

Characteristics of Impulsive Suicide Attempts and Attempters

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Suicide attempts often are impulsive, yet little is known about the characteristics of impulsive suicide. We examined impulsive suicide attempts within a population-based, case-control study of nearly lethal suicide attempts among people 13-34 years of age. Attempts were considered impulsive if the respondent reported spending less than 5 minutes between the decision to attempt suicide and the actual attempt. Among the 153 case-subjects, 24% attempted impulsively. Impulsive attempts were more likely among those who had been in a physical fight and less likely among those who were depressed. Relative to control subjects, male sex, fighting, and hopelessness distinguished impulsive cases but depression did not. Our findings suggest that inadequate control of aggressive impulses might be a greater indicator of risk for impulsive suicide attempts than depression.

In 1999 suicide was the third most common cause of death among adolescents and young adults between the ages of 15 and 34 years (National Center for Injury Prevention and Control, 2002). Suicide attempts often are impulsive (Williams, Davidson, & Montgomery, 1980), calling into question the utility of existing suicide prevention strategies which often rely on the identification and referral of individuals at risk (Centers for Disease Control [CDC], 1992; Potter, Powell, & Kachur, 1995). Preventing impulsive suicide attempts may require different strategies.

Researchers have noted an increase in impulsive behavior immediately prior to suicide attempts (Hall, Platt, & Hall, 1999), as well as a positive association between measures of

impulsivity and suicidal behavior (Kingsbury, Hawton, Steinhardt, & James, 1999; Pfeffer, Jiang, & Kakuma, 2000). Prior studies have also found that many suicide attempts are made impulsively (Brown, Overholser, Spirito, & Fritz 1991; Kost-Grant, 1983; O'Donnell, Farmer, & Catalan, 1996; Read, 1997; Williams et al., 1980). Estimates of the proportion of suicide attempts that are made impulsively vary widely depending on the definitions used and the sample studied. Some estimates are based on the characteristics of the attempt and the amount of planning involved (Brown et al., 1991; O'Donnell et al., 1996). Another approach is to examine the amount of time spent contemplating the suicide attempt. For example, Williams and colleagues

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(1980) found that 40 percent of hospital patients treated for self-injury reported less than 5 minutes premeditation.

Although research has consistently shown that a high percentage of suicide attempts are impulsive, few studies have examined how the characteristics of impulsive suicide attempts differ from those of nonimpulsive attempts. Additional information about the characteristics of impulsive suicide attempts and those making them is necessary for the development of effective prevention strategies.

The current study employed the conservative criterion of less than 5 minutes premeditation suggested by Williams and colleagues (1980) to categorize survivors of nearly lethal suicide attempts as impulsive or nonimpulsive attempters. We examined the following characteristics of the suicide attempts: time of day the attempt was made, perceived likelihood of discovery, type of method, consideration of other methods, expectation of death, and whether this was the first suicide attempt made by the subject. We also examined differences in the medical treatment required, the physician's perceptions regarding the severity of injuries or toxicity associated with the attempt, and the likelihood of recovery.

We sought to test four hypotheses concerning the characteristics of individuals who make impulsive and nonimpulsive suicide attempts. First, as indicated by previous research, we anticipated that poor impulse control might serve as a common link across multiple impulsive and health risk behaviors (Cairns, Peterson, & Neckerman, 1988). We hypothesized that impulsive suicide attempts would be more likely among those who engaged in other impulsive behaviors such as fighting, ending employment without another job, having multiple sex partners, or being arrested. Second, we expected that the disinhibiting effect of alcohol use immediately prior to the suicide attempt might be associated with impulsive suicide attempts (Kendall, 1983). Third, the results from previous research suggest that individuals who make impulsive suicide attempts are less depressed than those who make nonimpulsive suicide attempts (Brent, 1987; Brown et al., 1991; Williams et al., 1980); consequently, we expected depression and hopelessness to be in-

versely associated with impulsive attempts. Finally, we tested for an association between type of suicide attempt and help-seeking behavior prior to the attempt. If impulsive suicide attempters are not planning suicide and are experiencing less depressive mood, then we would expect them to be less likely to have discussed suicide with others or to have sought help for emotional problems. Once the characteristics that distinguish impulsive attempters from nonimpulsive attempters are identified, it is important to determine whether these characteristics also distinguish impulsive attempters from the general population. Therefore, we also compared impulsive and nonimpulsive attempters to control subjects.

METHOD

Sample

This study is part of a larger population-based, case-control study of nearly lethal suicide attempts occurring within a defined catchment area of Houston, Texas. A brief summary of the methods used in the study is provided here. A more detailed description of the sample and procedures is available elsewhere in this supplement (see Kresnow et al.). The sample consisted of 153 case and 513 control subjects interviewed from November 1992 through September 1995. Participation in the study was limited to youths and young adults between the ages of 13 and 34 years residing in the central area of Houston, Texas, circumscribed by a major highway (Beltway 8).

Case Identification. During the study period, an evaluating psychiatric physician completed a form indicating the method and severity of injury for all suicide attempters presenting at three hospitals located within Beltway 8. The form, described in detail elsewhere (Potter et al., 1998), has been shown to provide a reliable assessment of the medical severity of the attempt. Nearly lethal suicide attempts were those where the attempter was likely to have died from suicide had they not received emergency medical or surgical intervention, or the attempter unequivocally em-

ployed a method with a high case-fatality ratio (i.e., gunshot wounds and hanging) and sustained an injury, regardless of severity. Over 75% of cases were interviewed within 7 days of their attempt, and all interviews were completed within 33 days. Kresnow and colleagues (this supplement) provide the details regarding how the random sample of community controls was selected and interviewed.

Measures

Impulsive Suicide Attempts. Case subjects were asked, "How much time passed between the time you decided to commit suicide and when you actually attempted suicide?" Responses were recoded into a single dichotomous variable (i.e., impulsive = less than 5 minutes, and nonimpulsive = 5 minutes or longer).

Characteristics and Consequences. A variety of characteristics of the attempt were examined, including the time of day the attempt occurred, expectations of death at the time of the suicide attempt, and whether other suicide methods were considered. Notification of other people also was assessed by asking "Before you attempted suicide, did you tell anyone that you were considering suicide, or leave any clues that you might be thinking about suicide?" and "After you attempted suicide, did you call anyone or tell anyone about it?" We assessed prior suicide attempts by asking, "Not counting this suicide attempt, have you ever tried to take your life before?" Each of these questions had "yes" or "no" response choices. Perceived likelihood of discovery was assessed by asking "Considering where and when you attempted suicide, what did you think the chances were that someone might find you before you died?" The three response choices (high, moderate or 50/50, and low) were recoded as a dichotomous variable indicating whether the respondent perceived a "high" chance of discovery.

Physicians' reports were used to assess the consequences and type of suicide attempt. Three consequences, each with three responses, were assessed. Physicians rated sever-

ity of the lesions/toxicity of the attempt (mild, moderate, or severe), the likelihood of recovery (good, complete recovery expected; fair, recovery expected with time; or poor, residuals expected), and the type of treatment required (first-aid and emergency room care; admission with routine treatment; or intensive care or special treatment). Method of suicide attempt also was determined by physician report. Violent attempts included those involving firearms, hanging, cutting, burning, jumping, or blunt instruments. Other attempts included ingestion of poison, pills, drugs, and stopping insulin.

Involvement in Other Impulsive Behaviors. Involvement in impulsive behaviors was assessed with a series of yes/no questions including the following: "Have you ever been arrested?" "Have you been in any fights in the past 12 months that came to swapping blows?" and "Have you ever quit a job without having another one to go to?" One question assessed the number of sexual partners: "How many different people have you had sex with in the past year" (response coded to reflect 3 or more partners in past year—yes/no).

Alcohol Use Prior To The Suicide Attempt. Alcohol consumption prior to the suicide attempt was assessed by asking respondents to report how many glasses of wine, bottles or cans of beer, or drinks of whiskey or liquor they consumed "in the three hours before your suicide attempt." Responses were recoded to indicate any alcohol consumption during this period versus none. As described by Kresnow and colleagues (this supplement), self-reports of alcohol use were highly consistent with the blood alcohol levels of those who were tested at the hospital. Because only 54% of the cases were tested for blood alcohol as part of their hospital visit and these cases may not be representative of the full sample, we used the self-reports of recent alcohol use in our analyses. As described by Powell et al. (this supplement), self-reports of alcohol consumption can include deliberate or unintentional misreporting.

