				
Overdose	47	72.3	23	71.9
Laceration	2	3.1	5	15.6
Stab/knife	7	10.8	1	3.1
Hang		1.5	1	3.1
Asphyxiate	3	4.6	0	0.0
Jump	2.0	> 3.1	2.	6.3
Shoot/gun	2	3.1	0	0.0
Fire	1	1.5	0	0.0
Method of most severe		~ /	_	
attempt			\mathbf{O}	
Overdose	34	52.3	9	28.1
Laceration	9	13.9	10	31.3
Stab/knife	7	10.8	(0)	0.0
Hang	2	3.1		3.1
Asphyxiate	3	4.6	2	6.3
Jump	5	7.7	8	25.0
Shoot/gun	3	4.6	1.0	3.1
Fire	2	3.1	1 0	3.1
Intoxication on <i>current</i>				122
attempt				Y O
Drugs	27	41.5	12	37.5
Alcohol	10	15.4	2	6.3
Current number of				
drugs used ^a	0.7	0.9	1.1 ^c	1.2
Suicide Intent Scale score	12.6 ^b	6.7	9.9	4.8
Risk-Rescue Rating Scale sc	ore 7.9 ^d	2.0	5.5	0.7
Number of suicide attempts	4.3	6.3	6.8 ^c	7.4
Number of years since				
first attempt ^a	6.5	9.0	12.1 ^b	12.3
^a Significant by stepwise disc ^b $n < 05$	riminant aı	nalysis.		

Table 1. Suicide Attempt Characteristics: Medically Serious	
Suicide Attempt (MSSÅ) Versus Non-Medically Serious	
Suicide Attempt (NMSSA) Groups	

 $cp^{r} < .01.$

 $d^{t}p < .001$

ation in the emergency room and 32 suicide attempters who were evaluated medically and determined to be medically stable and without further need for acute medical intervention at Harborview Medical Center in Seattle, Washington, from May to December 1994. Those not admitted to the medical service were evaluated in the emergency room by a psychiatric resident for subsequent psychiatric hospitalization or outpatient treatment. All NMSSA individuals were interviewed in the emergency room within 24 hours of presenting to the emergency room with a suicide attempt, while 76.9% of MSSA individuals were interviewed on the medical unit they were admitted to within the first 48 hours. The remainder were interviewed within the following 72 hours.

Emergency room log sheets for this period indicate that approximately 150 individuals per month are seen at Harborview Medical Center primarily for suicide evaluation. Of these, 35% require acute medical intervention and are admitted for medical treatment, while 65% are discharged to outpatient care or admitted for inpatient psychiatric treatment.

Characteristic	MSSA (N = 65)		NMSSA (N = 32)	
	Ν	%	N	%
Psychiatric treatment	42	64.6	26	81.3
Psychiatric hospitalization	28	43.1	18	56.3
History of physical abuse ^a	20	30.8	18 ^c	56.3
History of sexual abuse	18	27.7	17 ^c	53.1
History of traumatic				
life events	20	30.8	17 ^b	53.1
History of legal problems ^a	31 ^b	47.7	8	25.0
History of violence	22	33.8	8	25.0
Family history of suicide				
attempts	17	26.2	13	40.6

p = .03 $c \hat{p} < .01.$

Procedure

A semistructured interview was administered to evaluate demographic information including age, sex, education, ethnicity, and marital, living, and employment status.

Since emotional and cognitive factors were thought to be immediately relevant to attempt severity, variables were collected to identify the current psychiatric mental state. This set included the Mini-Mental Status Examination (MMSE),¹⁷ current number of life stressors, presence of psychosis, suicidal or homicidal ideation, presence of an ambivalent emotional reactor to the suicide attempt (assessed by a negative response to "Are you glad you survived?" or an affirmative response to "Do you wish you would have died?"), and distress as measured by presence of an affective response to the attempt (i.e., depressed or anxious).

Information on suicide attempt characteristics (Table 1) was grouped by number of attempts, method of current attempt, method of most severe attempt, intoxication on current attempt, current number of drugs used (including alcohol), number of years since first attempt, as well as Beck's Suicide Intent Scale score to measure suicidal intent¹⁸ and the 5-item Risk-Rescue Rating Scale to measure medical lethality.¹⁹

Psychiatric characteristics (Table 2) thought to contribute to attempt severity included history of psychiatric treatment or hospitalization, history of physical or sexual abuse or traumatic events, family history of suicide attempt, history of violence, and history of legal problems (defined as having been arrested, served time in jail for criminal activity, or been charged with committing a crime).

