

Suicide Among Patients with Schizophrenia: A Consideration of Risk and Protective Factors

LORI P. MONTROSS, PhD, and SIDNEY ZISOOK, MD

University of California San Diego, Department of Psychiatry, San Diego, CA, USA

JOHN KASCKOW, MD

University of Cincinnati, Department of Psychiatry, Cincinnati, OH, USA

Background. The elevated rate of suicide among patients with schizophrenia is well documented and thus frequently researched. The majority of research has focused solely on the identification of risk factors that predispose patients to attempt or commit suicide. This review serves to expand on the literature pertaining to suicide risk factors by additionally outlining how protective factors may shield against suicide within this unique patient population.

Methods. A literature review of English-language publications pertaining to suicide among people with schizophrenia was completed using PsychINFO and MEDLINE databases between the years of 1960–2004 and 1950–2004 respectively. Special emphasis was given to studies of risk factors and protective factors for suicide.

Results. Commonly supported risk factors for suicide were identified: previous attempts, severity of illness, comorbidity, social isolation, temporal relationships, and demographic characteristics. Risk factors such as a history of violence, the presence of command hallucinations, and recent tragic loss were found to warrant future study. Social support, positive coping skills, life satisfaction, and resiliency emerged as protective factors that may mitigate suicide.

Conclusions. Understanding why some patients wish to end their lives but also why some desire to live allows for more comprehensive suicide prevention.

Keywords Suicide prevention, Risk and protective factors, Resiliency

INTRODUCTION

The public health burden posed by suicide and attempted suicide is readily recognized. Suicide is the 11th leading cause of death among adults in the United States (1). Americans commit suicide at a rate of 10.7 per 100,000 (2). Approximately 30,000 people commit suicide in the United States each year, equating to 85 deaths a day (3).

Men are three times more likely to commit suicide than women, and Caucasian men commit suicide at a rate two times greater than people of color (4,5). Among the elderly, rates are also elevated. For those over 75 years of age, the suicide rate is three times higher than it is for the young (1,4), and elderly White men have the highest per-capita rate of completed suicide when compared to any other demographic group (1,6).

Between 70 and 95% of suicide victims have some form of diagnosable mental illness (5,7,8). Two forms of mental illness play a particularly crucial role in suicide: depression and schizophrenia. This article focuses on suicidal ideation, suicide attempts, and completed suicide among people with schizophrenia. It offers a summation of the most frequently cited risk factors, as well as a discussion of how protective factors may prove to be a fertile ground for future investigations with this high-risk patient population.

Suicide Among Patients With Schizophrenia

Suicide is the leading cause of premature death among people with schizophrenia (9,10). When people with schizophrenia are compared to the general population, they hold an 8.5 fold greater risk of suicide (11), a rate surpassed only by people with severe mood disorders (12). Between 40–50% of people with schizophrenia report suicidal ideation at some point in

Address correspondence to Lori P. Montross, Department of Psychiatry, Division of Geriatric Psychiatry (116A-1), 3350 La Jolla Village Drive, San Diego, California 92161, USA. E-mail: pmontro@ucsd.edu

their lives, 20–50% have a history of suicide attempts (13,14), and 4–13% eventually commit suicide (15–19).

In the year 1991 alone, the total cost for suicide in this population was \$190 million, while the loss of productivity due to suicide among people with schizophrenia reached an estimated \$7 billion (20). The human and economic loss associated with suicide among people with schizophrenia is apparent, and forms the basis for a dramatic public health priority (21).

Risk Factors

In order to diminish the level of suicide among people with schizophrenia, researchers have frequently focused on the identification of risk factors. The basis for this type of research involves identifying which patients are most at risk for suicide, so as to more effectively implement timely and effective interventions. One prior difficulty for studies of this nature was the availability of standardized assessments applicable to people with schizophrenia. However, several measures have now shown reliability and validity for this population, and now serve to inform hypotheses about risk factors within this group (e.g., the Beck Scale for Suicide Ideation (22), InterSePT Scale for Suicidal Thinking (ISST) (23). Several risk factors consistently have related to the likelihood of suicidal acts (see Table 1), while others have received only marginal or inconsistent support (see Table 2). This section delineates the consistently supported risk factors, and discusses others that require further investigation.

Consistently Supported Risk Factors

Previous Attempts

Perhaps the most concrete, most readily recognized risk factor for suicide is the presence of previous attempts (5,16,24–33). Greater lethality of attempts, and fewer provisions for being rescued are also indicative of strong fatalistic intentions (5). The strength of this factor underscores the importance of gathering full psychiatric histories from high-risk patients as a means of more effectively predicting future attempts.

Severity of Illness

For individuals with more severe cases of schizophrenia, the risk of suicide is increased. Severity of illness can be exemplified by more frequent hospitalizations and longer durations of index hospitalizations. Severity can also be marked by numerous relapses, younger ages of onset, or higher doses of antipsychotic medications (16,27,30,32,34,35).

Social Support

For patients with psychiatric illnesses, social support strongly mediates levels of suicidal ideation. People with schizophrenia are no exception (5,16,25,33,36,37). Possessing

a supportive network of family, friends, co-workers, or mental health professionals can mitigate thoughts of suicide. Positive connections with others help solidify reasons for living, and add meaning to lives that may otherwise feel desolate and lonesome. Therefore, a lack of social support is a frequently noted risk factor.

Although the importance of social support is clear, the effectiveness of psychosocial interventions to bolster this important factor is not. No studies have systematically investigated the effectiveness of psychosocial interventions for this population. Harkavy-Friedman and Nelson (38) offered a comprehensive discussion of the ways in which clinicians can intervene in crisis situations (e.g., mobile multidisciplinary outreach teams, crisis-oriented day treatment), but no data regarding their ability to reduce levels of suicidal ideation or attempts is available. Future research needs to empirically measure the benefits of such psychosocial programs, allowing for more evidence-based intervention with patients in this regard.

Comorbidity

Co-existing depressive symptoms have been established as a common risk factor among people with schizophrenia (16,25,26,28,30,31,36,39). The link between suicide, schizophrenia, and comorbid depression is not surprising since major depression is the one of the few psychiatric illness that is more frequently represented in suicide cases than schizophrenia (12,40). The connection between suicide, schizophrenia, and substance abuse is also compelling (28,40–42). Substance abuse and alcoholism can exacerbate impulsiveness as well as social isolation and place high-risk patients in an even more vulnerable position.