Depressive Mood and Help-Seeking. The Center for Epidemiologic Studies Depression scale (CES-D) was used to assess depressive symptoms. The 20-item CES-D has been shown to have adequate test-retest reliability and a high degree of internal consistency (Radloff, 1977). Participants with CES-D scores above 15 were considered depressed (Radloff, 1977). Feelings of hopelessness about the future were assessed with the 20-item true-false Beck Hopelessness Scale. A dichotomous hopelessness variable was created, with scores greater than 8 coded as hopeless (Beck & Weishaar, 1990). This scale has shown high internal consistency and a strong agreement with clinical ratings of hopelessness (Beck, Weissman, Lester, & Trexler, 1974; Pillay & Wassenaar, 1997). In the current sample, respondents were asked to report whether they experienced symptoms of depression and hopelessness during the week before the suicide attempt (or the week before the interview, for control subjects). Both measures were found to have a high degree of internal consistency (Cronbach's α s were 0.93 for depression and 0.87 for hopelessness).

Lifetime and recent help-seeking behaviors were assessed with two sets of yes/no questions. The first question asked if respondents had "ever seen anyone for emotional problems, your nerves, or the way you were feeling or acting before your suicide attempt." The second set of questions assessed whether respondents "discussed suicide" in the "30 days before your suicide attempt" with any of the following: general physician, psychiatrist, nurse, clergy, teacher or counselor, hotline worker, other counselor or health professional, and friend or family member. Subjects who reported discussing suicide with any of these people were coded as "yes."

Analysis

A dichotomous outcome variable was created to indicate impulsive versus nonimpulsive suicide attempts based on the 5-minute criterion. We regressed the outcome variable on the characteristics and consequences of the suicide attempt. Separate logistic regression models were

used to calculate crude odds ratios (OR) and 95 percent confidence intervals (CI) for impulsive attempts for each characteristic and consequence. Next, we calculated separate bivariable logistic regression models to test the statistical significance of the demographic, behavioral, and psychosocial characteristics of the attempters. Finally, we completed a series of three multivariable logistic regression analyses to test the effect of each variable shown relevant in the bivariable analyses after adjusting for the influence of the other variables. In the first multivariable model, impulsive attempters were compared with nonimpulsive attempters on the characteristics of the attempts and the attempters. The last two logistic regression models were calculated to compare impulsive attempters to control subjects, and nonimpulsive attempters to control subjects on the characteristics of the attempters.

RESULTS

Within this sample of survivors of nearly lethal suicide attempts, 5% ($n = 7$) reported spending just 1 second and a total of 24% ($n = 36$) reported spending less than 5 minutes between the decision to attempt suicide and the actual attempt (impulsive attempters). The mean number of days between the attempt and the interview was similar for impulsive and nonimpulsive attempters (5.2 and 5.5, respectively).

Bivariable Results

Characteristics of the Attempts. Respondents who attempted suicide between 7:01 p.m. and 6:59 a.m. and those who used a violent method such as firearms, hanging, cutting, self-immolation, or jumping were significantly more likely to have made impulsive suicide attempts (Table 1). The association between perceptions of a high likelihood of discovery and increased risk for impulsive attempts approached statistical significance (p -value = 0.07). Attempters who expected that the attempt would be fatal were significantly less likely to have made an impulsive attempt. Although the percent of attempts that involved less than 5 minutes planning was

TABLE 1. Prevalence and Crude Odds Ratios for Impulsive Suicide Attempts by Characteristics and Consequences of the Suicide Attempt

	<i>n</i>	(% Impulsive)	OR	(95% CI)
Time of attempt				
7:00 a.m.–7:00 p.m.	73	(15.1)	1.00	
7:01 p.m.–6:59 a.m.	75	(32.0)	2.65*	(1.19–5.93)
Told someone after the attempt				
No	102	(25.5)	1.00	
Yes	45	(22.2)	0.84	(0.36–1.92)
Told someone before the attempt				
No	98	(22.5)	1.00	
Yes	52	(26.9)	1.27	(0.59–2.76)
Perceived a high chance of discovery				
No	90	(17.8)	1.00	
Yes	51	(31.4)	2.11	(0.95–4.71)
Used a violent method¹				
No	101	(18.8)	1.00	
Yes	48	(35.4)	2.37*	(1.09–5.13)
Expected to die				
No	39	(38.5)	1.00	
Yes	102	(16.7)	0.32*	(0.14–0.73)
Attempted suicide in the past				
No	78	(26.9)	1.00	
Yes	71	(21.1)	0.73	(0.34–1.55)
Considered another method				
No	109	(26.6)	1.00	
Yes	40	(15.0)	0.49	(0.19–1.28)
Lesions/toxicity				
Mild/moderate	114	(22.8)	1.00	
Severe	36	(27.8)	1.30	(0.56–3.05)
Reversibility				
Good (full recovery expected)	99	(22.2)	1.00	
Fair/poor	51	(27.5)	1.32	(0.61–2.88)
Treatment required				
ER care/hospital admission	68	(23.5)	1.00	
Intensive care/special treatment	82	(24.4)	1.05	(0.49–2.23)

Note. Cell sizes may not add to 153 due to missing data. *Denotes p -value ≤ 0.05 , Wald χ^2 test. ¹Violent methods include firearms, hanging, cutting, burning, or jumping/blunt trauma. Other methods include ingestion of poison, pills, drugs, and stopping insulin.

slightly lower among those who considered another suicide method (15%) relative to those who did not (27%), this difference was not statistically significant (p -value = 0.14).

Demographic Characteristics. Males were more likely than females to attempt suicide impulsively (31% versus 16%; OR = 2.44; 95% CI, 1.10–5.42). Race/ethnic background, age, years of formal education, and marital

status did not differentiate impulsive from nonimpulsive attempters (all p -values greater than 0.10).

Impulsive Behaviors. Impulsive suicide attempts tended to be more likely among attempters who were in a physical fight in the past year (OR = 2.14; p -value = 0.05). Respondents' reports of prior arrests, ending employment without having another position to start,

TABLE 2. Prevalence and Crude Odds Ratios for Impulsive Suicide Attempts by Impulsive Behaviors and Recent Alcohol Use

	<i>n</i>	(% Impulsive)	OR	(95% CI)
Ever arrested				
No	69	(20.3)	1.00	
Yes	81	(27.2)	1.47	(0.68–3.15)
In a physical fight (12 months)				
No	103	(19.4)	1.00	
Yes	47	(34.0)	2.14*	(0.99–4.65)
Ever quit job without having another position				
No	95	(20.0)	1.00	
Yes	55	(30.9)	1.79	(0.84–3.83)
3 or more sex partners (12 months)				
No	117	(24.8)	1.00	
Yes	31	(22.6)	0.89	(0.35–2.27)
Consumed alcohol within 3 hrs. before attempt				
No	109	(22.0)	1.00	
Yes	39	(30.8)	1.57	(0.70–3.56)

Note. Cell sizes may not add to 153 due to missing data. *Denotes p -value ≤ 0.05 , Wald χ^2 test.

having multiple sex partners, and consuming alcohol within 3 hours prior to the attempt did not distinguish impulsive attempters from nonimpulsive attempters (Table 2).

Depressive Mood. Attempters who scored above 15 on the CES-D were significantly less likely to have attempted impulsively (Table 3). Hopelessness also tended to be associated with lower likelihood of impulsive attempts; however, this finding did not attain statistical significance (OR = 0.53; p value = 0.11). Having ever sought help for emotional problems or having discussed suicide with someone in the 30 days prior to the suicide attempt did not distinguish impulsive attempters from nonimpulsive attempters.

Multivariable Results

The correlates of impulsive attempts found relevant in the bivariable models were included in a series of three multivariable logistic regression models. The first model predicted risk for impulsive suicide attempts among case subjects. Impulsive attempts were more likely among those who had been in a fight in the past 12 months (OR = 3.12; 95% CI, 1.18–8.24) and less likely among those

who were depressed (OR = 0.17; 95% CI, 0.04–0.76). Gender, time of day, perceived likelihood of discovery, violent method, and hopelessness no longer differentiated impulsive attempters from nonimpulsive attempters. The inverse association between impulsive attempts and expectation of death approached, but did not attain, statistical significance (OR = 0.38; 95% CI, 0.12–1.22; p -value = 0.1).

The final two sets of logistic regression models compared control subjects to impulsive attempters and to nonimpulsive attempters on the characteristics of the attempters that were statistically significant in the bivariable models (i.e., gender, depression, hopelessness, and involvement in a fight). Compared with control subjects, impulsive attempters were more likely to be male, have a high hopelessness score, and have been involved in physical fights (Table 4). Symptoms of depression did not distinguish case subjects who made impulsive suicide attempts from control subjects. Compared with control subjects, nonimpulsive attempters were more likely to have high depression scores and high hopelessness scores. Gender and involvement in physical fights did not distinguish nonimpulsive suicide attempters from control subjects.

