Published in final edited form as:
Am J Geriatr Psychiatry. 2012 April ; 20(4): 327–336. doi:10.1097/JGP.0b013e318233171a.

Clinical Correlates of Suicidal Thoughts in Patients with Advanced Cancer

Ryan J. Spencer, MD[1], **Alaka Ray, MD**[2], **William F. Pirl, MD, MPH**[3], and **Holly G. Prigerson, PhD**[4,5]

[1]Department of Obstetrics, Gynecology and Reproductive Medicine, Brigham and Women's Hospital, Boston, MA 02115

[2]Department of Medicine, Massachusetts General Hospital, Boston, MA 02114

[3]Department of Psychiatry, Massachusetts General Hospital, Boston, MA 02114

[4]Department of Psychiatry, Brigham and Women's Hospital, Boston, MA 02115

[5]Center for Psycho-Oncology and Palliative Care Research, Dana-Farber Cancer Institute, Boston, MA, 02115

Abstract

Objective—Cancer patients are at heightened risk of suicide. Clinical correlates of suicidal ideation in advanced cancer patients were examined to identify those at risk and to inform the development of interventions to reduce suicidal ideation in this vulnerable group.

Methods—Coping with Cancer (CwC) is an NCI- and NIMH-funded multi-institutional investigation examining psychosocial influences on the quality of life and care of advanced cancer patients. Baseline face-to-face interviews that assessed mental and physical functioning, coping, spirituality, and use of mental health services were conducted with 700 advanced cancer patients.

Results—Compared to patients without suicidal ideation, the 8.9% of patients who reported suicidal thoughts were more likely to be white and report no affiliation with an organized religion ($p<.05$). Adjusted analyses revealed that cancer patients who met criteria for current Panic Disorder [adjusted OR (95% CI) 3.24 (1.01, 10.4)] and Posttraumatic Stress Disorder [3.97 (1.13, 14.1)], who accessed mental health services [3.70 (2.07, 6.67)], particularly psychotherapy [2.62 (1.20,5.71)], who were not feeling well physically, and who lacked a sense of self-efficacy, spirituality, and being supported were more likely than others to report thoughts of suicide ($p<.05$).

Conclusions—Advanced cancer patients who report suicidal thoughts are more likely to meet criteria for posttraumatic stress disorder and panic disorder, feel unsupported, lack a religious affiliation, spirituality, and a sense of self-efficacy, and experience more physical distress. Palliative care interventions that promote a sense of self-efficacy, spirituality, and support while

Address correspondence and reprint requests to: Holly G. Prigerson, PhD, Department of Psychiatry, Brigham and Women's Hospital, Harvard Medical School, Center for Psycho-oncology and Palliative Care Research, Dana-Farber Cancer Institute, 268 Smith Building, 44 Binney Street, Boston, MA 02115, (P) 617-632-2369; (E) Holly_Prigerson@dfci.harvard.edu.

Authors' disclosures: The authors indicated no potential conflicts of interest or financial disclosures. All authors have read and approved the manuscript.

IRB approval and informed consent: The study was approved by the human subjects committee prior to the research being conducted at each institution and all participants provided written informed consent.

Data access and responsibility: Dr. Prigerson, the principal investigator for this study, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

minimizing physical distress may offer promise for reducing suicidal thoughts in this at-risk group.

Keywords

Cancer; terminal illness; suicidal ideation; depression; panic disorder; mental health

INTRODUCTION

Within this decade, the World Health Organization (WHO) listed suicide as a top cause of death worldwide[1]. Suicide represents an adverse outcome regardless of an individual's health status[2]. Suicide is known to be a significant cause of mortality among cancer patients [3,4] with the suicide rate of cancer patients being twice that of the baseline rate in the general population[5].

