

Warning Signs for Suicide on the Internet: A Descriptive Study

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The issue of suicide warning signs on the Internet is considered. In addition to reviewing some of the relevant conceptual issues about warning signs, a random sample of Internet sites was selected and reviewed. Warning signs were grouped and agreement across sites was examined, with results confirming broad disparity in what is presented to the public. The implications of a lack of consensus on warning signs for suicide are discussed.

INTRODUCTION

The Internet is a frequently used source of information for mental health issues, as well as an increasingly common tool for mental health interventions (Ybarra & Eaton, 2005). A nationally representative sample of adults in the United States estimated that eight out of ten Internet users (approximately 95 million people) searched for health information online in 2004 (Fox, 2005). The same study found that 23% of the Internet users in their sample searched online for information about mental health, including depression, anxiety, and stress. The Internet provides the public with easy access to information on mental health topics and research findings (Levy & Strombeck, 2002) and this ease of access may increase the dis-

semination of mental health information to underserved populations (i.e., youth and minorities; Ybarra & Eaton, 2005).

Many forms of mental health interventions are available to the public on the Internet, including online symptom screening tools, online support groups, online individual therapy (including real time exchanges with therapists), online group therapy, and self-directed therapy (akin to bibliotherapy; for a review, see Ybarra & Eaton, 2005). A prospective study of a group of individuals who used Internet-based depression support groups found that individuals who use online depression support groups may be a subsample of depressed individuals with lower social support (Houston, Cooper, & Ford, 2002). Participation in the online group did not, however, seem to exacerbate social isolation; in fact, more frequent users of the group were more likely to have improvements in depressive symptoms over a year than less frequent users. In addition, there were no data to suggest that participation in the support group decreased participation in face-to-face therapy. Thus, interactions via the Internet may positively supplement more traditional forms of mental health interventions for individuals with depressive symptoms. Support groups for individuals with suicidal

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symptoms are also available (Miller & Gergen, 1998), although research is needed to assess the impact of such groups.

A study of Internet-based help-seeking behaviors of adolescents found that one fifth of the sample sought help online for mental health problems, a rate which was comparable to the percentage who sought help from mental health professionals (Gould, Munfakh, Lubell, Kleinman, & Parker, 2002). Internet help-seeking (the most common form was participation in chat rooms) did not supplant other forms of help-seeking; in fact, adolescents who sought help via the Internet were more likely to also seek help from a mental health professional. These data suggest that online mental health information and interventions that recommend seeking help elsewhere (e.g., with a face-to-face mental health professional) could potentially be efficacious. The same study also found that 10% of the adolescents who sought help via the Internet reported that suicidal thoughts were their primary motive for seeking help. These adolescents were also more likely to report hopelessness and impaired functioning. These data suggest that many individuals who are likely in need of information about—and treatment for—suicidal symptoms are accessing the Internet in response to their symptoms; however, the accuracy and comprehensiveness of mental health Web sites is highly inconsistent (Ybarra & Eaton, 2005). In the present study, we provide an initial review of the content of Web sites providing information about warning signs for suicide.

There is considerable confusion in the literature regarding warning signs for suicide. Recently, attempts have been made to differentiate warning signs from risk factors (Rudd, 2003; Rudd et al., 2006). Although the terms *warnings signs* and *risk factors* often have been used interchangeably in the suicide literature (e.g., Aldridge, 1992; Crespi, 1990; James & Kowalski, 1996), Rudd (2003) suggested that warning signs are functionally and theoretically distinct. One differentiating feature is that warning signs imply near-term risk whereas risk factors imply longer-term risk,

although time frames have been poorly defined. An effort has been made to define warning signs emphasizing the salient feature of near-term risk (Rudd et al., 2006).

Rudd et al. (2006) suggest that a warning sign for suicide be defined as “the earliest detectable sign that indicates heightened risk for suicide in the near-term (i.e., within minutes, hours, or days). A warning sign refers to some feature of the developing outcome of interest (suicide) rather than to a distinct construct (e.g., risk factor) that predicts or may be causally related to suicide.” This definition emphasizes the immediate nature of suicide risk.