TABLE 3. Prevalence and Crude Odds Ratios for Impulsive Suicide Attempts by Depression, Hopelessness, and Help-Seeking Behavior

	<i>n</i>	(% Impulsive)	OR	(95% CI)
Depressed				
No	20	(50.0)	1.00	
Yes	130	(20.0)	0.25*	(0.09–0.66)
Hopelessness				
No	45	(33.8)	1.00	
Yes	101	(20.8)	0.53	(0.24–1.15)
Ever seen anyone for emotional problems				
No	97	(24.7)	1.00	
Yes	51	(21.6)	0.84	(0.32–1.88)
Discussed suicide (in 30 days before the attempt)				
No	106	(27.4)	1.00	
Yes	44	(15.9)	0.50	(0.20–1.25)

Note. Cell sizes may not add to 153 due to missing data. *Denotes p -value ≤ 0.05 , Wald χ^2 test.

DISCUSSION

Our findings indicate that 24% of survivors of nearly lethal suicide attempts spent less than 5 minutes between the decision to attempt suicide and the actual attempt; which is consistent with other research on hospitalized survivors (Williams et al., 1980). Also, the pattern of associations between the characteristics of the attempt and impulsive nature of the attempt is what might be expected when very little time is spent planning the attempt or contemplating the consequences. Those who made their attempt within 5 minutes of deciding to attempt suicide tended to be less likely to have considered another method of suicide, perceived a greater likelihood of discovery, and had a lower expectation of death. These findings are consistent with the description of such attempts as impulsive.

One notable exception to this pattern was for reports of telling anyone that they were considering suicide or leaving clues that they might be thinking about suicide. Contrary to what one would expect, impulsive attempters were as likely as nonimpulsive attempters to report leaving clues or telling someone that they were considering suicide. Unfortunately, the nature of this communication is unclear. It is possible that the impulsive attempter may have called someone or otherwise communicated their intentions within the 5 minutes between the point that they decided to attempt

and their actual attempt; Or, more likely, this communication took place before the impulsive attempter actually decided to attempt suicide. The fact that approximately one third of impulsive and nonimpulsive attempters reported telling someone that they were considering suicide raises the question of whether this communication may be an opportunity for intervention. Additional research is needed to understand what those who go on to make impulsive attempts actually say to their confidante about their suicidal thoughts, how the confidante interprets this information, and how they respond.

The bivariable association between use of a violent method and impulsive attempts suggests a paradox between expectations and method choice. Impulsive attempts that involve a violent method such as firearms, jumping, or hanging may result in death, regardless of the expectations and likelihood of discovery.

It is reasonable to expect that those who consider alternate methods for suicide, secure a location that is less likely to permit discovery, and have a higher expectation of death have more severe injuries following a suicide attempt. However, the impulsive attempters in our sample were just as likely as the nonimpulsive attempters to experience severe lesions/toxicity, have less than good reversibility of their condition, and require special treatment or intensive care. These findings are

TABLE 4. Adjusted Odds Ratios for Impulsive and Nonimpulsive Suicide Attempts from Multivariable¹ Analyses of Depression, Hopelessness, Physical Fights, and Gender

	Impulsive Cases		Nonimpulsive Cases	
	Adj. OR	(95% CI)	Adj. OR	(95% CI)
Depressed				
No	1.00		1.00	
Yes	2.18	(0.86–5.55)	7.17*	(3.34–15.38)
Hopelessness				
No	1.00		1.00	
Yes	8.95*	(3.71–21.55)	11.91*	(6.69–21.19)
Physical Fights				
No	1.00		1.00	
Yes	3.07*	(1.38–6.82)	1.50	(0.79–2.86)
Gender				
Female	1.00		1.00	
Male	3.15*	(1.38–7.18)	1.63	(0.94–2.84)

Note. Cell sizes may not add to 153 due to missing data. *Denotes p -value ≤ 0.05 , Wald χ^2 test. ¹The comparison group for both sets of models consisted of the 513 control subjects.

consistent with the use of a violent method and suggest that, despite a relative lack of planning and lower expectations of death, impulsive suicide attempts present a clear risk for serious injury and do not appear less harmful than planned attempts. This finding is consistent with estimates suggesting that 50% or more of suicides and nonfatal violent attempts are impulsive (Hoberman, & Garfinkel, 1988; Kost-Grant, 1983; O'Donnell et al., 1996; Peterson, Peterson, O'Shanick, & Swann, 1985).

The current finding that 24% of the cases were considered impulsive is somewhat lower than what others have observed (e.g., 40% reported by Williams et al., 1980). In particular, as mentioned above, the studies of suicide victims and violent attempters often report that the majority of attempts were impulsive. This discrepancy suggests that, although our sample consists of those who survived nearly lethal suicide attempts, it most likely provides an underestimate of the proportion of fatal suicide attempts that were made impulsively. Moreover, even within comparable studies of a range of attempters there is considerable variability in the proportion of attempters that are considered impulsive. Additional research is needed to identify the best criteria to use for classifying an attempt as impulsive. By

standardizing these criteria we can better understand the impulsive nature of attempts within different populations and across different outcomes.

Involvement in physical fights was the only impulsive behavior studied that was associated with impulsive suicide attempts. Impulsive suicidal behavior and involvement in physical fights differ from the other types of behaviors examined in the amount of aggression associated with the behavior. Perhaps impulsive suicide attempts are more strongly associated with the inability to control aggression-specific impulses than generalized impulsivity. Additional research is needed to replicate these findings with other measures that distinguish between general and aggressive forms of impulsivity.

Contrary to our hypotheses, alcohol use prior to the suicide attempt was not significantly associated with risk for impulsive suicide attempts. Among the attempters who reported drinking alcohol within 3 hours prior to their attempt, 30.8% of the attempts were impulsive. Among those who had not consumed alcohol immediately prior to their attempt, 22% of the attempts were impulsive. This difference was not statistically significant. Perhaps the causal sequence of the association between alcohol use and suicide

attempts may differ by type of attempt. Whereas impulsive attempts might be a direct consequence of the disinhibition caused by alcohol consumption (Kendall, 1983), individuals who are planning to attempt suicide might intentionally consume alcohol to increase their "conviction" to complete the suicide attempt (Khantzian, 1985).

Overall, the majority of the attempters scored high on the depression scale. Although impulsive attempts occurred among both depressed and nondepressed attempters, the depressed attempters were significantly less likely to have attempted impulsively. These findings are consistent with the results from other studies of suicide survivors (Brent, 1987; Brown et al., 1991; Williams et al., 1980). Whereas planned suicide attempts often result from chronic mental health problems such as depression, researchers have noted a tendency for impulsive suicide attempts to be immediately preceded by interpersonal conflicts and have suggested that impulsive suicide attempts might be a response to these conflicts rather than an actual desire to die (Kost-Grant, 1983; Smith & Crawford, 1986; Williams et al., 1980). The finding that impulsive attempts are more likely to occur at night may reflect the fact that this is the time when these interpersonal conflicts are most likely to occur. Additional research is necessary to describe the circumstances that facilitate impulsive and nonimpulsive suicide attempts.

The hypothesis that impulsive attempters are less likely to discuss suicide or seek help for emotional problems prior to their suicide attempt was not supported by the data. Although the percentage of attempters who were impulsive was considerably lower among those who had sought help or discussed suicide, these differences were not statistically significant. If future research with larger samples also finds no association, it would suggest that impulsive attempters might be identified before the attempt by their help-seeking behavior, just as nonimpulsive attempters may be so identified. However, only 34% of the entire sample of attempters reported ever seeing someone for emotional problems before the suicide attempt, and less than 30 percent re-

ported discussing suicide with anyone in the 30 days before the attempt. To the extent that early identification and referral can reduce risk for suicide, efforts to improve accessibility of mental health care and to reduce the stigma associated with discussing suicide might reduce risk for nonimpulsive and impulsive suicide attempts.

Among the attempters, multivariable analyses indicated that impulsive attempts were more likely for subjects who scored relatively lower on depression and were involved in physical fights. Moreover, in the multivariable analyses comparing impulsive attempters and nonimpulsive attempters to control subjects, involvement in physical fights was associated with risk for impulsive suicide attempts but was not associated with nonimpulsive attempts. Depression, on the other hand, was significantly associated with risk for nonimpulsive attempts but not impulsive attempts. Hopelessness was positively associated with both impulsive and nonimpulsive suicide attempts. Perhaps a sense of ambivalence about the future is a component of most impulsive and nonimpulsive suicide attempts. For most suicide attempters a sense of hopelessness combined with the pain of depression might have increased the person's desire to die, contributing to suicidal ideation and more premeditated suicide attempts. A minority of suicide attempters may be experiencing fewer symptoms of depression but have an ambivalence about the future combined with a difficulty controlling aggressive impulses that increases their risk for impulsive suicide attempts. This perspective is consistent with the hypothesis proposed by Apter et al. (1995) that there are at least two types of suicidal behaviors: "a planned desire to die (depression) and feelings and thoughts of the moment (impulse control)" (p. 917).