Many researchers have examined advanced cancer patients' attitudes towards the "wish for hastened death" with particular focus on the issues of euthanasia and physician-assisted suicide[6–11]. Various predictors of a "wish for hastened death" among terminally ill patients have been described in the literature and include: feelings of depression and anxiety, physical symptom burden, perception of being a burden, lower levels of social support and feeling hopeless[7,11]. There are, unfortunately, few studies that specifically examine suicidality in patients with advanced cancer. It is not yet clear if suicidal ideation in patients with advanced cancer is related to important clinical factors such as physical symptoms, psychiatric diagnoses, and the discussion and/or use of mental health services. Knowledge of the correlates of suicidal thoughts among terminally ill cancer patients can assist geriatric psychiatrists and palliative care clinicians in the identification of vulnerable patients and can inform the development of interventions to reduce their risk of suicide.

The ability of geriatric psychiatrists and palliative care clinicians to understand factors contributing to suicidal thoughts in cancer patients is essential to their efforts at prevention[12,13]. Unfortunately, results of studies to identify patients with suicidal thoughts have been mixed. Although a recent study reported no specific predictors for suicidal ideation among cancer patients[14], others have found that depressive disorders, history of mental illness, chronic medical illness[15], pain, declining physical function[16], feelings of hopelessness[17], and coping style both in well and ill populations[18–19] to be associated with suicidal ideation. Whereas a report published in 2008 found that 7.8% of cancer patients had thoughts of hurting themselves or being "better off dead[20]," multiple studies show that cancer patients who were recently diagnosed[21–23] and those with metastases[23] are at greatest risk.

The primary aim of this study is to examine socio-demographic characteristics and other possible correlates of suicidal ideation, including patients' physical performance status, presence of *DSM-IV* diagnosed mental disorders, use of mental health services, terminal illness awareness, self-efficacy, coping styles, and spirituality. We hypothesized that there would be no differences in demographic characteristics related to suicidal ideation in advanced cancer patients. We further hypothesized that suicidal ideation would be more common in patients meeting criteria for Major Depressive Disorder, those who had accessed mental health services, those with poorer physical performance status and increased physical symptom burden, lower levels of religiosity/spirituality, worse quality of life, and an avoidance style of coping with cancer.

METHODS

Study Sample

Patients were recruited from 9/1/2002 to 9/1/2008 into the Coping with Cancer (CwC) study, a multi-institutional investigation of advanced cancer patients and their primary, informal, unpaid caregivers [National Institutes of Health grants MH63892 and CA106370: PI, Prigerson]. Only data from the patient baseline interviews are included in this report. Participating sites included the Yale Cancer Center (New Haven, CT), the Veterans Affairs Connecticut Healthcare System Comprehensive Cancer Clinics (West Haven, CT), Memorial Sloan-Kettering Cancer Center (New York, NY), Simmons Comprehensive Cancer Center (Dallas, TX), and the Parkland Hospital Palliative Care Service (Dallas, TX). Approval was obtained from the human subjects committees of all participating centers; all enrolled patients provided written informed consent.

Oncology staff at each site identified potentially eligible patients. Inclusion criteria for the study were: 1) diagnosis of advanced cancer (presence of distant metastases and failure of first-line chemotherapy); 2) diagnosis at a participating clinic; 3) age ≥20 years; 4) identified unpaid, informal caregiver; and 5) adequate stamina to complete the interview. Patient-caregiver dyads in which either the patient or caregiver met criteria for dementia or delirium (by neuro-behavioral cognitive status exam), or did not speak either English or Spanish were excluded. Trained research staff approached identified patients to offer participation in the study. Once patients' written informed consent was obtained, medical records and clinicians were consulted to confirm eligibility. Of the 993 eligible patients, 718 patients (72.3%) participated in the baseline interview. There were no differences in the socio-demographic characteristics between the participants and nonparticipants, except that participants were more likely to be Hispanic (p=0.005). For the present analysis, we included the 700 patients who provided a response to the question regarding suicidal ideation that forms the basis for this study.

Study Protocol and Measures

Each patient participated in a baseline questionnaire administered by research staff trained at Yale University School of Medicine. Interviewers were required to achieve a level of accuracy based on concordance with the Yale training director's rating of the Structured Clinical Interview for the DSM-IV (SCID) diagnoses (kappa>0.85). Interviews were conducted in English or Spanish and took approximately 45 minutes to complete. Patients received $25 as compensation for completing the interview.