Warning signs for suicide are often disseminated to health care workers, school personnel, mental health professionals, and first responders (e.g., police and fire departments) with the goal of promoting awareness, early recognition, and prevention. As Berman (2003) has aptly noted, warning signs are public health messages with the goal of early identification and referral. Additionally, the first goal of the U.S. Surgeon General’s National Strategy for Suicide Prevention is to promote public health awareness that suicide is a public health problem that is preventable (Berman, 2003).

A variety of means are used to disseminate information about warning signs for suicide. One source has been school-based suicide prevention programs. These programs typically include warning signs to promote the identification of youth at risk for suicide (Garland, Shaffer, & Whittle, 1989) and are designed to help teens to identify peers who are at risk for suicide and to encourage disclosure to a responsible adult (Gould, Greenberg, Velting, & Shaffer, 2003); however, the evidence for the effectiveness of these programs is mixed (Gould et al., 2003). Yet schools, as a whole, are the best venue to reach youth; they are where adolescent problems are likely to be in evidence and observed by multiple others. The American Association of Suicidology (AAS), under contract to the U.S. Department of Education, recently authored a critical analysis of and consequent

recommendations regarding best practices and strategies to disseminate warning signs to school communities (Berman & Connor-ton, 2005).

The Internet is another source of education about warning signs. Many organizations, including national agencies such as the AAS, community agencies, and university-based counseling centers, provide lists of warning signs on their Web sites. A recent Google search for "warning signs" and "suicide" produced approximately 183,000 hits. Suicide prevention programs and, perhaps more notably, the Internet, ensure that warning signs for suicide are readily available to individuals looking for this information, some of whom may be in acute crisis, and to others who are likely to be concerned family and friends of those possibly at risk.

Despite widespread availability of warning signs, or perhaps because of it, there is little consensus on a specified set of warning signs for suicide (Rudd et al., 2006). One problem with the current distribution of a large number of warning signs is that they offer very little specificity. When almost any behavior can be seen as a potential warning sign, a large number of false positives will be generated, decreasing the utility of these indicators in anticipating suicidal acts. In the current study we examine and categorize warning signs found in a random sample of Internet Web sites in order to gain an initial, empirically-derived understanding of the types of warning signs that are currently being used and distributed on the Internet. In 2003, an AAS working group comprised of more than a dozen clinical researchers met to develop a consensus on what differentiated a warning sign from a risk factor and, consequently, a consensus set of warning signs for suicide based on empirical evidence and research. Furthermore, the working group, with the help of experts in public health messaging, carefully framed these warning signs in a hierarchical format that both communicated what to observe and what to do if these signs were observed. This set is described in detail elsewhere (Rudd et al., 2006). As an expert

consensus list, the AAS working group's list of suicide warning signs can serve as a gold standard for validating other sets of warning signs.

METHOD

A Google search was conducted online for the terms "warning signs" and "suicide." This search produced approximately 183,000 hits. To maximize relevancy, a random sample of 200 Web sites was taken from the first 500 hits. Warning signs listed on the first 50 of the sites in this sample of 200 were tabulated individually. This list was used to create categories or groupings of warning signs, consistent with general clinical experience and expertise. The warning signs from the remainder of the sites in the sample were organized into these categories (identified in Table 1). This provided a general template to evaluate the consistency of warning signs across a representative sample of Internet sites and also provided us with the opportunity to explore whether or not the most frequently mentioned warning signs on the Internet were consistent with those identified by the AAS consensus working group on warning signs for suicide (Rudd et al., 2006). As an expert consensus list, the AAS working group's set of warning signs thus serves as an index for validating published sets of warning signs.

RESULTS

In the initial sample of 50 Web sites, 138 distinct warning signs were identified. Of these, 18 were posted on over 30% of the sites (see Table 1). Out of these 18, 50% (9) were also found on the AAS consensus set, representing a clear majority of the warning signs identified by the working group (9 of 12, 75%). In contrast, 63 of the warning signs were unique, found on only one site. As noted previously, an examination of the content of the 138 Internet warning signs re-