Temporal Relationships

The timing of suicides among people with schizophrenia has been of concern to researchers. When are patients most likely to commit suicide or voice suicidal ideation? It has been noted that the majority of suicides for this population occur within the first 10 years of illness onset (5, 10, 16, 33, 37, 39, 43), with approximately 50% of suicides occurring within the first two years (31).

Not only are patients at higher risk in the years directly following their initial diagnosis, but are also more likely to commit suicide within the first few weeks or months after a hospital discharge (5,26,36,44). For example, 80% of patients with schizophrenia who committed suicide in one study were found to do so while housed in the hospital or within six months of discharge (29).

The temporal relationship between hospital discharge and suicide may be due to a “post-psychotic depression” which has been theorized to increase levels of suicidality (5, 36,45–47). It is believed that people with schizophrenia who experience an alleviation of symptoms may in turn have greater awareness of

Table 1 Consistently Supported Risk Factors for Suicide Among People with Schizophrenia

| Risk Factor | Comment | Sample Reference |
|------------------------|---|--|
| Previous attempts | Prior attempts readily increase risk of future acts | Heila, Isometsa, Henriksson, Heikkinen, Marttunen, & Lonnqvist (1997) (28) |
| Illness severity | More severe schizophrenia, increased suicide risk | Caldwell & Gottesman (1992) (25) |
| Social isolation | Loneliness/ minimal social support elevates risk | Pinikahana, Happell, & Keks (2003) (33) |
| Comorbid depression | Coexisting depression increases risk of suicide | Siris (2001) (36) |
| Temporal relationships | First 2–10 years of illness pose greatest risk; time immediately following hospital discharge also hazardous due to “post-psychotic depression” | Roy (1982) (39) |
| Gender | Men more likely to commit suicide | Caldwell & Gottesman (1990) (10) |
| Age | Mean age for suicide is approximately 33 years | Roy (1992) (26) |

their overall life circumstance, and feel a corresponding increase in despair. As a result, the need for increased vigilance soon after patients experience a period of recovery from schizophrenic symptoms is evident.

Demographic Factors

Gender. Men in the general population of the United States commit suicide more frequently than women (1). The same trend is seen among men with schizophrenia (29, 48, 49), therefore being male is consistently cited as a risk factor (5, 10, 16, 26, 29, 33, 36, 37, 47, 48, 50). It is unclear whether this increased risk is related to a worsened course of illness or an earlier onset of disease — both of which are frequently observed among men (12,51). An earlier onset of schizophrenia in combination with a more severe course of illness could lead to lower levels of social and occupational functioning, and increased rates of hospitalization. People with schizophrenia who possess such a profile are considered to be at high risk for suicidal ideation, attempts, and completion (5, 25, 27, 31, 32, 37).

Males with schizophrenia also tend to commit suicide at a younger age than females with the disease (52, 53). Notably, the first 10 years of illness pose the greatest likelihood for suicide and since men tend to have an earlier onset of illness, the risk may pertain more to the age of initial diagnosis than to gender itself. Whether estrogen plays a protective role for young and middle aged women with schizophrenia is an important unanswered question (12,54–56).

Age. The mean age of patients with schizophrenia who commit suicide is approximately 33 (10, 14), with one study noting the greatest risk occurring between 20 and 39 (57), and a more general range cited between 22–40 (33). The higher rate of suicide seen among young people with schizophrenia is discordant with trends in the general population. Generally the elderly possess some of the highest suicide rates in the United States. In 1997, the Centers for Disease Control and Prevention reported the rate of suicide for those aged 75–84 to be 19.3 per 100,000, and 20.8 for those 85 years of age or older (2). These rates differ from the rate of 14.3 for persons aged 25–34, although this is a time of primary risk for people diagnosed

with schizophrenia. This is not to say that elderly people with schizophrenia are not vulnerable, since clearly they commit suicide as well (28,58).

Less Consistently Supported Risk Factors

Other Demographic Variables

Demographic factors other than age or gender may also bear a relationship to suicidality. For example, whether significant differences exist among patients with varying levels of socioeconomic status or differing ethnic backgrounds has yet to be determined. It is well accepted that Caucasians have the highest rates of suicide in the general population as well as among people with schizophrenia (1,5,25,47,48), although few studies have included variables such as ethnicity or social class when measuring suicide risk. The paucity of research in this area partly results from the low numbers of completed suicide by people of varying races or social classes. Nonetheless, it behooves investigators to evaluate the impact of these variables in order to truly understand the interplay of race or social status on suicidality.

An additional line of research regarding individual characteristics has explored the biological bases for suicide, with studies often focusing on the involvement of the serotonergic and noradrenergic systems (59,60). The findings have been mixed, with some authors reporting no neurobiological differences among suicide victims (61–63), while others show promising genetic links (60,64,65). Further advances in technology and science will continue to promote this line of inquiry and may perhaps lead to genetic counseling as a means of diminishing suicide potential.

Lastly, schizophrenia subtypes are an understudied personal variable that could potentially relate to observed suicidal behavior. Early investigators hypothesized that the paranoid subtype would relate to a higher suicide risk (66,67). One study has since found the paranoid subtype to possess an elevated suicide risk (68), while another noted approximately half of the patients who committed suicide after being recently discharged

from the hospital were of the paranoid subtype (69). Most recently, a study which compared paranoid, nonparanoid, and major depressive groups found patients with the paranoid subtype to be at increased risk for suicide (70). Thus it appears paranoia elevates patients' risk of suicidal ideation, but since the majority of studies combine all subtypes of schizophrenia, this theory is difficult to verify. Future studies need to replicate such findings using distinct subtype groups in order to fully understand the role of paranoia in suicidal ideation.

Command Hallucinations

The relationship between suicide among people with schizophrenia and the presence of command hallucinations or delusions has not been consistently supported in the literature (5,30,32,39). Theory would suggest patients commit suicide because of command hallucinations that dictate they do so; but given the contradictory findings, it is uncertain whether this is more the exception than the rule. In fact, none of the patients who committed suicide and were later examined by Breier & Astrachan (48) or Cotton, Drake, & Gates (32) were found to exhibit hallucinatory behavior.