Yale Evaluation of Suicidality—This 13-item structured questionnaire was administered to determine vulnerability to suicide in patients[24]. One item of the questionnaire was deemed the most direct and reproducible assessment of patients' suicidality: "In light of your current circumstances, have you ever had thoughts of killing yourself?" Answer options were, "No," "Possibly," and "Yes." Those who answered "Yes" and "Possibly" were grouped together to create a binary variable where 1=Yes, 0=No.

Demographics and Patient's Cognitive Acceptance of Terminal Illness—Age, sex, race/ethnicity, education, marital status and health insurance coverage were recorded as reported by participants and were collected to control for potential confounders in subsequent analyses. Patients were asked the question, "How would you describe your current health status?" Response options were 1 "Relatively healthy," 2 "Seriously but not terminally ill" and 3 "Seriously and terminally ill." Patients who responded 3 "Seriously and terminally ill" were coded 1 = "terminal illness acknowledgment." Others were coded 2 = "no terminal illness acknowledgment."

Health Status—Patients' functional status was measured by the Karnofsky scale[25,26], where 100 = "Asymptomatic," 60–70 = "Cares for self with/without assistance, but cannot do normal activities," 0 = "Dead." In addition, the Charlson Comorbidity Index[27] was used to determine baseline health status, with higher scores indicating a greater burden of comorbid conditions. Length of survival after the baseline interview was also included.

***DSM-IV* Mental Disorder Diagnoses—**The Structured Clinical Interview for the *DSM-IV* (SCID) Axis I Modules[28] was used to diagnose current (i.e., past 30 day) Major Depressive Disorder (MDD), Post-Traumatic Stress Disorder (PTSD), Panic Disorder (PD), and Generalized Anxiety Disorder (GAD). The SCID has been validated elsewhere[29.] Patients completed the full SCID module for current disorders for which they screened positive.

Mental Health Service Use—Patients completed a structured interview to assess forms of mental health services they had utilized[30.] Specifically, patients were asked if they had discussed their mental health with a clinician at any time before or after receiving their cancer diagnosis, or accessed mental health interventions to help them cope with cancer, and specifically if they had seen a psychotherapist and received antidepressants and/or anxiolytics.

McGill Quality of Life Questionnaire—This questionnaire, designed for patients at all stages of illness, contains items related to global, physical, psychological, emotional and existential well-being[31]. Each item uses a 10-point scale, where 0 is desirable and 10 is undesirable. Items were reverse coded as needed for consistency of presentation. One item related to social support was specifically examined, where the patient was asked to rate the statement "Over the past two days, I have felt supported" on a scale of 0 ("Not at all") to 10 ("Completely").

Religiousness/Spirituality—Items from the NIA/Fetzer Multidimensional Measure of Religiousness/Spirituality for Use in Health Research[32] were included as an assessment of general spiritual experiences. Patients' answers to each of 13 items related to daily spiritual experiences were summed to produce an overall religiousness/spirituality score (Cronbach's alpha = 0.94).

Peacefulness—Patients were asked in the NIA/Fetzer measure to rate the statement "I feel deep inner peace or harmony," on a scale of 1–6, where 1="Many times a day" and 6="Never or almost never." The median response for the study sample was 3 ("Most days"). For analyses, the responses were stratified such that those with responses 3 ("Most days") were coded "1" = "Peaceful"; otherwise responses were coded "2." Steinhauser et al. showed that a one-item assessment of peacefulness was strongly correlated with emotional and spiritual well-being, faith and purpose subscales, and had broad applicability across different definitions of spirituality[33]. We found that this measure was closely associated with better mental health outcomes[34].

General Self-Efficacy—The General Self-Efficacy Scale[35] assessed general confidence in one's ability to adjust to daily challenges (e.g., "I can solve most problems if I invest the necessary effort"). Responses on the 10-item scale range from 1 = "not at all true" to 4 = "exactly true."

Brief Cope—This 15-item structured questionnaire, with proven reliability and validity[36], was administered to examine types of coping strategies, specifically, "Action-based" (e.g. "trying to come up with a strategy about what to do"), "Emotional support-based" (e.g.