Semistructured interviews following the DSM-IV were done to determine Axis I psychiatric diagnoses as well as the Axis II diagnoses of borderline and antisocial personality disorder (Table 3). Substance-induced mood disorder (SIMD) was defined as the syndrome of depressed mood or markedly diminished interest or pleasure

	MSSA (N = 65)		NMSSA (N = 32)	
Psychiatric Diagnosis	Mean or Number	SD or Percent	Mean or Number	SD or Percent
	Number	Tercent	Rumber	Tercent
Primary diagnoses				
Adjustment disorder	13	20.0	12	37.5
Bipolar disorder,	5			
depressed	4	6.2	6 ^c	18.8
Major depression ^a	22	33.8	6	18.8
Schizophrenia	3	4.6	2	6.3
Substance-induced				
mood disorder ^{a,b}	19	29.2	3	9.4
Secondary diagnoses				
Antisocial personality				
disorder	5	7.7	3	9.4
Borderline personality)		
disorder ^c	14	21.5	11	34.4
Alcohol abuse/dependence	e 30	46.2	16	50.0
Drug abuse/dependence	19	29.2	2 10	31.3
Total number of diagnoses	3.5	1.9	3.9	1.9
^a Significant by stepwise disc ^b Considered a primary diagn diagnosis present. ^c p < .05.	riminant a osis if ther	nalysis. e was no o	ther Axis I	primary

Table 3. Current DSM Diagnosis: Medically Serious Suicide Attempt (MSSA) Versus Non-Medically Serious Suicide Attempt (NMSSA) Groups

in activities developing within a month of substance in toxication or withdrawal and not accounted for by a preexisting mood disorder.²⁰ The interview and rating scales were performed by psychiatric residents during regular hospital clinical duties. Psychiatric diagnoses were confirmed by review of cases with a board-certified attending psychiatrist, and only those diagnoses with a frequency of 10% or greater were entered into the data analysis.

Data Analysis

The data analyses had both a univariate and multivariate component. To examine univariate group differences, chi-square analyses and independent sample t tests were used for categorical and continuous data, respectively. Owing to the 39 univariate tests performed, a Bonferroni adjustment to the significance level was used to assess statistical significance. Tests with p values less than .001 were considered statistically significant. Other p values are included in the tables for descriptive purposes.

To perform the multivariate component, variables were grouped by set (demographics, current psychiatric mental state, suicide attempt, and psychiatric characteristics and diagnosis). To further reduce type I error, discriminant analyses were performed on each of the five sets. All variables in each set were entered simultaneously into a discriminant analysis to determine overall if a set of variables would significantly discriminate the groups. If there was no overall significance at the p < .05 level, we discontinued further analysis on that set of variables. If the set globally discriminated, we performed a stepwise discriminant analysis to determine the most salient discriminators within that set of variables. The significant variables from each set that were identified by stepwise discriminant analysis were combined for final discriminant analysis.

RESULTS

Univariate Analyses

There were no significant differences in demographic information (age, gender, education, ethnicity, marital status, employment, or living situation) or current psychiatric mental state characteristics (suicidal ideation, homicidal ideation, presence of psychosis, negative emotional response, affective distress, MMSE scores, or current number of life stressors).

For suicide attempt characteristics, there were greater Risk-Rescue scores (t = -8.67, df = 87.11, p < .001) in the MSSA group. Additionally, there were trend level differences for increased suicide intent (t = 2.18, df = 83,p < .03) in the MSSA group and an increased number of years since first attempt (t = 2.28, df = 47.87, p < .03) and number of suicide attempts (t = 2.44, df = 95, p < .01) in the NMSSA group. There was no significant difference between alcohol or drug intoxication at the time of the attempt in MSSA individuals. For psychiatric characteristics, there were no significant differences. There were trend level differences of increased legal problems ($\chi^2 = 4.59$, df = 1, p = .03 in those with MSSA and increased physical $(\chi^2 = 5.57, df = 1, p = .01)$ and sexual abuse $(\chi^2 = 5.75, df = 1, p = .01)$ df = 1, p = .01), presence of current traumatic life events $(\chi^2 = 4.54, df = 1, p = .03)$, and use of drugs and/or alcohol currently ($\chi^2 = 6.25$, df = 1, p = .10) in those with NMSSA. For psychiatric diagnoses, there were no significant differences. There were trend level differences showing an increased rate of substance-induced mood disorder $(\chi^2 = 4.82, df = 1, p < .02)$ in MSSA and an increased rate of bipolar disorder ($\chi^2 = 3.67$, df = 1, p < .05) and borderline personality disorder ($\chi^2 = 3.68$, df = 1, p < .05) in NMSSA. Despite the increase in substance-induced mood disorder in individuals with MSSA, there was no difference in alcohol abuse/dependence or polysubstance abuse/dependence between the two groups.

Multivariate Analyses

Five discriminant analyses were performed in which all variables in each set were entered simultaneously. The models for demographic information ($\chi^2 = 7.71$, df = 7) and the current psychiatric mental state characteristics ($\chi^2 = 6.85$, df = 7) were not significant, so no further analyses were performed on these sets of variables. The overall discriminant analysis models for suicide attempt characteristics ($\chi^2 = 14.06$, df = 7, p = .03), psychiatric characteristics ($\chi^2 = 14.13$, df = 8, p < .05) were all significant analysis.