There are at least three limitations of this study that should be considered. First, with the exception of severity of injury, these data are from self-reports and are therefore vulnerable to misreporting. Because the data were collected after the suicide attempt, it is possible that the experience of the attempt influenced responses. Nonetheless, self-report

data are the most direct way to estimate impulsiveness of suicidal behavior. Also, the fact that the interviews were confidential and most were completed within 7 days of the attempt is likely to bolster the validity of participants' reports. Relatedly, the finding that the length of time between the attempt and interview was similar for both types of attempters eliminates the possibility that differential lag times could account for the differences observed between impulsive and nonimpulsive attempters. Second, subjects who were considered impulsive attempters based on the criteria of less than 5 minutes planning might have planned previously how they could commit suicide without actually deciding to make an attempt until immediately before the attempt. However, as suggested by Williams and colleagues (1980), the fact that less than five minutes was available between the decision and the actual attempt suggests that the impulsive suicidal act was not the result of a plan. Finally, the relatively small sample of cases limited the statistical power for detecting differences between impulsive and nonimpulsive attempters and for examining behaviors such as illicit drug abuse. Efforts to replicate these findings with larger samples are needed.

In summary, the percentage of suicide attempts that are impulsive and the risk for injury associated with these attempts indicate a clear need for strategies to prevent impulsive suicide. These data also suggest the need to broaden the scope of suicide prevention strategies beyond our current, somewhat limited ways of thinking about mental health. For example, suicidal ideation among impulsive attempters may be more transient and temporary than that experienced by persons with chronic depression. By limiting our approach to the identification and treatment of depressive symptoms, we may miss many preventable suicides. Existing suicide prevention strategies such as screening programs, crisis centers and hotlines, educating gatekeepers, and peer support programs may need to expand their conceptualization of suicide risk factors to include those related to impulsive attempts. In our study, hopelessness and involvement in physical fights differentiate impulsive attempters from control subjects, and time of day the attempt occurred is associated with impulsive attempts. These findings suggest that additional effort is needed to understand the interpersonal and situational factors, as well as the psychological characteristics, that influence risk for impulsive suicide attempts.

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Medical Conditions and Nearly Lethal Suicide Attempts

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Physical illness has been studied as a risk factor for suicidal behavior, but little is known about this relationship among younger persons. We conducted a population-based, case-control study in Houston, Texas, from November 1992 through September 1995. The final sample consisted of 153 case- and 513 control-subjects aged 13 to 34 years. Case patients were identified at hospital emergency departments and met criteria for a nearly lethal suicide attempt. Control subjects were recruited via a random-digit-dial telephone survey. Case patients were more likely than controls to report having any serious medical conditions (crude OR = 3.23; 95% CI = 2.12-4.91). After controlling for age, race/ethnicity, alcoholism, depression, and hopelessness, the adjusted odds ratio for men was 4.76 (95% CI = 1.87-12.17), whereas the adjusted odds ratio for women was 1.60 (95% CI=0.62-4.17), suggesting that young men with medical conditions are at increased risk for nearly lethal suicide attempts. Increased efforts to identify and appropriately refer these patients are needed.

Physical illness has been examined as a potentially important risk factor for suicidal behavior, particularly among the elderly (Grabbe, Demi, Camann, & Potter, 1997). A number of studies have evaluated the relationship between various medical conditions (e.g., cancer and diabetes) and suicidal behavior (Harris & Barraclough, 1994; Hughes & Kleespies, 2001; MacKenzie & Popkin, 1987; Stenager & Stenager, 1998; Whitlock, 1986), but this association has not been as closely examined among young people. The importance of understanding the relationship between illness and suicidal behavior is underscored by the fact that the presence of medical conditions is

fairly common in the general population. Based on information from the 1995 National Health Interview Survey, approximately 174 acute medical conditions per 100 persons are reported each year. The prevalence rates of the most commonly reported chronic conditions, such as arthritis, are as high as 124.7/1000 persons (Benson & Marano, 1998). In addition, because persons with medical conditions or disabilities generally have regular contact with health care professionals, there are multiple opportunities to assess for and prevent suicidal behavior.

Many of the previously published studies evaluating the relationship between medical

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conditions and suicidal behavior have been case series in which the medical records of persons who committed suicide were reviewed to identify pre-existing medical conditions (Stensman & Sundqvist-Stensman, 1988). Another approach used by some researchers is to determine existing medical conditions during the post-mortem examination of the decedent (Gatter & Bowen, 1980; Stewart, 1960). Relatively fewer studies have used a comparison group, and often summary data from the general population has been used as the comparison, which limits the ability to control for potential confounding variables (Cote, Biggar, & Dannenberg, 1992; Stenager & Stenager, 1992). In addition, most studies focus on completed suicide and/or older adults; there is less known about the relationship between medical conditions and suicide attempts among young persons (Beautrais, Joyce, & Mulder 1996; Druss & Pincus 2000; Goldston, Kovacs, Ho, Parrone, & Stiffler, 1994; Robins, 1989). The purpose of this study was to explore the relationship between medical conditions and nearly lethal suicide attempts among adolescents and young adults using case-control methodology.

METHODS

We conducted a population-based, case-control study of nearly lethal suicide attempts occurring within a defined area of Houston, Texas, from November 1992 through September 1995. The study methodology is described in detail elsewhere in this supplement (see Kresnow et al.). The final sample consisted of 153 case- and 513 control-subjects between the ages of 13 and 34 years (response rates 63% and 60%, respectively).

Case Identification

Case patients were identified at one of three study hospital emergency departments. All persons attempting suicide are routinely seen by a psychiatrist. During the study period, the evaluating psychiatric physician completed the Self-Inflicted Injury Severity Form (SIISF) indicating the method and severity of injury

for every age- and residence-eligible suicide attempter entering the emergency room. The SIISF has been shown to provide a reliable assessment of the medical severity of the attempt (Potter et al., 1998). Only patients whose injuries were considered “nearly lethal” were eligible for our study. In general, nearly lethal suicide attempts were defined as those in which the attempter was likely to have died from suicide had they not received emergency treatment or one in which the attempter used a method with a high case-fatality ratio (e.g., gunshot wound or hanging).

After obtaining permission from the responsible physician and the patient (and patient’s guardian, if a minor), case patients were interviewed in a private setting. Most case patients were interviewed within a week of their attempt ($M = 5.4$ days; $SD 5.8$ days). Seventy-eight percent of cases were interviewed in the hospital, 12% at home, and 10% at other locations.

Control Identification

Control subjects from the catchment area were recruited for a face-to-face interview via a random-digit-dial telephone survey. During the same time period in which case subjects were enrolled, potential control subjects were contacted and screened for age and residence eligibility. Control subjects were interviewed at the home, at the workplace, or at another location suggested by the participant.

Measurement

Information about demographics, medical conditions, alcohol use, depression, and hopelessness was collected. Alcohol use, depression, and hopelessness were selected based on their theoretical and/or documented relationship to suicide and our main exposure of interest, medical conditions. The demographic information collected included: sex (male, female), age (13-17 years, 18-24 years, and 25-34 years), and race/ethnicity (Black, non-Hispanic, White non-Hispanic, Hispanic, and other).

With respect to medical conditions, study participants were asked “Do you have any se-

rious medical problems or disabilities?" Examples of specific problems or disabilities were not provided. If the answer was yes, participants were asked "What serious medical problems or disabilities do you have?" Up to four conditions were recorded. Participants were then questioned about whether any of the conditions listed had started in the past 12 months. Based on the answers to these questions, we constructed three separate main exposure variables: (1) whether or not the study participant reported any serious medical conditions or disabilities (yes/no); (2) the number of serious medical conditions (two or more, one, or none); and (3) the onset of the most recent medical condition (within the past 12 months, more than 12 months ago, or no medical conditions).