"getting comfort or understanding from someone"), or "Avoidance-based" (e.g. "refusing to believe that it has happened").The relevant items were combined to create summative scores of each type of coping.

Statistical Analysis

Patients were grouped based on their responses to a question assessing whether they had actively thought of suicide. T-test or χ^2 statistics were used to determine any differences in sociodemographics or other medical factors between those who reported suicidal thoughts and those who did not. Logistic regression models, both unadjusted and adjusted, were used to compare the effects of current psychiatric disorders, mental health service use, coping, quality of life and cognitive and emotional acceptance of illness on the likelihood of the patient reporting any suicidal ideation. Analyses adjusted for the effects of having no religious affiliation, being white and recruited from Parkland Hospital in all models because they were significant socio-demographic and medical correlates of any suicidal ideation. Additionally, models of the effects of the psychiatric diagnoses included the other examined (competing) psychiatric diagnoses, with the exception of the "any SCID" predictor model. The likelihood ratio test for the set of significant predictors of suicidal ideation = 32.37, df=13, p=0.002. Because the likelihood ratio test was significant, we present p-values without correction for Type I error.

RESULTS

Patient Characteristics

The cohort of 700 advanced cancer patients was 72.2% White, 14.1% Black, 11.5% Hispanic, 1.9% Asian and 51.4% male (Table 1). Patients died a median of 116 days after enrollment and had the following primary cancers: gastrointestinal (24.7%), breast (9%), thoracic (25.9%), other (40.4%). Sixty-two patients (8.9%) reported thoughts of suicide. Although no gender differences emerged, being a non-Hispanic White compared to non-White was associated with a significantly higher prevalence of thinking about suicide and being Black was associated with a significantly lower prevalence. Suicidal ideation was significantly more common in patients who reported that they had no religious affiliation and was significantly less common in patients who were recruited from Parkland Hospital. There was no association between thinking about suicide and age, education, marital status, primary cancer site, physical performance as determined by Karnofsky score and Charlson Comorbidity Index, or health insurance coverage. Based on these results we entered race, not having a religious affiliation, and recruitment from Parkland Hospital as control variables in all subsequent analyses.

Psychological and Physical Factors Associated with Suicidal Ideation

Prevalence of Past 30-day *DSM-IV* Psychiatric Disorders—As the adjusted analyses shown in Table 2 reveal, patients who met SCID-criteria for current Panic Disorder [adjusted OR (95% CI) 3.24 (1.01, 10.4)], current PTSD [3.97 (1.13,14.1)], and any of the assessed SCID disorders (current MDD, GAD, Panic, or PTSD) [6.20 (3.26,11.8)] were significantly more likely to have thoughts of suicide.

Mental Health Service Use—Patients who had discussed mental health concerns with a clinician prior to their cancer diagnosis [4.20 (2.31,7.63)] or after their cancer diagnosis [4.23 (2.25,6.67)] were more likely to have suicidal thoughts. Those who accessed mental health services were also more likely to have suicidal thoughts [3.70 (2.07,6.67)]. When we examined this further, we found that the use of antidepressants or anxiolytics were not associated with suicidal ideation, but psychotherapy was [2.62 (1.20,5.71)]. This was true even in analyses that further controlled for the presence of psychiatric disorders.

Coping, General Self-Efficacy, and Religiousness/Spirituality—Thoughts of suicide were not associated with any of the assessed coping styles. Patients who had high levels of self-efficacy [0.93 (0.86,0.99)] and who were more spiritual [0.98 (0.96,1.00)] were less likely to have thoughts of suicide

Quality of Life—Patients who reported increased levels of feeling "depressed," [1.23 (1.13,1.33)] "nervous and worried," [1.12 (1.03,1.22)] "sad," [1.22 (1.12,1.33)] and "terrified" [1.18 (1.08,1.29)] were more likely to report thoughts of suicide. Patients who felt "completely supported" [0.86 (0.81,0.92)] by their significant others were less likely to report thoughts of suicide. Patients with bothersome physical symptoms [1.01 (1.02,1.00)] were more likely to have thoughts of suicide. Patients who reported feeling "physically well" [0.88 (0.79,0.98)] were less likely to report thoughts of suicide.