Similarly, Zisook et al. (71) investigated clinical and research records from 106 patients with schizophrenia who were reported to have auditory hallucinations, 43% of whom experienced command hallucinations. No significant differences emerged between patients who did report command hallucinations and those who did not with regard to a) histories of violent and/or impulsive acts, or b) prior suicide attempts. However, during the study, two patients committed suicide — both of whom were from the command hallucination group. Thus Zisook et al. (71) illustrated how the presence of command hallucinations may not hold statistical significance, but their clinical significance remains vital. A recent one-year follow-up study of 341 patients experiencing their first episode of schizophrenia-spectrum disorders took an even stronger stance by denoting the presence of hallucinations to be one of only two significant predictors of suicide attempts (72).

In order to explain the contradiction in findings, Kaplan and Harrow (73) suggest any link is due more to the global level of functioning rather than the presence of positive symptomology. Siris (36) further describes how people experiencing delusions or hallucinations may not intend to harm themselves, even though their actions prove fatal. In other words, patients may be severely distracted by hallucinations while engaging in highly self-injurious behaviors, or delusions could leave patients feeling "magically protected" from harmful acts. Thus the legitimacy of hallucinations as a risk factor continues to be questionable, and any explanations or justifications for the association between them and suicidal gestures are tentative.

Level of Functioning

A relationship between lower levels of premorbid functioning and increased rates of suicide among people with

schizophrenia has been illustrated (25,27,37). A low level of premorbid functioning may be manifested behaviorally via unemployment, lower levels of educational attainment, and occupational instability. People with low levels of premorbid functioning may be more prone to suicide due to weaker coping strategies and greater impulsivity (27,37).

However, the converse has also been shown to hold significance as a risk factor. Suicide rates are increased for patients who have high premorbid functioning, higher educational attainment, and high expectations (5,16,25,29,31,32,36,37,47). These patients may more fully comprehend the chronicity and severity of their illness. They may also be more cognizant of the impact schizophrenia will have upon their life trajectories and experience more distress as a result. In summary, even though groups at both ends of the premorbid functioning continuum are at risk for suicide, this factor remains problematic since a standardized definition of functioning level has not been established or tested.

Hopelessness

Depression, despair, and a sense of hopelessness have been frequently considered as factors that increase the likelihood of suicide, although not specifically for people with schizophrenia. As early as 1974, research was published illustrating how hopelessness could be a harbinger of patients' subsequent suicide (74). Later studies indicated the robustness of this intrapsychic variable, with one study stating "depression becomes a clinically meaningful predictor of suicide only when hopelessness develops" (p. 557) (75). In one study, the Beck Hopelessness Scale was used as a suicide screening tool and was able to identify 91% of eventual suicides by using a scale score of 10 as a cutoff (76). The hopelessness expressed by patients on this scale more strongly differentiated between patients who did or did not commit suicide than their scores on the Beck Depression Inventory or the Scale for Suicide Ideation (76).

Although this study paved the way for hopelessness as a strongly noted suicide risk factor, this study did not exclusively sample people with schizophrenia. In fact, only five of the fourteen eventual suicides studied by Beck et al. (76) were within the schizophrenia-spectrum of disorders. As a result, hopelessness should be considered when determining patients' likelihood of suicide. However, since hopelessness has not been rigorously proven as a risk factor for patients diagnosed with schizophrenia, future studies need to determine its applicability to this specific population.

History of Violent Acts

The connection between aggression towards oneself (suicide) and aggression towards others (violence) has been proposed by psychodynamic theorists (5,77,78). Subsequently, aggression was considered a distinguishing factor between those who did and did not commit suicide (79), with serotonergic dysregulation appearing to mediate this process (80).

Table 2 Less Consistently Supported Risk Factors for Suicide Among People with Schizophrenia

| Risk Factor | Comment | Sample Reference |
|------------------------|---|--|
| Schizophrenia subtype | Paranoid subtype found to have higher risk of suicide | Fenton, McGlashan, Victor, & Blyler, (1997) (68) |
| Command hallucinations | Empirically no connection is found, remains clinically important | Breier & Astrachan (1984) (48) |
| Level of functioning | Both low and high levels of premorbid functioning appear to increase risk | Raymont (2001) (37) |
| Hopelessness | Depression + Hopelessness appears to increase risk | Beck, Steer, Kovacs, & Garrison (1985) (76) |
| History of violence | Past impulsivity, aggression, and violence can signal suicidal potential | Cheng, Leung, Lo, & Lam (1990) (30) |
| Tragic loss | Recent dire losses relate to despair and heightened risk | Cotton, Drake, & Gates (1985) (32) |

Logically, a history of impulsivity, aggression, and/or violence signals the presence of potentially hazardous suicidal possibilities (5), and one study found violent acts prior to the last psychiatric admission equated to a nearly 10-fold increase in risk for suicide among people with schizophrenia (30). However, no studies have methodically compared groups according to past levels of violence, and it therefore remains an undeterminable risk factor.

General Medical Co-morbid Conditions

A link between schizophrenia and co-morbid physical conditions is possible. In elderly populations, co-occurring physical illness burdens can increase the likelihood of suicide (7,81). The impact medical complications may have on people with schizophrenia remains uncertain (particularly when controlled for levels of depression), but the relationship remains worthy of exploration.

Tragic Loss as a Precipitating Event

Some researchers have noted the presence of “tragic losses” as a trigger for suicide (25,31,82). The evidence for a relationship between dire losses, despair, and patient suicide is mixed. In a study of 20 people with schizophrenia who committed suicide, results indicated they were less likely to have experienced stressful events (e.g., death of a loved one, divorce) prior to death than the matched group of normal controls who had also been suicidal.

Conversely, Cotton, Drake, & Gates (32) completed a unique study whereby 20 psychotherapists were interviewed, all of whom had treated patients with schizophrenia who eventually committed suicide. In these interviews, the clinicians stressed the value of interpersonal relationships for people with schizophrenia, and underscored the importance of assisting patients when such relationships are jeopardized or lost. It was further noted that more than 50% of the patients who had committed suicide experienced significant losses in their social support network within three months prior to death.

Although it is critical to question *why* the loss of social support increases the risk of suicide, it is also important to consider the contrary perspective. Why do those with strong social support networks have a decreased risk of suicide? What factors seem to “protect” those with close family, friends, or mental health providers from considering or attempting suicide?