The stepwise discriminant analysis model for suicide attempt characteristics was significant ($\chi^2 = 5.32$, df = 1, p = .02) and identified number of years since first attempt as the only significant predictor in this set. The Risk-Rescue Rating Scale was not used in this analysis since it was considered tautologic. For psychiatric characteristics, stepwise discriminant analysis ($\chi^2 = 17.61$, df = 3, p = .001) identified physical abuse, legal problems, and number of drugs currently used as the most significant predictors in this set. Stepwise discriminant analysis of psychiatric diagnoses ($\chi^2 = 11.12$, df = 2, p < .004) identified substance-induced mood disorder and major depression as the most significant discriminating diagnoses.

The six significant predictors (number of years since first suicide attempt, physical abuse, legal problems, number of drugs used currently, SIMD, and major depression) were entered into a final stepwise discriminant analysis model. This model was significant ($\chi^2 = 28.87$, df = 5, p < .001) and correctly classified 77.32% overall into the respective MSSA and NMSSA groups; 46.9% were correctly classified into the NMSSA group and 92.3% were correctly classified into the MSSA group. For individuals with MSSA, 28.1% had four or more of these risk factors compared with 18.8% of those with NMSSA.

DISCUSSION

Our study demonstrated that those who make a MSSA were more likely to have a diagnosis of substanceinduced mood disorder and were less likely to have ongoing psychiatric problems (number of suicide attempts and length of suicidality, history of trauma, number of drugs used) and meet criteria for bipolar disorder or borderline personality disorder.

Those with MSSA had the expected increased severity of suicidal risk and intent and the presence of a legal history. Interestingly, our data did not support any difference either in alcohol or substance abuse/dependence or in alcohol/drug intoxication at the time of attempt. Studies investigating the presence of alcohol/substance abuse and comorbid mood disorders have demonstrated increased risk of suicide attempt, but have not investigated whether these were related to severity of the attempt.^{3,21-24}

The increased rate of substance-induced mood disorder in MSSA is consistent with the work of Asnis and colleagues²¹ who suggest that it is patients whose substance abuse and dependence leads to a mood disorder or dysregulation who are at higher risk of making a serious suicide attempt. In fact, Murphy and Wetzel²⁵ demonstrated mood dysregulation to be present in 25% to 50% of successful alcohol-related suicides. Similarly, increased mortality is associated with alcohol consumption at the time of first attempt.²⁴ Although it has been suggested that those with diagnoses of both alcohol and substance abuse are at the highest risk for suicide,^{26,27} the patients in our sample were not at higher risk for severe suicide attempts. Suokas and Lonnqvist²⁴ noted that up to 70% of individuals who consumed alcohol on attempt did not meet criteria for chronic use. This would be consistent with our data, which show no difference in abuse or dependence between MSSA and NMSSA groups and that the majority of those making MSSA with substanceinduced mood disorder did not meet criteria for dependence. It may be, as Murphy and Wetzel²⁵ and Asnis et al.²¹ suggest, that alcohol dysregulates mood independent of use and that our group of individuals with substanceinduced mood disorder represents that dysregulation. This mood dysregulation thus can lead to increased risk of suicide attempt.

Those with NMSSA were more likely to have chronic psychiatric characteristics including increased number of suicide attempts and duration of suicidality, type of diagnoses (borderline personality and bipolar), presence of abuse and/or trauma, as well as increased number of drugs at the time of attempt. These data are consistent with studies demonstrating greater psychiatric comorbidity in suicide completers and attempters.^{21,22,24,28,29} In our sample, the NMSSA did make less serious attempts despite greater psychiatric problems. However, it would be a mistake to disregard or take lightly these attempts, because they were less medically serious, or a pattern of multiple attempts, since it has been shown²³ that severity of repeated attempts may increase over the course of an illness.

Substance-induced mood disorder is an important diagnosis in the evaluation of suicidal patients. Our data suggest that the vulnerability to mood effects of substance abuse may lead to more serious suicide attempts despite less extensive psychiatric problems. Those with chronic psychiatric characteristics continue to be at risk but are likely to make NMSSA. Those with MSSA may not live long enough to become chronic but, if they survive, may have subsequent attempts. In fact, Suokas and Lonnqvist have shown that increased alcohol use during an initial attempt predicts increased risk of competed suicide.²⁴ This again emphasizes the importance of alcohol and its effects on mood. Therefore, for those with concurrent substance abuse/dependence and mood disorder, the most important early psychiatric intervention may be immediate recognition and aggressive treatment of both their affective and substance use disorders.

There are several limitations to this study. The generalizability of the results to a different population would need to be demonstrated, and it would be important to cross-validate the risk factors identified in this sample on another population. Furthermore, an increased sample size may allow detection of a smaller effect. On the other hand, given the limited information available on the characteristics of those with substance-induced mood disorder, these data represent information that may allow clinicians and researchers to understand important clinical characteristics that may be related to severity of a patient's suicide attempt.

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