Based on responses to the 24 questions from the Veterans' Alcoholism Screening Test (VAST) (Magruder-Habib, Harris, & Fraker, 1982) included in the questionnaire, a dichotomous alcoholism variable was created. Those scoring 5 or higher were classified as alcoholic. Dichotomous variables for depression and hopelessness were also created, using responses to the 20 items included in the questionnaire obtained from the Center for Epidemiologic Studies Depression Scale (CES-D) (Radlof, 1977) and to the 20 items from the Beck's Hopelessness Scale (Beck & Weishaar, 1990), respectively. Study participants were asked about their feelings in the week prior to the attempt (for case patients) or the week prior to the interview (for controls). Participants were categorized as either depressed (those scoring 16 or higher on the CES-D scale components) or not depressed (those scoring 0-15). Those who scored 9 or higher on the hopelessness scale were categorized as hopeless and those scoring 8 or less were considered not hopeless.

Analysis

Data were analyzed using Statistical Analysis Software (SAS). We used Pearson's chi-square test to assess the association between each of the main exposure variables and case-control status. Crude and adjusted

odds ratios (OR) and 95% confidence intervals (CI) were generated using logistic regression. The primary exposure of interest—any reported serious medical conditions or disabilities (yes/no)—and potentially confounding variables (age, sex, race/ethnicity, alcohol use, depression, and hopelessness) were included in a multivariable model. Two-way interactions between the primary exposure of interest and each potential confounder were also simultaneously included in the model to assess for possible effect modification. Interaction terms were evaluated using a backwards, stepwise procedure. Likelihood ratio tests were used at each step to determine whether any of the interaction terms were important to the model. The importance of each main effect was assessed using the Wald chi-square test.

RESULTS

General Characteristics and Bivariable Analysis

Overall, 109 (16.4%) study participants reported having medical conditions. The most frequently reported condition among our study participants was asthma ($n = 15$), followed by back problems/injury ($n = 13$), and HIV/AIDS ($n = 9$). A comparison of case patients and controls with respect to the presence of a medical condition, the number of conditions present, and the time of onset is presented in Table 1. Case patients were more likely than controls to report having any serious medical conditions (crude OR = 3.23; 95% CI = 2.12-4.91) and the risk of nearly lethal suicide attempt increased with the number of medical problems reported ($p < .001$, chi-square test for linear trend). In general, the time of onset of the medical conditions for both case patients and control subjects was more than 12 months prior to the interview date. Persons with HIV/AIDS were more likely to attempt suicide than persons without medical conditions (crude OR = 14.89; 95% CI = 4.44-50.00), whereas no differences were seen for those respondents who reported having asthma or back problems/injury (crude OR = 1.55; 95% CI =

TABLE 1. Distribution, Crude Odds Ratios (OR), and 95% Confidence Intervals (CI) of Measures Related to Reported Medical Conditions and Disabilities

Question	Cases		Controls		Crude	
	<i>n</i>	(%)	<i>n</i>	(%)	ORs	(95%CI)
Do you have any serious medical problems or disabilities?						
Yes	47	(30.7)	62	(12.1)	3.23	(2.12–4.91)
No	106	(69.3)	451	(87.9)	1.00	
Number of serious medical problems						
≥ Two	13	(8.5)	9	(1.8)	6.15	(2.81–13.42)
One	34	(22.2)	53	(10.3)	2.73	(1.71–4.35)
None	106	(69.3)	451	(87.9)	1.00	
Did any of these first start in the past 12 months?						
Yes, within past 12 months	7	(4.6)	14	(2.7)	2.13	(0.85–5.30)
No, not within past 12 months	40	(26.1)	48	(9.4)	3.55	(2.26–5.57)
No medical problems	106	(69.3)	451	(87.9)	1.00	

0.49-4.92 and crude OR = 2.66; 95% CI = 0.89-7.97, respectively).

Only a small number of subjects reported two or more medical conditions or conditions with a time of onset in the 12 months prior to the interview. With respect to case-control status, no significant differences were identified for persons with one medical condition compared with those who reported two or more conditions (OR = 2.25, 95% CI = 0.88-5.78). Similarly, no differences were seen between patients reporting medical conditions with time of onset in the 12 months prior to the interview compared to those reporting conditions that started more than 12 months prior (OR = 0.60, 95% CI = 0.22-1.63). Given the small numbers and the lack of significant differences seen in these comparisons, we decided not to pursue further analyses using these particular variables. Instead, the presence of any medical condition (yes/no) was used as the primary exposure of interest for the remainder of the analyses.

The distribution of selected characteristics among case patients and controls and crude odds ratios are displayed in Table 2. In addition to having medical conditions, case patients were more likely than controls to be male; Black or Hispanic; and to report symp-

toms of alcoholism, depression, and hopelessness.

Multivariable Analysis

The presence of a medical condition, potential confounding variables, and all the two-way interactions between medical condition and the potential confounders were included in the initial model. Of the two-way interactions, only the interaction between the presence of a medical condition and sex was statistically significant ($p < .05$); thus we elected to construct separate models for men and women (Table 3). Controlling for age, race/ethnicity, alcoholism, depression, and hopelessness, the adjusted odds ratio for men was 4.76 (95% CI = 1.87-12.17). Other variables that remained significant ($p < .05$) in the model included race/ethnicity (Black or Hispanic), depression, and hopelessness. For women, the adjusted odds ratio for the relationship between the presence of a medical condition and nearly lethal suicide attempt was 1.60 (95% CI = 0.62-4.17). Race/ethnicity (Black or Hispanic) and hopelessness remained significant ($p < .05$) in this model. The results from these two models indicate an association between the presence of a medical condition and a

TABLE 2. Distribution of Cases and Controls, Crude Odds Ratios (OR) and 95% Confidence Intervals (CI), by Selected Characteristics

	Cases		Controls		Crude	
	<i>n</i>	(%)	<i>n</i>	(%)	OR	(95% CI)
Sex*						
Male	83	(54.2)	221	(43.1)	1.57	(1.09–2.25)
Female	70	(45.8)	292	(56.9)	1.00	
Race/Ethnicity*						
Other	4	(2.6)	15	(2.9)	1.48	(0.47–4.61)
Black/Nonhispanic	55	(35.9)	118	(23.1)	2.58	(1.68–3.98)
White/Hispanic	44	(28.8)	101	(19.8)	2.41	(1.53–3.81)
White/Nonhispanic	50	(32.7)	277	(54.2)	1.00	
Age group						
13–17 years	37	(24.2)	126	(24.7)	0.99	(0.63–1.56)
18–24 years	45	(29.4)	147	(28.6)	1.04	(0.68–1.59)
25–34 years	71	(46.4)	240	(46.7)	1.00	
Alcohol use*						
Alcoholic	52	(34.7)	69	(13.5)	3.39	(2.26–5.10)
Other	98	(65.3)	441	(86.5)	1.00	
Depressed*						
Yes	131	(85.6)	163	(31.9)	12.7	(8.31–19.44)
No	22	(14.4)	348	(68.1)	1.00	
Hopelessness*						
Yes	102	(68.5)	43	(8.4)	23.7	(15.9–35.2)
No	47	(31.5)	469	(91.6)	1.00	

* $p < 0.05$, Pearson's χ^2 test.

nearly lethal suicide attempt among men but not among women.

DISCUSSION

Our findings suggest that the presence of medical conditions is associated with an increased risk of a nearly lethal suicide attempt among young men. This relationship remained significant after controlling for age, race/ethnicity, alcoholism, depression, and hopelessness in the multivariable model. However, these results should be interpreted in light of the limitations of this study.

First, the results may be influenced by our relatively small number of case patients ($N = 153$) and/or by our response rate (63% for case patients, 60% for control subjects), both of which may raise questions about potential bias. To evaluate this possibility, we compared the available demographic characteristics of eligible case patients who elected to

participate in our study with those who did not and found most of these characteristics to be similar. The control subjects willing to participate in our interview were similar to the Harris County population with respect to age, sex, and race (see Kresnow et al., this issue).

Second, our findings may be subject to recall bias as a result of the control population selected. Because we employed hospitalized (or recently discharged) case patients and community-based controls, differential recall between cases and controls regarding the presence of medical conditions is a possibility. Case patients might be more likely to recall and report medical conditions that would bias our findings away from the null; however, we would expect this bias to affect men and women equally. The difference in the odds ratios for men and women found in our study makes the possibility of recall bias somewhat less likely.

TABLE 3. Crude and Adjusted Odds Ratios (OR) for the Association Between the Presence of Any Medical Condition and Risk of Attempted Suicide for Men and Women

	Presence of Any Medical Condition	Crude OR	95% CI ¹	Adjusted ² OR	95% CI
Men	Yes	4.95	(2.80–8.76)	4.76	(1.87–12.17)
	No	1.00		1.00	
Women	Yes	1.78	(0.90–3.50)	1.60	(0.62–4.17)
	No	1.00		1.00	

¹CI = confidence interval. ²Adjusted for age, race/ethnicity, symptoms of alcoholism, depression, and hopelessness (other variables remaining significant in the adjusted models: race/ethnicity [men & women], hopelessness [men & women], depression [men only]).