TABLE 1*The Most Frequently Mentioned Warning Signs for Suicide on the Internet*

Warning Signs	Percent of Web sites	On AAS consensus list?
Giving away prized possessions	86%	N
Isolation or withdrawal	78%	Y
Use or increased use of alcohol or drugs	68%	Y
Changes in sleeping patterns	64%	Y
Indirect verbal statements (talking about dying or not being around)	62%	Y
Changes in eating patterns or weight	56%	N
Risk-taking or reckless behavior (death wish)	54%	Y
Loss of interest in previously enjoyed activities (hobbies, school, work)	54%	N
Putting affairs in order	48%	N
Feelings of sadness or indications of depression	48%	N
Recent loss (death/divorce/break-up)	48%	N
Feelings of hopelessness	46%	Y
Previous suicide attempt	44%	N
Sudden change in behavior	44%	N
Direct suicidal threat (talking about killing oneself)	42%	Y
Talking about suicide or death	40%	Y
Sudden change in mood, particularly mood elevations following depression	38%	Y
Decreased performance or loss of interest in school	38%	N

Note. Random sample of 50 sites drawn from 200. AAS = American Association of Suicidology. Bold print indicates the warning signs that were included on the AAS consensus list.

The complete list of Warning Signs for Suicide from the consensus working group includes the following 12 items: someone threatening to hurt or kill themselves; someone looking for ways to kill themselves; seeking access to pills, weapons, or other means; someone talking or writing about death, dying or suicide; hopelessness; rage/anger/seeking revenge; acting reckless or engaging in risk activities seemingly without thinking; feeling trapped—like there's no way out; increasing alcohol or drug use; withdrawing from friends, family or society; anxiety/agitation/unable to sleep or sleeping all the time; dramatic changes in mood; no reason for living/no sense of purpose in life.

vealed 16 categories or logical groupings of warning signs for suicide. In total, 3,266 warning signs were categorized from the sample of 200 sites. The proportion of warning signs in each category can be found in Table 2 (in an effort to facilitate a more efficient presentation, the 16 groupings are organized with subheadings representing logical clusters; e.g., cognitive warning signs).

Three categories of warning signs appeared to involve cognitive characteristics. The first, *suicidal thinking*, refers to signs that include talking about suicide and making direct and indirect verbal statements. Direct verbal statements involve explicit talk about killing oneself and include threats of suicide. Indirect verbal statements, such as the com-

ment, "no one will miss me when I am gone," make no specific reference to suicide. Rather, they imply that an individual is thinking about and possibly considering suicide. A second category is *morbid thinking*, which refers to indications that an individual is preoccupied with thoughts of death or dying. In particular, he or she may frequently mention death or dying or otherwise demonstrate an interest in these subjects. The third category involves warning signs related to *self-image*. These warning signs tend to deal with an individual's sense of self-esteem, and include self-critical thinking and tendencies toward perfectionism.

Behavioral warning signs for suicide distributed on the Internet can be separated

TABLE 2
Categories of Warning Signs Found on Internet Web sites

Category	Description	Percent of Total (N = 3266)
<i>Cognitive Warning Signs</i>		
Suicidal thinking	“Feelings of suicide” or having a desire to die, often as expressed through direct or indirect verbal statements. Also includes formulation of a suicide plan and increased attention on means of suicide	9.09% (n = 297)
Morbid thinking	Preoccupation with thoughts of death or dying	3.15% (n = 103)
Self-image	Overly self-critical stance toward self, low self-esteem, perfectionism, or an inability to tolerate praise and rewards.	2.60% (n = 85)
<i>Behavioral Warning Signs</i>		
Suicidal acts	Suicidal gestures, notes or drawings, collecting the means for completing suicide, preparing for the act of suicide, previous attempts.	9.31% (n = 304)
Other self-destructive behavior	Self-destructive, risk taking, and reckless behavior, sometimes associated with having a death wish. Also includes self-mutilation. Not explicitly involved in preparing for or attempting suicide.	1.35% (n = 44)
Threats toward others	Threats or expressions of violence directed toward other people.	1.04% (n = 174)
Substance abuse	History, use, increased use, or relapse involving drugs or alcohol.	5.33% (n = 713)
Other behavior changes	A variety of indicators of change in behavior, including changes in attitude, personality, and appearance, decreased academic or work performance, trouble with authority and disruptive or poorly controlled behavior. Also included are a variety of termination behavior, including reconciliation, saying goodbye and making certain final arrangements.	21.83% (n = 713)
<i>Situational Warning Signs</i>		
Medical problems	Somatic or physical illness, frequent health complaints or medical appointments or chronic pain.	2.27% (n = 74)
Loss	Recent losses, including death, divorce, break-up, recent or long-term unemployment. Also includes loss of possessions, finances, physical mobility, freedom, enjoyed activities and the anniversaries of such losses.	5.17% (n = 169)
Trauma	Experience of a traumatic event, including natural disasters or physical assaults, emotional or physical abuse and exposure to suicide attempts by others.	1.47% (n = 48)