Cognitive and Emotional Acceptance of Terminal Illness—Neither terminal illness acknowledgment nor peaceful acceptance of one's illness was significantly associated with suicidal ideation.

COMMENT

This report demonstrates that there are multiple, significant clinical markers that geriatric psychiatrists and palliative care clinicians can use to identify advanced cancer patients with suicidal thoughts. The Coping with Cancer study is among the largest psychiatric epidemiologic studies of advanced cancer patients and, specifically assesses suicidality. It, therefore, provides useful data for elucidating the risk factors that clinicians can use to triage their patients to more rigorous evaluation of potentially self-injurious behaviors. Among the advanced cancer patients in this study, 8.9% reported suicidal thoughts, which is comparable to the rates found in the literature for other groups of cancer patients(6.5–17%)[8,18,19].

In this study, we intentionally used a single-item variable as a screen for suicidal ideation. The utility of single-item screens for the geriatric psychiatrist and palliative care clinician is high due to demands to see an increasing number of patients in shorter periods of time, particularly among terminally ill cancer patients. Single-item screens are useful to help clinicians in all subspecialties rapidly determine who needs further evaluation – be it for psychological co-morbidities, substance abuse, or depression. Single-item screens or questionnaires including a single-item screen for suicidal thoughts have been successfully studied and validated in both the adolescent and primary care settings[37–39]. Walker et al. showed that cancer patients who receive even the lowest score on the single item from the Patient Health Questionnaire-9 (PHQ9) that deals specifically with suicidal ideation were at-risk for suicide and required more detailed evaluation[40]. It was because of these recent reports of the validity, utility, and ease of a single-item screen in a clinical setting that we chose to employ a single-item within this study.

Although several studies have shown that MDD presents a significant risk for suicidal ideation among cancer patients[8,9,18], this study revealed that when statistical confounding influences are included in the modeling of suicidal ideation, the association with MDD fades to a level of marginal statistical significance. Still, the single items that assessed mood specifically (i.e., the McGill "depressed" and "sad" items) remained highly significantly associated with suicidal ideation even after adjustment for significant confounding effects. This suggests that it is the affective component of MDD (i.e., sad mood) that is linked to thoughts of wanting to kill oneself as an advanced cancer patient.

To our knowledge this is the first to demonstrate that Panic Disorder and PTSD are significantly associated with suicidal thoughts, even in adjusted analyses, among terminally

ill cancer patients. Previously, Sareen et al.found that anxiety-based disorders are independent risk factors for suicidality in the general population, and also that an anxiety disorder coexistent with a mood disorder was a stronger risk factor than a mood disorder alone[41]. As the treatment for traumatic stress and panic disorder may differ importantly from the focus of treatments for depression, these findings have clinical significance, especially given recent data on the detrimental effects anxiety disorders may have on advanced cancer patients[42]. Of the patients in our sample who met criteria for current MDD, 37% also met criteria for a co-morbid anxiety disorder (PTSD, PD, or GAD). These results highlight the value of obtaining a thorough psychiatric history from advanced cancer patients and continuing to treat each of those disorders specifically and possibly in combination.

Another clinically relevant finding is that patients with suicidal ideation are more likely to have consulted a mental health professional, both prior to and after their cancer diagnosis, and to have accessed mental health interventions to help them cope with cancer. Although we did not find that patients who received antidepressants or anxiolytics had elevated suicidality, those who reported seeing a psychotherapist were significantly more likely to have suicidal thoughts. One might expect individuals who would be willing to see a psychotherapist to have more severe levels of psychological distress, but when we conducted analyses that further controlled for meeting criteria for any of the examined mood or anxiety disorders, the effect remained. It may be true that patients who see a psychotherapist might be more comfortable reporting suicidal thoughts. However, the results also suggest that the psychotherapy these patients did receive was not helpful at reducing their suicidal ideation. Perhaps psychiatrists and palliative care clinicians might improve upon existing psychotherapies available by targeting some of the issues identified in this report. For example, psychotherapeutic approaches that address fears of the ravages of cancer and/or death, that enhance therapeutic alliance with clinic staff and that promote social support of significant others to offset feelings of not being supported, that address unmet spiritual needs and feelings of helplessness or lack of control associated with low self-efficacy might prove promising targets for psychotherapeutic interventions with advanced cancer patients. The present study is cross sectional and provides limited information on the mental health interventions received, so we have no way of knowing specifics of the psychotherapy the patient received, and neither information on its dose nor duration. These results highlight the need for longitudinal studies to examine much more closely the effects of psychotherapeutic interventions on suicidal ideation among dying cancer patients.