Third, the prevalence of medical conditions reported by our study participants was relatively low (16.4%), probably a reflection of their young age. Given this and because we relied on open-ended, self-reported information about the types of medical conditions, our ability to categorize those conditions was limited. Many of the conditions reported were either non-specific (e.g., respiratory problems) or simply difficult to place in a particular category (e.g., tinnitus). However, we were able to categorize some types of medical conditions for our study population. Based on these data, it appears that HIV-antibody positive persons (OR = 14.89, 95% CI = 4.44–50.00) and those with psychiatric conditions (OR = 7.09, 95% CI = 2.52–19.94) are more likely to attempt suicide than persons without medical conditions. These findings should be interpreted with caution because of the small numbers and resulting instability of our estimates.

Despite these limitations, our findings are consistent with other studies which have generally identified a positive association between the presence of various medical conditions and suicidal behavior (Breslau, 1992; Druss & Pincus, 2000; Grabbe, Demi, Camann, & Potter, 1997; Harris & Barraclough, 1994; Henderson & Ord, 1997; Kyvik, Stenager, Green, & Svendsen, 1994; MacKenzie & Popkin 1987; Magni, Rigatti-Luchini, Fracca, & Merskey, 1998; Noyes, 1991; Stenager, Madsen, Stenager, & Boldsen, 1998; Stenager & Stenager 1998; Stenager, Stenager, & Jensen 1994; Whitlock, 1986). The significant dose-response effect in our crude analyses also lends credibility to our findings. Because most cases were interviewed

within a week after their attempt, it is unlikely that the outcome of interest (suicide attempt) preceded the exposure of interest (presence of a medical condition).

The reasons for the difference in the relationship between the presence of medical conditions and a nearly lethal suicide attempt for the men and women in our study are unknown. One potential explanation is that this finding may be spurious, resulting from differential reporting of medical conditions by men and women. If men were more likely to report medical conditions or more likely to report those associated with an increased risk of suicide attempt (being HIV positive or having psychiatric conditions) this might explain the different results. However, this was not seen in our study data; there were no significant differences between men and women with respect to the types of medical conditions reported. Related to this is the possibility that women may have a lower threshold for reporting medical conditions than men as has been suggested by previous studies (Verbrugge, 1985; 1989). If this were the case for our study population, a significant association between medical conditions and suicide attempt for women might be obscured. Although nondifferential classification of exposure for cases and controls would bias findings toward the null for both men and women (Kleinbaum, Kupper, & Morgenstern, 1982), the degree to which this bias affects the point estimates may be different for the sexes. If women truly have a lower threshold for reporting medical conditions, we can imagine a possible scenario in which the probability that women without medical conditions will be

classified as unexposed (specificity) will be lower than that for men. Given this difference, the odds ratio for women will tend to be biased toward the null to a greater extent than the odds ratio for men.

Another possible explanation for our findings may be related to differences in adjustment to serious illness that have been identified for men and women. Some studies have suggested that women have a more positive adjustment to serious illness, such as cancer, compared with men (Fife, 1994; Fife, Kennedy, & Robinson, 1994). This positive adjustment may be related to differences in societal expectations for men and women in response to illness, and/or to gender differences in social support or coping styles (Fife, 1994; Fife, Kennedy, & Robinson, 1994; Ratliff-Crain & Baum, 1990). For example, men traditionally utilize more problem-focused coping styles which may be less effective when there is loss of personal control, as there often is with a medical illness (Fife, 1994; Fife, Kennedy, & Robinson, 1994). Although the relationship between adjustment to illness, coping styles, and suicidal behavior has not been clearly defined and was not the focus of our analysis, men may be more likely than women to cope with a serious medical condition by engaging in suicidal behavior.

Our data suggest that young men with medical conditions are at increased risk for nearly lethal suicide attempts. Based on these findings, we encourage increased awareness about the risk for suicidal behavior, ongoing monitoring for such behavior, and appropriate referral and intervention among health care

professionals who see adolescents and young adults. Because patients with medical conditions generally have contact with health care professionals on a regular basis, clinicians should take advantage of the multiple opportunities to assess for and prevent suicidal behavior. Of the case patients with medical conditions in our study population, almost half (47%) of them had contact with a health professional in the 30 days before their suicide attempt.

Although we did not obtain information about the reasons why respondents reported the medical conditions they did, some of our study participants reported conditions that did not appear "serious" on paper, which suggests that it may be the perception of having a serious medical condition or disability that increases the risk, not necessarily the actual diagnosis per se. Therefore, clinicians should assess the patient's perception of his or her medical status and not rely solely on the diagnosis rendered, since the patient's perception of the level of seriousness of his or her illness or disability may vary markedly depending on factors such as the patient's prognosis or the availability of satisfactory treatment. Given our difficulty categorizing the types of medical conditions reported by our study population, additional studies are needed to understand the relationship between specific types of medical conditions, patients' perception of the seriousness of these, and the risk for suicide among the younger patient population. Also needed in this population are studies to clarify the relationship between adjustment to serious illness, coping styles, and suicidal behavior.

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Help-Seeking Behavior Prior to Nearly Lethal Suicide Attempts

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The association between help-seeking and nearly lethal suicide attempts was evaluated using data from a population-based, case-control study of 153 13- to 34-year-old suicide attempt case-patients treated at emergency departments in Houston, Texas, and a random sample of 513 control-subjects. Measures of help-seeking included whether the participant sought help for health/emotional problems in the past month, type of consultant contacted, and whether suicide was discussed during the interaction. Overall, friends/family were consulted most frequently (48%). After controlling for potential confounders, case-patients were less likely than control-subjects to seek help from any consultant (OR = 0.5, 95% CI = 0.3-0.8) or a professional (e.g., physician, counselor) consultant (OR = 0.5, 95% CI = 0.29-0.8). Among those who sought help, case-patients were more likely than to discuss suicide (OR = 2.6, 95% CI = 1.2-5.4), particularly with professionals (OR = 11.8, 95% CI = 3.2-43.2). Our findings suggest that efforts to better understand the role of help-seeking in suicide prevention, including help sought from family and friends, deserves further attention.

In 1998, 30,575 deaths from suicide occurred in the United States, making it the eighth leading cause of death in this country overall (Murphy, 2000). One particular concern is the rise in suicide among adolescents and young adults. The rate of suicide in this group has tripled since the 1950s (Centers for Disease Control and Prevention [CDC], 1995). Suicide is currently the third leading cause of death among persons aged 15 to 34 years old, and is nearly equal to the second leading cause of death in this age group (homicides). The number of suicide deaths surpassed those due to cancer, heart disease, AIDS, birth defects, cerebral vascular disease, diabetes, and pneumonia/influenza (Murphy, 2000).

These statistics have prompted prevention efforts such as the development of the U.S. Surgeon General's National Strategy for Suicide Prevention: Specific recommendations for suicide prevention include those that focus on enhancing public awareness of suicide and its risk factors. The National Strategy specifically recommends training to improve the recognition of those at risk and the response by health care providers. It also recommends expanding this training beyond health care or mental health providers to include other service providers (e.g., social workers, teachers, and clergy), family members of persons at risk for suicide, and natural community helpers

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(e.g., coaches and hairdressers) (U.S. Dept. of Health and Human Services, 2001). However, relatively little is known about the help-seeking behavior of those at risk, especially involving contact with others besides clinicians.

Many of the studies examining help-seeking behavior prior to suicide have primarily focused on the role of general practitioners, mental health specialists, and other health care providers. These studies suggest that contact with clinicians is common prior to a suicidal act. Studies have shown from 24% to 69% of those who committed suicide had contact with psychiatrists or general practitioners in the month prior to death. A case-control study comparing psychiatric contacts among 129 youths who have made serious suicide attempts to 153 randomly selected controls showed that those who attempted suicide were significantly more likely to have contact with psychiatric services than controls (Beautrais, Joyce, & Mulder, 1998). This study, which was limited to psychiatric contacts only, is one of the few analytic studies regarding help-seeking behavior prior to suicide. Most studies are descriptive and do not include comparisons with non-suicidal controls, so only limited conclusions can be drawn about whether these patterns of contact prior to suicide differ from routine patterns in the general population (Pirkis & Burgess, 1998).