Studying why people choose to live versus narrowly studying why people choose to die could help identify elements that insulate patients. The identification of protective elements would allow clinicians to not only minimize patient risk factors, but to also bolster modifiable protective factors. This combination would lead to more comprehensive approaches in suicide prevention. The next section addresses these topics by identifying the few protective factors that have been studied, and by proposing directions for further advancements in the area.

Protective Factors

In a recent supplement of the *American Journal of Psychiatry* (5) dedicated solely to the treatment of suicide, several factors were cited as having a “protective effect” for suicide. Several of the protective factors listed were merely the converse of various aforementioned risk factors: positive social support, strong therapeutic relationships with mental health providers, and religiosity. Other factors such as having children in the home, being pregnant, or possessing a sense of responsibility to one’s family are perhaps “expected” in light of the relationship between social support and suicidality.

The delineation of such factors would lead one to believe protective factors are simply an inversion of risk factors (e.g., minimal social support equals higher suicide risk, strong social support equals lower suicide risk). However, several factors highlighted in the *American Journal of Psychiatry* suicide supplement (5) move beyond this dichotomy and begin to inform hypotheses about the characteristics of non-suicidal patients. These factors were namely: (a) positive coping strategies, (b) efficacious problem-solving skills, and (c) general life satisfaction. Thus protective factors may equate to more than the sum of inverted risk factors (see Table 3).

Suicide Protective Factors Among People with Schizophrenia

Most studies investigating protective factors have not sampled people with schizophrenia, nor have they specifically focused on suicidal ideation or attempts. However, two contemporary studies do bear mention as they provide information about the benefits of providing effective pharmacologic treatment to this population, and the characteristics of nonsuicidal control subjects.

The first was a study measuring the effectiveness of medication in reducing suicidality among patients with schizophrenia or schizoaffective disorder known as the International Suicide Prevention Trial (InterSePT) (83–85). The InterSePT was a multicenter, randomized study that followed 980 patients who were considered to be at high risk for suicide. Results indicated that patients treated with Clozapine required fewer hospitalizations or interventions to prevent suicide, required fewer adjunct antidepressants, and were less apt to attempt suicide or actually commit suicide during the study than those treated with Olanzapine (83). The promising results of this research may spur other investigations regarding the mediating effects of antipsychotic medications among patients who are suicidal.

In a different study comparing 63 patients with schizophrenia who committed suicide to 63 controls, DeHert, McKenzie, and Peuskens (34) investigated the predictability of risk factors, but also assessed the presence of several protective factors. Participants were selected from records of hospitalized patients under the age of 30 who had been diagnosed with schizophrenia or schizoaffective disorder in Belgium between 1973–1992. Death records were retrieved for all patients who had died, and those who committed suicide were then matched with controls by age, sex, schizophrenia subtype, and year of index admission. The nonsuicidal controls were more likely to have received community-based care, were four times more likely to have engaged in “useful daily activities,” and were more likely to be symptom-free.

Protective Factors for Suicide in Other Populations

Given so few studies have specifically focused on suicidality among people with schizophrenia, a more broad-based discussion of suicide protective factors is warranted. Malone et al. (86) investigated the protective factors among a group of inpatients diagnosed with major depression. Eighty-four patients' level of depression, hopelessness, psychopathology, “reasons for living,” and severity of recent life events were assessed. Patients' level of current suicidal ideation, past level of intent, and overall history of suicidal acts (including any resulting medical injuries) were also measured. The patients were then divided into two groups: those who had attempted suicide ($n = 45$) and those who had not ($n = 39$).

The patients who had attempted suicide scored significantly higher on measures of hopelessness, depression, and suicidal ideation. Patients who had not attempted suicide scored significantly higher on the “Reasons for Living Inventory” (86,87). Specifically, the nonattemptors exhibited greater moral objections to suicide, stronger fears of social disapproval if they attempted suicide, and a more intense fear of suicide itself. Nonattemptors further demonstrated higher levels of responsibility toward their families, as well as harder survival and coping beliefs.

Moreover, scores on the Reasons for Living Inventory were inversely correlated with depression, hopelessness, and suicidal ideation scores. As a result, Malone et al. (86) emphasized how

“clinical suicidality was highly significantly inversely correlated with reasons for living” (p. 1086), and suggested the need to replicate such findings with other patient populations (namely patients with bi-polar disorder or schizophrenia).

In a more broad-based study of 298 Canadian undergraduate students, Edwards and Holden (88) investigated the link between coping styles, meaning in life, and suicidal manifestations. Participants completed measures of coping strategies, sense of coherence, hopelessness, purpose in life, and suicidal ideation/ suicide attempts. Correlational results revealed a positive relationship between “emotion-oriented coping” (attempting to simply control distress, often via avoidance, versus actively problem-solving) and suicidal ideation as well as previous suicide attempts. Conversely, suicidal ideation exhibited significant negative correlations with a sense of coherence and purpose in life.

When the sample was dichotomized into groups of previous suicide attemptors ($n = 22$) and nonattemptors ($n = 276$), the attemptors were found to have a lower sense of coherence and higher emotion-oriented coping. Men and women also differed on the factors predicting ideation and future attempts. For example, among women, the magnitude of the relationship between coping style and suicidal ideation was more strongly diminished by a higher sense of life meaning. In sum, the researchers proposed “suicide prevention and intervention may be enhanced through the use of activities designed to increase life meaning” (p. 1146), and furthermore suggested treatment programs could help individuals learn more effective, active coping strategies as a means of lowering suicidal susceptibility.

Overall, studies have indicated suicidality is lessened by the presence of social support, general life satisfaction, purposefulness, useful daily activities, and active coping strategies. Although these dimensions have not been systematically applied to suicide prevention among people with schizophrenia, they clearly are worthy of investigation.

One way to expand our knowledge of these factors would involve turning to the study of resiliency. Resiliency is a field of inquiry that investigates how/why some people exhibit hardiness in the face of life adversity while seeming to develop more determination in the process. This field of study could enrich our current paradigm given its focus on “inner resources,” many of which are malleable in the face of mental health intervention. By understanding the basis of resiliency we can more readily explain a) why some people are not suicidal in the face of adversity, b) how *inner* resources play a role in suicide prevention, and c) how the application of resiliency principles may ultimately help our patients garner more hardiness in general. An overview of resiliency theory and a discussion of its place in suicide prevention are provided next.