As suggested above, we found that patients with suicidal ideation had lower levels of self-efficacy, or confidence in their ability to overcome challenges, suggesting that strategies to restructure cognition of helplessness to thoughts of agency might be effective in treating suicidal ideation. There has been scant prior examination of religion or spirituality in association with suicidality in cancer patients[9,17]. Patients who reported no religious affiliation were more likely to report suicidal ideation. Patients with suicidal ideation also reported lower levels of religiousness/spirituality, even after adjusting for identifying no religious affiliation. Previously, Tarakeshwar et al. found that positive religious coping resulted in greater quality of life in advanced cancer patients, whereas negative religious coping produced worse psychological outcomes[43]. Thus, referral to chaplaincy may be an effective intervention for religious patients, allowing further exploration of religious concerns[44]. For those without a religious affiliation, there may be religious conflicts the resolution of which might reduce a patient's wish to kill him/herself.

Further research is needed to identify effective strategies for addressing active suicidal ideation, but programs in complementary medicine, such as mindfulness meditation or massage therapy, in combination with psychotherapeutic modalities that incorporate these

approaches may be successful in reducing suicidal ideation in these patients[45], especially since multiple psychotherapeutic approaches have been tested with varying degrees of success with patients at or near the end-of-life[46]. Additionally, dignity therapy has shown promise in alleviating suffering and distress for patients at the end-of-life[47] and since we find that physical and emotional suffering increases suicide risk, this modality may be beneficial in this patient population.

Several studies have found that physical suffering is correlated with "wish for hastened death" as well as with suicidality[8,9,18.] Although our findings support this, we found no difference between these patients and others in health status as measured by Karnofsky score and Charlson Comorbidity Index. It may be that the increased physical suffering experienced by these patients is partially due to their psychological burden[8,48.] It is well known that mood disorders can exacerbate physical symptoms, and it is possible that psychosocial interventions may add significantly to symptom management alone[49]. Enlisting friends and family to demonstrate support for the patient may counter the isolation that may trigger thoughts of wanting to kill oneself.

The lower risk of suicidal ideation among black patients, who were predominantly recruited from Parkland (explaining that result), may be rooted in black attitudes regarding the virtue of struggle when confronting adversity [50] and appear consistent with the lower rates of suicide among blacks in general.[51] Perhaps the greater spirituality of black patients relative to white patients may protect against suicidal thoughts as well.

Some study limitations deserve mention. As mentioned earlier, the use of a single-item variable as a screen for suicidal ideation may be more useful clinically, but more comprehensive assessments will have favorable psychometric properties, and the results reported here should be replicated in analyses that use a broader assessment of suicidality. Also, because this was a cross-sectional analysis, no claims about causality can be made. Additional details of mental health interventions accessed by study patients were not available to us, making it impossible to study the efficacy of specific interventions. Future research should focus on providing a longitudinal assessment of suicidal ideation as it evolves through the illness trajectory and in relation to mental health, as well as on the effectiveness of various mental health interventions in this vulnerable group of patients.

Despite these limitations, this study has certain strengths over others that have focused on the topic of advanced cancer patients and risk for suicide. Our study used a large cohort of 700 patients all of whom had advanced cancer. Cancers were distributed among various primary sites, allowing for greater genaralizability across cancers. In addition, validated scales administered by raters trained to a high standard in the assessment of mental disorders were used.

The findings of this study identify several ways geriatric psychiatrists and palliative care clinicians might reduce suicidal ideation among advanced cancer patients. Specifically, palliative care interventions that promote a sense of self-efficacy, spirituality, and support while minimizing physical distress may offer promise for reducing suicidal thoughts in this at-risk group.