There is little data concerning the role of seeking help from family, friends, and other community helpers in the prevention of suicide. These nonprofessional consultants may be especially important in addressing suicide prevention among adolescents and young adults who may have less frequent or irregular access to health care, and are therefore less likely than older adults to have contact with a clinician prior to a suicidal attempt. Vassilas and Morgan's (1993) study showed that suicide case-patients 35 years and older were significantly more likely to contact a general practitioner prior to suicide than younger case-patients. Another consideration is that adolescents often confide in other adolescents—friends and peers—rather than adults prior to suicidal act (Clark, 1993; Ross, 1980).

The objectives of this study were to define various help-seeking behaviors prior to a nearly lethal suicide attempt in a population of adolescents and young adults and to examine the association between these behaviors and nearly lethal suicide attempts.

METHODS

This is a secondary analysis of data from a population-based, case-control study. Data were obtained from personal interviews of 153 case-patients who presented to one of three hospitals in Houston, Texas, for treatment following a nearly lethal suicide attempt and a group of 513 randomly selected control-subjects. The overall study design, enrollment, and interviewing procedures as well as other methodological aspects of the study are described in detail elsewhere in this supplement (see Kresnow et al.). Methods particular to this analysis are described below.

Data Analysis—Measures

“Sought Help” Exposure Variables. Respondents were asked about their contact with health professionals, other service providers, and family and friends 30 days prior to the suicide attempt for cases and 30 days prior to the interview for controls. From a list of eight consultant types (regular medical doctor, psychiatrist, nurse, clergy, teacher or school counselor, suicide hotline, another counselor or health care professional, and family/friend), study participants were first asked whether they sought help from each consultant about health or emotional problems during the reference period. Respondents who reported seeking help were asked if suicide was discussed during the consultation. Further information about the specifics of the help-seeking interaction (e.g., who raised the issue of suicide and whether treatment/referral was offered) was obtained for each consultant type contacted.

By combining the consultant categories, three dichotomous help-seeking exposure variables were created for analysis: (1) sought help from any consultant; (2) sought help from a

professional consultant; and (3) sought help from a friend or family member. Those who sought help from any one or more of the eight consultants were classified as having sought help from any consultant. This variable was then further refined into two variables: professionals, which represents those seeking help from medical or other human service professionals; and family/friends, which represents those seeking help from a nonprofessional consultant. The professional group was comprised of seven of the eight individual consultant categories—regular MD, psychiatrist, nurse, clergy, teacher, hotline, other counselor/health professional. The family/friend group represented the remaining individual category—family and friends. Those who sought help from a professional consultant, regardless of their contact with family and friends, were classified as professionals. Similarly, participants who reported seeing a family member or friend were classified as such independent of any contact they may have had with a professional.

“Discussed Suicide” Exposure Variables.

The same combined consultant groups used to create the “sought help” variables were used to create three dichotomous “discussed suicide” variables: (1) discussed suicide with any consultant; (2) discussed suicide with a professional consultant, and (3) discussed suicide with a family member or friend. Participants who discussed suicide with any of the eight consultants were classified as having discussed suicide with any consultant. This variable was further refined to capture discussions of suicide with a professional consultant and with a family member or friend. As was the case with the help-seeking exposure variables, these latter two classifications were made independent of one another. The “discussed suicide” variables only included participants who reported that they sought help for health and emotional problems.

Demographic Variables and Potential Confounders. We collected information on respondent demographics, mental state, previous suicide attempt, and history of medical ill-

ness. The demographic information collected included sex, age (13-17 years, 18-24 years, 25-34 years), and marital status (never married, separated/widowed/divorced, and married). The mental state variables were hopelessness and depression. The respondent’s level of hopelessness in the week prior to the suicide attempt for cases and the week prior to the interview for controls was assessed using Beck’s Hopelessness Scale (Beck, Weismann, Lester, & Trexler, 1974). This scale measures negative expectations and pessimism using 20 true/false items. A dichotomous variable was created based on the recommended cutoff of 9, where respondents scoring 9 or higher were classified as feeling hopeless and respondents who scored less than 9 were considered not to feel hopeless (Beck, & Weishaar, 1990). Depression is based on the Center for Epidemiologic Studies-Depression (CES-D) scale, a 20-item scale used to assess depressive symptoms during the week before the suicide attempt for cases and the week prior to interview for controls. Those respondents scoring 16 or higher were classified as depressed and respondents who scored less than 16 were classified as not feeling depressed (Radloff, 1977). Previous attempt refers to any lifetime previous suicide attempt. Medical illness refers to any serious medical problem or disability. The above variables were considered to be potential confounders of the relationship between nearly lethal suicide and our exposures of interest and were controlled for in the analysis.

Data Analysis—Analytic Methods

Data were analyzed using SAS computer software. Pearson’s chi-square test was used to assess the association between the help-seeking exposure variables and case-control status. Crude and adjusted odds ratios (OR) and 95% confidence intervals (CI) were generated using a series of logistic regression models focusing first on the “sought help” exposure variables and then on the “discussed suicide” exposures. All adjusted models included the main exposure variable(s) of interest and all potential confounders. Inclusion in the model was based on theoretical grounds and the results of Pearson’s

TABLE 1. Distribution of Demographic, Mental State and Other Variables by Case–Control Status

Variables	Cases	Controls
	<i>n</i> (%)	<i>n</i> (%)
Age		
13 – 17	37 (24)	126 (23)
18 – 24	45 (29)	147 (29)
25 – 34	71 (47)	240 (47)
Gender*		
Male	83 (54)	221 (43)
Female	70 (46)	292 (57)
Marital Status*		
Never married	104 (68)	344 (67)
Separated/widow/divorced	24 (16)	47 (9)
Married	25 (16)	122 (24)
Hopelessness*		
Hopeless	102 (68)	43 (8)
Not hopeless	47 (32)	469 (92)
Depression*		
Depressed	131 (86)	163 (32)
Not depressed	22 (14)	348 (68)
Presence of Medical Illness*		
Medical illness – Yes	47 (31)	62 (12)
Medical illness – No	106 (69)	451 (88)
History of Previous Attempt*		
Previous attempt – Yes	72 (47)	38 (7)
Previous attempt – No	80 (53)	475 (93)

*Indicates a statistically significant association ($p < 0.05$ Pearson's χ^2 test).

chi-square analysis (variables with $p < 0.05$ were included), except for age, which was included solely on theoretical grounds. Models assessing the “sought help” exposures were generated on the entire sample of case-patients and control-subjects. The importance of each variable in the model was assessed using the Wald chi-square test. The interaction between the main exposure variable(s) of interest and each potential confounder was assessed using a likelihood ratio test and found to be nonsignificant ($p > 0.05$); therefore, interaction terms were dropped from all models and the model containing the exposure variable(s) of interest and all potential confounders (the full main effects model) was selected as the final model. Models assessing the “discussed suicide” exposures were restricted to those who had sought help. In each instance, the final model from above was re-run after substituting the “sought help” ex-

posure for a given consultant type (any, professional, or family/friend) with the corresponding “discussed suicide” exposure. As before, the importance of each variable in the model was assessed using the Wald chi-square test. For all tests performed, p -values < 0.05 were considered statistically significant.

RESULTS

Bivariable Analysis

Table 1 describes the study population by case-control status. There were no differences between cases and controls by age. Case-subjects were significantly more likely to be male, hopeless, depressed, have a medical illness, and have made a previous suicide attempt than control-subjects ($p < 0.05$, Pearson's

TABLE 2. Distribution of Help-Seeking Behaviors by Case-Control Status

	Sought Help for Health or Emotional Problems ¹		Discussed Suicide ⁴	
	Case <i>n</i> (%)	Control <i>n</i> (%)	Case <i>n</i> (%)	Control <i>n</i> (%)
Consultants ²				
Any Consultant ³	96 (63)	321 (63)	45 (48)	27 (8)
Professional ³	56 (37)	196 (38)	22 (41)	7 (4)
Regular MD	23 (15)	136 (27)	3	2
Psychiatrist	27 (18)	11 (2)	14	4
Nurse	10 (7)	67 (13)	3	0
Clergy	10 (7)	21 (4)	2	1
Teacher	6 (4)	30 (6)	0	1
Hotline	6 (4)	1 (0.2)	4	1
Other counselor or health professional	18 (12)	24 (5)	5	2
Family/friend	75 (49)	244 (48)	32(43)	24(10)

¹These denominators are derived from the total number of cases ($n = 153$) and the total number of controls ($n = 513$) in the study. ²The consultant categories are not mutually exclusive. ³If the respondent saw more than one individual consultant within the professional category it only counted as one exposure. ⁴The denominators for each percent consists of the total number of cases or controls that sought help from the consultant of interest (the numbers listed in the "sought help" column).

chi-square test). While similar proportions of cases and controls were never married, cases were more likely than controls to be separated/widowed/divorced.