Resiliency

“Men shall learn wisdom, by affliction schooled.”—Aeschylus (525–456 B.C.)

While there are no empirical studies linking suicide among people with schizophrenia and resiliency, the connection between the two has been gradually gaining momentum as a course of study. For example, in order to explore the connection between resiliency and suicide, Shulman (89) investigated the life of Franz Kafka, the prolific German writer who frequently contemplated suicide. Franz Kafka's writings highlighted chronic self-loathing, a noteworthy level of despair, a reverence for others who committed suicide, and a preoccupation with his own death. Conversely, Kafka's remarkable coping abilities, productivity, and ability to love were also identified. In fact, despite Kafka's many broodings, he was able to grow as a writer, maintain work as an attorney, and experience long-lasting friendships (particularly with Max Brod who later took the lead in publishing Kafka's works posthumously). Thus Kafka's ability to resist chronic suicidal ideation while leading a productive life exemplifies "resilience."

Specifically, Shulman (89) proposed that resilience occurs "when coping leads to transformation," and/ or being able to "overcome obstacles while becoming more capable in the process" (p. 31). In order to achieve this type of resilience, several of the following factors are influential. First, resilient individuals frequently possess supportive networks of people. Second, a concern for others is usually exhibited — often in the form of helpfulness or kindness (which was often described as one of Kafka's defining features). Third, a level of spirituality or philosophical strength often anchors their worldview. The belief in something greater can help people cope with challenges and bring meaning to their lives. Fourth, characteristics such as humor, intelligence, and physical attractiveness often help people remain resilient. Finally, resilient people possess different methods of coping. They tend to utilize "active coping strategies" and exhibit multiple coping strategies in times of trouble (rather than relying on a single one). The combination of these factors may allow people to profit from crises in a way that facilitates personal growth.

These characteristics fit well with the more broad definition of resilience put forth by Richardson (90). Similar to the notion of resilience being above and beyond "coping well" due to its inclusion of a self-growth component, Richardson defined

resilience as "the motivational force within everyone that drives them to pursue wisdom, self-actualization, and altruism and to be in harmony with a spiritual source of strength" (p. 309).

The study of resiliency has ranged from identifying what types of people succeed while living in high-risk environments (91), to defining what qualities are possessed by resilient people (i.e., optimism, faith, self-determination, wisdom, excellence, self-control, gratitude, hope, humility) (78), to investigating the motivational forces behind resiliency (90,92). Others have begun to investigate the connection between resiliency and secure attachment styles in childhood and adolescence (91). An additional model of the neurochemical response patterns of resilience has recently been proposed, with striking implications for the importance of the amygdala, nucleus accumbens, and medial prefrontal cortex as psychobiological mechanisms (93).

As a means of learning more about resilience among those living with mental illness, Marsh et al. (94) conducted a national survey of family members who had a mentally ill relative. All of the 131 participants were members of patients' nuclear families and were recruited from the National Alliance for the Mentally Ill (NAMI) directory. Approximately 67% of the respondents' relatives were diagnosed with schizophrenia or schizoaffective disorder. The survey offered open-ended questions asking whether any personal or family resilience emerged as a result of dealing with the relative's mental illness. Survey items also asked about any particular contributions made by the mentally ill family member, and whether the family members had observed any adaptation processes or levels of recovery among themselves or within the identified patient.

Eighty seven percent of the participants self-identified as possessing "family resilience," 75% stated the mentally ill family member exhibited resilience, and nearly all of the family members (99.2%) reported being resilient themselves. Of the 75% who believed their mentally ill family member was resilient, the most common qualities cited were: positive personal qualities (e.g., generosity, gentleness), potential for recovery, contributions to the family and other patients, and contributions to society as a whole and the

Table 3 Protective Factors Against Suicide

| Protective Factor | Comment | Sample Reference |
|--------------------------|--|--|
| Antipsychotic medication | Patients treated with Clozapine shown to require fewer interventions to prevent suicide, less apt to attempt or commit suicide | Meltzer et al. (2003) (83) |
| Social support | Strong social connections with family, friends, or mental health providers tend to mediate suicidality | Cotton, Drake, & Gates (1985) (32) |
| Positive coping skills | Use of multiple coping skills; use of task-oriented coping skills serve to mitigate feelings of hopelessness and suicidality | Edwards & Holden (2003) (88) |
| Life satisfaction | General satisfaction with life, reasons for living, and the inclusion of "useful daily activities" decrease propensity for suicide | Malone, Oquendo, Haas, Ellis, Li, & Mann (2000) (86) |
| Resilience | Characteristics of resiliency that motivate people to cope and subsequently grow from life's adversities may temper suicide risk | Richardson (2002) (90) |

mental health system in particular (e.g., serving as consumer advocates or peer educators). Although many believed their family was more cohesive, committed, and resilient as a result of mental illness, the participants also wanted the researchers to know it was not easy. In conclusion, Marsh et al. (94) suggested "services for families should be designed not only to reduce family burden, but also to maximize family resilience" (p. 11).

CONCLUSION

Suicide remains the leading cause of premature death among people with schizophrenia (9,10), underscoring the need for effective suicide prevention within this population. Efforts to minimize suicidal ideation and suicide attempts have largely focused on the identification of risk factors. The following risk factors have been consistently shown to relate to elevated levels of suicidality among people with schizophrenia: male gender, young age, comorbid depression, a severe level of illness, previous suicide attempts, low social support, and a recent diagnosis or hospital discharge. Other risk factors have proven valuable but are less consistently supported in the literature: the presence of command hallucinations, low and high levels of premorbid functioning, hopelessness, higher antipsychotic medication doses, histories of violence, and recent tragic losses.

In addition to the risk factors outlined for this population, other investigators have proposed that protective factors may also mitigate suicidality. Several of these protective factors serve as the inverse of risk factors: the presence of strong social support including familial relationships, healthy connections with service providers, and religiosity. However, other more intrapsychic factors may also play a role in diminishing suicidal ideation and attempts. These factors include a) positive coping strategies, b) effective problem-solving skills, c) life satisfaction, d) a sense of purpose, and d) meaningfulness in daily activities. We suggest the examination of protective factors logically leads to an appreciation of resiliency in general. Resiliency theory serves as the bedrock for understanding how individuals demonstrate hardiness even in the face of suffering, and it is possible that resiliency is much more common than once believed (94,95).