Acknowledgments

This research was supported in part by the following grants to Dr. Prigerson: MH63892 from the National Institute of Mental Health and CA106370 and CA156732 from the National Cancer Institute; a pilot grant from the American Foundation for Suicide Prevention; and the Center for Psycho-Oncology and Palliative Care Research, Dana-Farber Cancer Institute.

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Table 1

Sociodemographic Factors Associated with Suicidal Ideation in Advanced Cancer Patients

		Patient Reports Suicidal Ideation		Comparative Test		
	All patients N = 700	**Yes**	**No**	***t* or χ^2**	***df***	***p* value**
	N [g] (%)	**62 (8.9)**	**638 (91.1)**			
Gender						
Male; N (%)	357 (51.4)	37 (10.4)	320 (89.6)	2.31	1	0.13
Female; N (%)	338 (48.6)	24 (7.1)	314 (92.9)			
Age, yrs; Mean (SD)	59.1 (13.1)	57.5 (12.2)	59.3 (13.2)	1.01	694	0.31
Race/Ethnicity; N (%)				7.65	4	0.11
White, non-Hispanic	**502 (72.2)**	**53 (10.6)**	**449 (89.4)**	**7.16**	**1**	**0.008**
Black, non-Hispanic	**98 (14.1)**	**3 (3.1)**	**95 (96.9)**	**4.66**	**1**	**0.03**
Hispanic	80 (11.5)	4 (5.0)	76 (95.0)	1.61	1	0.20
Asian	13 (1.9)	1 (7.7)	12 (92.3)	0.02	1	0.89
Education, yrs; Mean (SD)	13.0 (3.9)	14.0 (4.9)	12.8 (3.9)	−2.20	694	0.03
Religion; N (%)				**24.2**	**7**	**0.001**
Catholic	297 (42.7)	22 (7.4)	275 (92.6)	1.22	1	0.27
Protestant	130 (18.7)	10 (7.7)	120 (92.0)	0.24	1	0.63
Jewish	33 (4.8)	3 (9.1)	30 (90.9)	0.00	1	0.95
Muslim	7 (1.01	2 (28.6)	5 (71.4)	3.46	1	0.06
Pentecostal	10 (1.4)	0 (0)	10 (100.0)	0.98	1	0.32
Baptist	74 (10.7)	7 (9.5)	67 (90.5)	0.05	1	0.83
Other	110 (15.8)	7 (6.4)	103 (93.6)	0.95	1	0.33
None	**34 (4.9)**	**10 (29.4)**	**24 (70.6)**	**19.0**	**1**	**<0.001**
Marital Status; N(%)						
Married	454 (66.2)	41 (9.0)	413 (91.0)	0.92	1	0.33
Treatment Center; N (%)				13.4	8	0.10
Yale Cancer Center	158 (23.8)	16 (10.1)	142 (89.9)	0.62	1	0.43
VA CT Healthcare System[a]	23 (3.5)	4 (17.4)	19 (82.6)	2.34	1	0.13
Parkland Hospital[b]	**182 (30.4)**	**9 (5.0)**	**173 (95.0)**	**4.26**	**1**	**0.04**

	All patients N = 700	Patient Reports Suicidal Ideation: Yes	Patient Reports Suicidal Ideation: No	Comparative Test: *t* or χ^2	Comparative Test: *df*	Comparative Test: *p* value
	N [g] (%)	62 (8.9)	638 (91.1)			
Simmons Center[c]	20 (3.9)	3 (15.0)	17 (85.0)	0.01	1	0.95
NHOH	142 (21.4)	16 (11.3)	126 (88.7)	1.64	1	0.20
Miscellaneous Other	40 (5.7)	5 (12.5)	35 (87.5)	0.70	1	0.40
Primary Cancer; N (%)				2.67	3	0.45
Breast	61 (9.0)	4 (6.6)	57 (93.4)	0.38	1	0.54
Thoracic	181 (25.9)	19 (10.5)	162 (89.5)	0.81	1	0.37
Gastrointestinal	173 (24.7)	17 (9.8)	156 (90.2)	0.27	1	0.61
Miscellaneous Other	283 (40.4)	23 (7.1)	260 (91.9)	2.31	1	0.13
Karnofsky Score[e]; Mean (SD)	68.1 (17.0)	67.1 (18.9)	68.3 (16.8)	0.49	660	0.62
Charlson Comorbidity Index; Mean (SD)	8.24 (2.68)	7.92 (3.02)	8.26 (2.65)	0.87	670	0.31
Survival from baseline interview[†], days; Mean (SD)	184 (188)	189 (184)	182 (187)	−0.22	336	0.83
Health Insurance;N (%)				1.15	1	0.28
Insured	493 (72.0)	46 (9.3)	447 (90.7)			
Uninsured	192 (28.0)	13 (6.8)	179 (93.2)			