As for the "sought help" variable (Table 2), the same proportion of cases and controls sought help for health or emotional problems with any consultant, professional consultants, and family/friends. Almost half of the cases and controls sought help from family/friends (49%, and 48% respectively), making them more frequently consulted by cases and controls than were the professional consultant group.

Among the individual professional consultants, cases sought help from psychiatry most frequently (18%), followed by regular MD (15%), and other counselor (12%). Controls primarily sought help from their regular MD (27%). Less than 7% of cases or controls consulted a teacher, clergy, or a hotline. Overall, hotlines were utilized less frequently than any other consultant group.

Regarding the content of the consultant interaction (Table 2), cases discussed suicide far more frequently than controls in all groups. Overall, both cases and controls discussed suicide more frequently with family and friends than professionals. For the cases alone these

proportions were similar—43% of cases discussed suicide with family/friends and 41% with professionals. Among the individual professional consultants, suicide was discussed with psychiatry most frequently by cases and controls. Five or fewer cases or controls discussed suicide with the remainder of the individual professional consultants.

Logistic Regression

With regard to seeking help for health and emotional problems (Table 3), crude analysis showed that case-subjects were no more likely than controls to seek help from any consultant (OR = 1.0, 95% CI = 0.7-1.5). In the refined analysis of professionals and family/friends, where each consultant type was adjusted for the possibility that the other consultant was seen, cases were no more likely than controls to seek help from either a professional consultant or a family member/friend.

In the adjusted analysis, cases were significantly less likely than controls to seek help from any consultant (OR = 0.5, 95% CI = 0.3 - 0.8). In the more refined analysis, although cases were less likely than controls to seek help from both professional consultants and

TABLE 3. Association Between Case–Controls Status and Consultant Contact Behavior, by Consultant Type

Exposure	Consultant	Crude OR (95% CI)	Adjusted ¹ OR (95% CI)	
Sought Help ²	Any			
	Yes	1.0 (0.7–1.5)	0.5 (0.3–0.8)	
	No	1.0	1.0	
	Professional ³			
	Yes	0.9 (0.64–1.36)	0.50 (0.29–0.88)	
	No	1.0	1.00	
Family/Friend ³	Yes	1.1 (0.7–1.5)	0.8 (0.5–1.3)	
	No	1.0	1.0	
	Discussed Suicide ⁴	Any		
		Yes	10.0 (5.7–17.5)	2.6 (1.2–5.4)
No		1.0	1.0	
Professional ³				
Yes	12.8 (4.9–33.6)	11.8 (3.2–43.2)		
No	1.0	1.0		
Family/Friend ³	Yes	5.0 (2.6–9.7)	0.9 (0.4–2.2)	
	No	1.0	1.0	

¹Adjusted for age, sex, marital status, hopelessness, depression, presence of a medical condition, and prior suicide attempt. ²Analysis based on 666 case- and control-subjects in the sample. ³Each consultant type adjusted for the other consultant type in the model. ⁴Analysis restricted to the 415 case- and control-subjects who sought help.

family/friends, only the association with professional consultants was statistically significant (OR = 0.5, 95% CI = 0.3–0.9). No significant difference in help-seeking behavior was seen between case-patients and control-subjects when the consultant was a family member or friend. Male sex, depression, hopelessness, prior attempt, and medical condition, which were all significant predictors of nearly lethal suicide in the bivariable analysis, remained significant in both adjusted models.

With regard to having discussed suicide, crude analysis showed that cases were significantly more likely than controls to discuss suicide with any consultant (OR = 10, 95% CI = 5.7–17.5). This relationship held for both professional consultants and family members/friends. In the adjusted analysis, this association remained significant for any consultant (OR = 2.6, 95% CI = 1.2–5.4) and professionals (OR = 11.8, 95% CI = 3.2–43.2), however, the association between

family/friend and a nearly lethal suicide attempt was no longer significant after adjusting for the potential confounders and professional consultants. All potential confounders that were significant in the bivariable analysis remained significant predictors of nearly lethal suicide attempts in both adjusted models, except for the presence of a medical condition, which was no longer significant.

DISCUSSION

The descriptive data from this analysis suggest that the majority (63%) of our study participants sought help from consultants regarding health or emotional problems and that friends and family were more frequently contacted than all the professional consultants combined. In comparison to control-subjects, case-patients were significantly less likely to seek help from any consultant, particularly a

professional consultant. Among those who did seek help, case-patients were significantly more likely to have discussed suicide with any consultant, especially a professional consultant.

Our finding that family and friends were frequently consulted suggest that they are potentially an important point of intervention and underscores recommendations to expand educational efforts to improve the recognition and response to those at risk beyond professionals (U.S. DHHS, 2001). Also, primary prevention programs aimed at strengthening family and community support networks in general may be a potentially effective strategy in the primary prevention of suicide (Garland & Zigler, 1993).

The consultant type contacted least frequently in our study population was the crisis hotline. This finding is supported by previous studies which show that hotlines are under-utilized (Sawyer, Sudak, and Hall, 1972); adolescents in particular are less likely to be aware of suicide hotline services (Greer and Anderson, 1979). Perhaps increasing awareness of these services—which are anonymous, easily accessible, and likely to appeal to adolescents and young adults—may provide some benefit in preventing suicide in this age group.

This study shows that not only are young people who attempt suicide less likely to seek help in general compared to nonsuicidal control-subjects, but they are least likely to seek help from clinicians and other professional caregivers even though they are more likely to have problems (e.g., depression, hopelessness, the presence of a medical illness and a history of previous suicide attempt) that would bring them in contact with health care providers. This highlights the need to increase efforts aimed at encouraging those at risk to seek help. These efforts should include public education programs which promote help-seeking among those at risk and destigmatize suicide, and the reduction of barriers to health care and mental health services. Because those at risk for suicide in our study population were less likely to seek help, suicide prevention efforts should not be limited to strategies that depend on a help-seeking interaction, but

should include restricting access to lethal, common means of suicide (e.g., firearms, drugs, and high places) (CDC, 1992).

When our case-patients did seek help, nearly half (48%) discussed suicide with a consultant before going on to make a near fatal attempt, therefore efforts aimed at improving the response and intervention provided by consultants are warranted. One program which provided training for primary care providers on the care of potentially suicidal patients demonstrated a beneficial effect and resulted in a decreased suicide rate (Rutz, von Knorrling, & Walinder, 1989). The finding that cases who sought help were significantly more likely than controls to discuss suicide was not unexpected and may be explained by case-patients being more likely to have sought help specifically for suicidal ideation as opposed to control-subjects who were more likely to seek help for a variety of reasons.

Our findings should be interpreted in light of several limitations. Those limitations concerning the overall study are discussed in detail elsewhere in this supplement (see Kresnow et al.), but there are some that are particular to this analysis of the help-seeking questions. The general nature of the initial help seeking question prevented us from examining help-seeking for health problems separately from help-seeking for emotional problems. Questions exploring more specific aspects of help-seeking behavior (e.g., whether treatment was offered, taken, and if not—why?) were only asked of those respondents who answered “yes” to the initial questions, thus limiting the sample size responding to these more specific questions. Consequently, our analysis was limited to the initial, less specific questions. Recall bias is of particular concern in this analysis since the case-patients were primarily interviewed while receiving acute medical care for the suicide attempt. For this reason, they may have better recall regarding contact with health care providers compared to control-subjects since their point of reference relates to a significant and acute event in their lives. In our preliminary analysis, we found no association between help seeking and Hispanic ethnicity and therefore did not include ethnicity in this study. The data may

have been limited, however, by the fact that a higher percentage of nonparticipants were of Hispanic ethnicity. Lastly, the data do not allow us to examine the nature of the respondent-consultant interaction and whether these interactions are successful in preventing suicide or harmful in nature, thus these help-seeking behaviors cannot be interpreted as being risk factors or protective factors for a nearly lethal suicide attempt based on the associations described above.

Despite these limitations, several recommendations can be made concerning the prevention of suicidal behavior among adolescents and young adults. These data sug-

gest that increasing our understanding of the role of family and friends as consultants may further our efforts in preventing suicide, since this group is most frequently contacted by adolescents and young adults. Our data also suggest that educating the public to recognize signs of suicide risk and encouraging those at risk to seek help, should be promoted. These are among the recommendations outlined in the Surgeon General's National Strategy for Suicide Prevention. Finally, we recommend that more analytic studies regarding help seeking would significantly contribute to our understanding of the role of help seeking in suicide prevention.

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