Future suicide research may well test the treatment effectiveness of interventions that combine remediation of risk factors with enhancement of protective factors such as coping skills, reasons for living, and resiliency. In fact, protective factors are more modifiable than many of the risk factors (e.g., age, gender, severity of illness) thereby allowing for greater professional intervention. Perhaps future studies could measure the outcomes of suicidal interventions that directly measure reasons for living after providing specific intervention in the development of useful daily activities, increased social contact (conceivably even participation in peer mentoring groups), and psycho-educational groups focused on positive coping strategies.

In conclusion, suicide prevention has the potential of becoming much more than the deterrent of self-harm. Building patients' social support networks, teaching positive coping skills, and infusing meaningfulness into daily activities can all help patients become the resilient, productive members of society that their families believe they can be. It is this type of outcome that is perhaps the greatest goal of suicide intervention.

REFERENCES

- Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. www.cdc.gov/factsheets/suifacts.htm (accessed Jan 2003)
- Hoyert DL, Kochanek KD, Murphy SL: Deaths: Final data for 1997. In: *National Vital Statistics Reports Vol 47 (19)*. Hyattsville, MD: National Center for Health Statistics, 1999
- Surgeon General Call to Action to Prevent Suicide (1999). Available at <http://www.surgeongeneral.gov/library/calltoaction/fact1.htm> (accessed April 2004)
- Kaplan HI, Sadock BJ: *Synopsis of Psychiatry*. Baltimore: Williams & Wilkins, 1991
- American Psychiatric Association: Practice guideline for the assessment and treatment of patients with suicidal behavior. *Am J Psychiatry* 1995; 160
- Lyon DE, Chase LS, Farrell SP: Using an interview guide to assess suicidal ideation. *Nurse Pract* 2002; 27:26-29
- Conwell Y, Duberstein PR, Caine ED: Risk factors for suicide in later life. *Biol Psychiatry* 2002; 52:193-204
- Henriksson MM, Aro HM, Marttunen MJ, Heikkinen ME, Isometsa ET, Kuoppasalmi KI, Lonnqvist JK: Mental disorders and comorbidity in suicide. *Am J Psychiatry* 1993; 150:935-940
- Allebeck P, Wistedt B: Mortality in schizophrenia: A ten-year follow-up based on the Stockholm County inpatient register. *Arch Gen Psychiatry* 1986; 43:650-653
- Caldwell CB, Gottesman II: Schizophrenics kill themselves too: A review of risk factors for suicide. *Schizophr Bull* 1990; 16:571-589
- Harris EC, Barraclough B: Suicide as an outcome for mental disorders. A meta-analysis. *Br J Psychiatry* 1997; 170:205-28
- Nasrallah HA, Smeltzer DJ: *Contemporary Diagnosis and Management of The Patient with Schizophrenia*. Newton, PA: Handbooks in Health Care, 2002
- Breier A, Schreiber JL, Dyer J, Pickar D: National Institute of Mental Health longitudinal study of chronic schizophrenia: Prognosis and predictors of outcome. *Arch Gen Psychiatry* 1991; 48:239-246
- Roy A: Depression, attempted suicide, and suicide in patients with chronic schizophrenia. *Psychiatr Clin North Am* 1986; 9:193-206
- Allebeck P: Schizophrenia: A life-shortening disease. *Schizophr Bull* 1989; 15:81-89
- Drake RE, Gates C, Whitaker A, Cotton PG: Suicide among schizophrenics: A review. *Compr Psychiatry* 1985; 26:90-100
- Inskip HM, Harris EC, Barraclough B: Lifetime risk of suicide for affective disorder, alcoholism and schizophrenia. *Br J Psychiatry* 1998; 172:35-37