(continued)

TABLE 2
Continued

Category	Description	Percent of Total (N = 3266)
Legal problems	Being under investigation for criminal charges.	.43% (<i>n</i> = 14)
<i>Other Warning Signs</i> Psychological	Symptoms of depression (the majority, with a particular emphasis on withdrawal and loss of interest in life activities), anxiety or psychosis. Also includes feelings of restlessness and of being trapped, lonely or isolated.	31.02% (<i>n</i> = 1,013)
Interpersonal Problems	Perceived or actual rejection, persecution or lack of support. Also includes lack of friends, ending of relationships and changes in patterns of socialization.	4.35% (<i>n</i> = 142)
Family and Developmental History	Family history of suicide attempts or a genetic predisposition for suicide	1.44% (<i>n</i> = 47)
Sexual Orientation	Conflicted feelings or shame about one's sexual orientation	.15% (<i>n</i> = 5)

Note. An undergraduate research team assisted in reviewing web site and logging listed warning signs.

into five categories. *Suicidal acts* refer to actions explicitly related to suicide, such as suicide attempts, writing suicide notes or farewell letters, or collecting the means to complete suicide. *Other self-destructive behaviors* refer to life-threatening behaviors that do not explicitly reflect suicidality, but may be considered reckless and self-destructive (e.g., driving at excessive speeds with no expressed intent to die by suicide). Self-mutilation is put into this category, provided that the act (e.g., cutting) is not coupled with expressed suicide intent. *Threats toward others*, specifically threats of violence or expressions of violent feelings, is the third category. *Substance abuse* refers to warning signs involving use of drugs or alcohol, particularly when use is elevated. A category of *behavioral changes* was created to encompass the host of behavioral indicators not included in the other four categories. As posted on Internet Web sites, such warning signs include a variety of behavioral indicators including decreased performance at school or work and changes in personal hygiene. Several behaviors such as saying goodbye, attempting to reconcile dif-

ferences, and making final arrangements were also included in this category.

Four categories refer to situations, events, or stressors experienced by individuals. *Medical problems* includes warning signs related to physical health problems such as illness and pain, and to somatic conditions. *Loss* refers not only to warning signs regarding the death of loved ones, but also to divorce, loss of jobs, and loss of other valued aspects of life (e.g., financial, esteem, or identify losses). Warning signs involving *trauma* were also mentioned, including traumatic events and different forms of abuse. *Legal problems* are represented as a distinct category that includes being under investigation and losing one's freedom.

The largest individual category, *psychological symptoms*, encapsulates warning signs related to symptoms of depression, anxiety, psychosis, and maladaptive emotional states. This category was found on 31% of Web sites. Although almost all symptoms of depression, as noted in the *DSM-IV-TR* (American Psychiatric Association [APA], 2000), are included, anxiety is only mentioned in gen-

eral terms. Delusions and hallucinations are mentioned as symptoms of psychosis. The *Interpersonal problems* category includes perceived or actual rejection or persecution, lack of relationships, or termination of relationships. Lastly, shame or confusion surrounding one's *sexual orientation* is represented as an infrequently cited (it only occurred in 0.15% of the sites) but distinct category of warning signs.

As is evident, warning signs listed on the Internet are heavily weighted toward symptoms of depression. Similarly, the warning signs listed have no published empirical support.

DISCUSSION

An examination of the warning signs found on the Internet revealed 16 relatively distinct categories of warning signs (see Table 2). Although a great deal of disparity was revealed, surprisingly, 75% of the warning signs identified by the AAS consensus working group were frequently included on the Web sites. Despite the finding that almost 50% of warning signs listed on the Internet were unique to each site, the fact that 75% of the warning signs identified by the AAS working group are among the most frequently cited suggests a limited empirical finding to the information available on the Internet about suicide and suicide prevention.