18. Meltzer HY, Okayli G: Reduction of suicidality during clozapine treatment of neuroleptic-resistant schizophrenia: Impact on risk-benefit assessment. *Am J Psychiatry* 1995; 152:183–190
19. Miles CP: Conditions predisposing to suicide: A review. *J Nerv Ment Dis* 1977; 164:231–46
20. Wyatt RJ, Henter I, Leary MC, Taylor E: An economic evaluation of schizophrenia — 1991. *Soc Psychiatry Psychiatr Epidemiol* 1995; 30:196–205
21. U.S.Public Health Services: National strategy for suicide prevention: Goals and objectives for action. Rockville, MD: Public Health Services, 2001
22. Pinninti N, Steer RA, Rissmiller DJ, Nelson S, Beck AT: Use of the Beck Scale for suicide ideation with psychiatric inpatients diagnosed with schizophrenia, schizoaffective, or bipolar disorder. *Behav Res Ther* 2002; 40:1071–1079
23. Lindenmayer JP, Czobor P, Alphas L, Nathan AM, Anand R, Islam Z, Chou JC, InterSePT Study Group: The InterSePT scale for suicidal thinking reliability and validity. *Schizophr Res* 2003; 63:161–170
24. Allebeck P, Varla A, Kristjansson E, Wistedt B: Risk factors for suicide among patients with schizophrenia. *Acta Psychiatr Scand* 1987; 76:414–419
25. Caldwell CB, Gottesman II: Schizophrenia—a high risk factor for suicide: Clues to risk reduction. *Suicide Life Threat Behav* 1992; 22:479–493
26. Roy A: Suicide in schizophrenia. *International Review of Psychiatry* 1992; 4:205–209
27. Modestin J, Zarro I, Waldvogel D: A study of suicide in schizophrenic in-patients. *Br J Psychiatry* 1992; 160:398–401
28. Heila H, Isometsa ET, Henriksson MM, Heikkinen ME, Marttunen MJ, Lonnqvist JK: Suicide and schizophrenia: A nationwide psychological autopsy study on age- and sex-specific clinical characteristics of 92 suicide victims with schizophrenia. *Am J Psychiatry* 1997; 154:1235–1242
29. Cannon M, Buckley P, Larkin C: Suicide in schizophrenia. *Irish Journal of Psychological Medicine* 1991; 8:19–21
30. Cheng KK, Leung CM, Lo WH, Lam TH: Risk factors of suicide among schizophrenics. *Acta Psychiatr Scand* 1990; 81:220–4
31. Tandon R, Jibson MD: Suicidal behavior in schizophrenia: Diagnosis, neurobiology, and treatment implications. *Curr Opin Psychiatry* 2003; 16:193–197
32. Cotton PG, Drake RE, Gates C: Critical treatment issues in suicide among schizophrenics. *Hosp Community Psychiatry* 1985; 36:534–536
33. Pinikahana J, Happell B, Keks NA: Suicide and schizophrenia: A review of literature for the decade (1990–1999) and implications for mental health nursing. *Issues Ment Health Nurs* 2003; 24:27–43
34. De Hert M, McKenzie K, Peuskens J: Risk factors for suicide in young people suffering from schizophrenia: A long-term follow-up study. *Schizophr Res* 2001; 47:127–134
35. Yarden PE: Observations on suicide in chronic schizophrenics. *Compr Psychiatry* 1974; 15:325–33
36. Siris SG: Suicide and schizophrenia. *J Psychopharmacol* 2001; 15:127–135
37. Raymont V: Suicide in schizophrenia — how can research influence training and clinical practice? *Psychiatric Bulletin* 2001; 25:46–50
38. Harkavy-Friedman JM, Nelson EA: Assessment and intervention for the suicidal patient with schizophrenia. *Psychiatr Q* 1997; 68:361–375
39. Roy A: Suicide in chronic schizophrenia. *Br J Psychiatry* 1982; 141:171–177
40. Henriksson MM, Marttunen MJ, Isometsa ET, Heikkinen ME, Aro HM, Kuoppasalmi KI, Lonnqvist JK: Mental disorders in elderly suicide. *Int Psychogeriatr* 1995; 7:275–286
41. Conwell Y, Duberstein PR, Cox C, Herrmann JH, Forbes NT, Caine ED: Relationships of age and Axis I diagnoses in victims of completed suicide: A psychological autopsy study. *Am J Psychiatry* 1996; 153:1001–1008
42. Gut-Fayand A, Dervaux A, Olie JP, Loo H, Poirier MF, Krebs MO: Substance abuse and suicidality in schizophrenia: A common risk factor linked to impulsivity. *Psychiatry Res* 2001; 102:65–72
43. Roy A, Draper R: Suicide among psychiatric hospital in-patients. *Psychol Med* 1995; 25:199–202
44. Rossau CD, Mortensen PB: Risk factors for suicide in patients with schizophrenia: Nested case-control study. *Br J Psychiatry* 1997; 171:355–359
45. McGlashan TH, Carpenter WT: Postpsychotic depression in schizophrenia. *Arch Gen Psychiatry* 1976; 3:231–239
46. Siris SG: Diagnosis of secondary depression in schizophrenia: Implications for DSM-IV. *Schizophr Bull* 1991; 17:75–98
47. Pompili M, Mancinelli I, Tatarelli R: Suicide and schizophrenia. *Psychiatr Serv* 2003; 54:747–748
48. Breier A, Astrachan BM: Characterization of schizophrenic patients who commit suicide. *Am J Psychiatry* 1984; 141:206–209
49. Osby U, Correia N, Brandt L, Ekblom A, Sparen P: Mortality and causes of death in schizophrenia in Stockholm County, Sweden. *Schizophr Res* 2000; 45:21–28
50. Cohen LJ, Test MA, Brown RL: Suicide and schizophrenia: Data from a prospective community treatment study. *Am J Psychiatry* 1990; 147:602–607
51. Andia AM, Zisook S, Heaton RK, Hesselink J, Jernigan T, Kuck J, Moranville J, Braff DL: Gender differences in schizophrenia. *J Nerv Ment Dis* 1995; 183:522–528
52. Copas JB, Robin A: Suicide in psychiatric in-patients. *Br J Psychiatry* 1982; 141:503–511
53. Black D, Winokur G, Warrach G: Suicide in schizophrenia: The Iowa Linkage Study. *J Clin Psychiatry* 1985; 46:14–17
54. Halbreich U, Kahn LS: Hormonal aspects of schizophrenias: An overview. *Psychoneuroendocrinology* 2003; 28:1–16
55. Lindamer LA, Lohr JB, Harris MJ, Jeste DV: Gender, estrogen, and schizophrenia. *Psychopharmacol Bull* 1997; 33:221–228
56. Ostlund H, Keller E, Hurd YL: Estrogen receptor gene expression in relation to neuropsychiatric disorders. *Ann N Y Acad Sci* 2003; 1007:54–63
57. Evenson RC, Wood JB, Nuttall EA, Cho DW: Suicide rates among public mental health patients. *Acta Psychiatr Scand* 1982; 66:254–264
58. Waern M, Runeson BS, Allebeck P, Beskow J, Rubenowitz E, Skoog I, Wilhelmsson K: Mental disorder in elderly suicides: A case-control study. *Am J Psychiatry* 2002; 159:450–455
59. Mann JJ: Neurobiology of suicidal behaviour. *Nat Rev Neurosci* 2003; 4:819–828
60. Mann JJ, Malone KM, Nielsen DA, Goldman D, Erdos J, Gelernter J: Possible association of a polymorphism of the tryptophan hydroxylase gene with suicidal behavior in depressed patients. *Am J Psychiatry* 1997; 154:1451–1453
61. Lowther S, De Paermentier F, Cheetham SC, Crompton MR, Katona CL, Horton RW: 5-HT_{1A} receptor binding sites in

- post-mortem brain samples from depressed suicides and controls. *J Affect Disord* 1997; 42:199–207
62. Chong SA, Lee WL, Tan CH, Tay AH, Chan AO, Tan EC: Attempted suicide and polymorphism of the serotonin transporter gene in Chinese patients with schizophrenia. *Psychiatry Res* 2000; 97:101–106
 63. Huang YY, Oquendo MA, Friedman JM, Greenhill LL, Brodsky B, Malone KM, Khait V, Mann JJ: Substance abuse disorder and major depression are associated with the human 5-HT1B receptor gene (HTR1B) G861C polymorphism. *Neuropsychopharmacology* 2003; 28:163–169
 64. Arranz B, Eriksson A, Mellerup E, Plenge P, Marcusson J: Brain 5-HT1A, 5-HT1D, and 5-HT2 receptors in suicide victims. *Biol Psychiatry* 1994; 35:457–463
 65. Gelernter J, Kranzler H, Lacobelle J: Population studies of polymorphisms at loci of neuropsychiatric interest (tryptophan hydroxylase (TPH), dopamine transporter protein (SLC6A3), D3 dopamine receptor (DRD3), apolipoprotein E (APOE), mu opioid receptor (OPRM1), and ciliary neurotrophic factor (CNTF)). *Genomics* 1998; 52:289–297
 66. Virkkunen M: Suicide linked to homicide. *Psychiatr Q* 1974; 48:276–282
 67. Levy S, Southcombe RH: Suicide in a state hospital for the mentally ill. *J Nerv Ment Dis* 1953; 117:504–514
 68. Fenton WS, McGlashan TH, Victor BJ, Blyler CR: Symptoms, subtype, and suicidality in patients with schizophrenia spectrum disorders. *Am J Psychiatry* 1997; 154:199–204
 69. Heila H, Isometsa ET, Henriksson MM, Heikkinen ME, Marttunen MJ, Lonnqvist JK: Suicide victims with schizophrenia in different treatment phases and adequacy of antipsychotic medication. *J Clin Psychiatry* 1999; 60:200–208
 70. Candido CL, Romney DM: Depression in paranoid and nonparanoid schizophrenic patients compared with major depressive disorder. *J Affect Disord* 2002; 70:261–271
 71. Zisook S, Byrd D, Kuck J, Jeste DV: Command hallucinations in outpatients with schizophrenia. *J Clin Psychiatry* 1995; 56:462–465
 72. Nordentoft M, Jeppesen P, Abel M, Kassow P, Petersen L, Thorup A, Krarup G, Hemmingsen R, Jorgensen P: OPUS study: suicidal behaviour, suicidal ideation and hopelessness among patients with first-episode psychosis. One-year follow-up of a randomised controlled trial. *Br J Psychiatry* 2002; 181:98–106
 73. Kaplan KJ, Harrow M: Psychosis and functioning as risk factors for later suicidal activity among schizophrenia and schizoaffective patients: A disease-based interactive model. *Suicide Life Threat Behav* 1999; 29:10–24
 74. Beck AT, Weissman A, Lester D, Trexler L: The measurement of pessimism: The hopelessness scale. *J Consult Clin Psychol* 1974; 42:861–865
 75. Drake RE, Cotton PG: Depression, hopelessness and suicide in chronic schizophrenia. *Br J Psychiatry* 1986; 148:554–559
 76. Beck AT, Steer RA, Kovacs M, Garrison B: Hopelessness and eventual suicide: A 10-year prospective study of patients hospitalized with suicidal ideation. *Am J Psychiatry* 1985; 142:559–563
 77. Kaslow NJ, Reviere SL, Chance SE, Rogers JH, Hatcher CA, Wasserman F, Smith L, Jessee S, James ME, Seelig B: An empirical study of the psychodynamics of suicide. *J Am Psychoanal Assoc* 1998; 46:777–796
 78. Menninger K: Psychoanalytic aspects of suicide. *Psychoanalysis* 1933; 14:376–390
 79. Conner KR, Conwell Y, Duberstein PR, Eberly S: Aggression in suicide among adults age 50 and over. *Am J Geriatr Psychiatry* 2004; 12:37–42
 80. Conner KR, Duberstein PR, Conwell Y, et al.: Reactive aggression: Theory and evidence. *Aggression and Violent Behavior* 2002; 259:1–20
 81. Conwell Y, Lyness JM, Duberstein P, Cox C, Seidlitz L, DiGiorgio A, Caine ED: Completed suicide among older patients in primary care practices: A controlled study. *J Am Geriatr Soc* 2000; 48:23–29
 82. Heila H, Heikkinen ME, Isometsa ET, Henriksson MM, Marttunen MJ, Lonnqvist JK: Life events and completed suicide in schizophrenia: A comparison of suicide victims with and without schizophrenia. *Schizophr Bull* 1999; 25:519–531
 83. Meltzer HY, Alphas L, Green AI, Altamura AC, Anand R, Bertoldi A, Bourgeois M, Chouinard G, Islam MZ, Kane J, Krishnan R, Lindenmayer JP, Potkin S: International Suicide Prevention Trial Study Group: Clozapine treatment for suicidality in schizophrenia: International Suicide Prevention Trial (InterSePT). *Arch Gen Psychiatry* 2003; 60:82–91
 84. Meltzer HY, Anand R, Alphas L: Reducing suicide risk in schizophrenia: Focus on the role of Clozapine. *CNS Drugs* 2000; 14:355–365
 85. Meltzer HY: Suicide and schizophrenia: Clozapine and the InterSePT Study. *J Clin Psychiatry* 1999; 60:47–50
 86. Malone KM, Oquendo MA, Haas GL, Ellis SP, Li S, Mann JJ: Protective factors against suicidal acts in major depression: Reasons for living. *Am J Psychiatry* 2000; 157:1084–1088
 87. Linehan MM, Goodstein JL, Nielsen SL, Chiles JA: Reasons for staying alive when you are thinking of killing yourself: The reasons for living inventory. *J Consult Clin Psychol* 1983; 51:276–286
 88. Edwards MJ, Holden RR: Coping, meaning in life, and suicidal manifestations: Examining gender differences. *J Clin Psychol* 2003; 59:1133–1150
 89. Shulman E: Vulnerability factors in Sylvia Plath's suicide. *Death Stud* 1998; 22:597–613
 90. Richardson GE: The metatheory of resilience and resiliency. *J Clin Psychol* 2002; 58:307–321
 91. Resilience and Vulnerability: *Adaptation in the Context of Childhood Adversities*. New York, NY: Cambridge University Press, 2003
 92. Lifton R: *The Protean Self: Human Resilience in an Age of Fragmentation*. New York, NY: Basic Books, 1994
 93. Charney DS: Psychobiological mechanisms of resilience and vulnerability: implications for successful adaptation to extreme stress. *Am J Psychiatry* 2004; 161:195–216
 94. Marsh DT, Lefley HP, Evans-Rhodes D, Ansell VI, Doerzbacher BM, LaBarbera L, Paluzzi JE: The family experience of mental illness: Evidence for resilience. *Psychiatric Rehabilitation Journal* 1996; 20:3–12
 95. Bonanno GA: Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events? *Am Psychol* 2004; 59:20–28