Some of the warning signs listed on the Internet may be too vague to be useful as a warning sign, offering little specificity to suicide (e.g., sudden change in behavior, decreased performance or loss of interest in school). Although it is encouraging that there is some overlap among warning signs found on Web sites and those found on the AAS consensus set, there is also considerable discrepancy across sites. Signs included on the AAS list that were *not* common among the Internet sites included: seeking access to means of suicide; feeling trapped or without a sense of purpose; seeming agitated or anxious; expressing rage, anger, or revenge-seeking; and having no reason for living or no

sense of purpose in life. Given that these warning signs were designated by AAS to be important due to their empirical support, the public clearly needs to be made more aware of them since they do not appear to be well-known.

Inconsistently selected warning signs for suicide that are disseminated on the Internet may be ineffective in increasing recognition and prevention of suicide due to their high sensitivity and low level of specificity. *Sensitivity* refers to a warning sign's ability to detect an individual at risk for suicide. *Specificity* refers to a warning sign's ability to differentiate someone who is at risk for suicide from someone who is not. While warning signs need to be sensitive, they are not useful for predicting who will attempt or complete suicide if they lack specificity. The sheer number of warning signs found for suicide reduces their specificity. It is not unreasonable to speculate that a large percentage of the population will experience or exhibit some of the warning signs described in Table 2 at some point in their lives.

In addition, the lack of specificity impacts the practical utility of the identified warning sign and may even pose a threat to harm if it is misinterpreted. For example, a large proportion of adolescents exhibit rebellious behavior, a warning sign posted on the Internet. Although this warning sign may or may not be highly sensitive to imminent risk of suicide in adolescents, it is possible that inappropriate referrals can hinder help-seeking by adolescents during moments of crisis. Other examples of warning signs that appear to lack the necessary specificity are indecisiveness, perfectionism, and feelings of guilt.

There is little question that research is required to determine which warning signs are high in specificity; however, examples of warning signs that should not be ignored and that appear to hold a high degree of specificity include talking about suicide and formulating a suicide plan (e.g., Rudd, Joiner, & Rajab, 2004). It is important that these warning signs are not lost amid the large number of warning signs that have lower specificity.

Another notable trend among the

warning signs found is that many are not indicators of near-term risk (i.e., within minutes, hours, or days). Many of the warning signs posted on the Web sites are, by definition, risk factors if the criteria identified by Rudd et al. (2006) are employed. For example, chronic pain, a history of substance abuse, long-term unemployment, or a genetic predisposition cannot be signs of near-term risk because they indicate a long-standing history or pattern. Although they may be of value in identifying at-risk populations, they are of less value for identifying someone who is likely to die by suicide in the immediate future.

To date, only a few warning signs have received some form of empirical support for their effectiveness in predicting risk of suicide over 12-month time periods, and none within the identified goal of near-term risk. These include severe anxiety or agitation (Busch, Fawcett, & Jacobs, 2003); precipitating events, often involving loss or shame (Acosta-Rua, 1991; Maltsberger et al., Hendin, Haas, & Lipschitz, 2003); and recent prison incarceration (Backett, 1988). Countless other warning signs for suicide are routinely disseminated on the Internet and are included in suicide prevention programs. Although the

importance of recognition and intervention is undeniable, a lack of adherence to a consensus set of warning signs for suicide may lead to the dissemination of warning signs with little predictive power that are ineffective at identifying individuals at imminent risk for suicide.

The research implications for the current findings are clear. First, an effort needs to be made to broadly disseminate the warning signs identified by the AAS consensus working group. Second, research needs to target the impact of warning signs in the public domain, examining not just the Internet but also school-based programs, and educational efforts geared toward first-responders and other healthcare providers. Finally, continued research is needed to address the distinctive nature of warning signs relative to risk factors. In short, in order to effectively offer the general public a health message that stimulates preventive intervention (i.e., behavior of observing and referring) we need to achieve a consistent and empirically sound list of warning signs, in contrast to the glut of inaccurate and unfounded warning signs currently available on the Web.

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