Note: Mean and standard deviation (SD) shown.

[a] VA CT=Veterans Affairs Connecticut Healthcare System Comprehensive Cancer Clinics.

[b] Parkland Hospital=Parkland Hospital Palliative Care Service, Texas.

[c] Simmons Center=Simmons Comprehensive Cancer Center, Texas.

[d] NHOH=New Hampshire Oncology

[e] Karnofsky Score Range: 100 = Asymptomatic, 60–70 = Cares for self with/without assistance, cannot do normal activities, 0 = Dead.

[f] Length of survival from baseline interview obtained from postmortem questionnaire.

[g] 2–3% variations in N are attributable to missing data.

Table 2

Psychological and Physical Factors Associated with Suicidal Ideation in Advanced Cancer Patients (N=700)

	Suicidal Ideation			
	Unadjusted OR (95%CI)	**$p^{\ddagger}$ value**	**Adjusted[§] OR (95%CI)**	**$p^{\ddagger}$ value**
SCID-Diagnosed Mental Disorders				
MDD[a] (current) (7.25%)	**3.65 (1.75,7.63)**	**<0.000**	2.54 (0.99,1.00)	0.051
GAD[b] (current) (2.91%)	3.02 (0.97,9.43)	0.057	1.09 (0.27,4.34)	0.905
PanicD[c] (current) (3.06%)	**4.72 (1.75,12.7)**	**0.002**	**3.24 (1.01,10.4)**	**0.048**
PTSD[d] (current) (2.75%)	**5.46 (2.00,14.9)**	**0.0001**	**3.97 (1.13,14.1)**	**0.032**
AnySCID (current) (11.9%)	**5.55 (3.04,10.2)**	**0.0001**	**6.20 (3.26,11.8)**	**0.0001**
Mental Health Service Use				
Discussed Mental Health Concerns Prior To Diagnosis	**4.98 (2.83,8.70)**	**0.0001**	**4.20 (2.31,7.63)**	**0.0001**
Discussed Mental Health Concerns Clinician Since DDiagDiagnosis	**3.54 (2.49,8.67)**	**0.0001**	**4.23 (2.25,7.97)**	**0.0002**
Diagnosis Used Any Mental Health Services	**3.97 (2.28,6.90)**	**0.0001**	**3.70 (2.07,6.67)**	**0.0001**
• Psychotherapy	**3.94 (1.93,8.00)**	**0.0002**	**2.62 (1.20,5.71)**	**0.016**
• Antidepressants	0.97 (0.46,2.08)	0.943	1.25 (2.94,0.53)	0.610
• Anxiolytics	1.86 (0.85,4.10)	0.121	1.82 (0.79,4.20)	0.159
Coping[e]				
Action-based coping	1.01 (0.93,1.09)	0.907	1.00 (0.93,1.09)	0.946
Emotional support-based coping	0.89 (0.76,1.03)	0.121	0.91 (0.78,1.07)	0.246
Avoidance-based coping	1.09 (0.86,1.40)	0.477	1.03 (0.79,1.34)	0.821
General Self-Efficacy[f]	**0.92 (0.86,0.98)**	**0.009**	**0.93 (0.86,0.99)**	**0.025**
Religiousness/spirituality[g]	**0.97 (0.95,0.99)**	**0.001**	**0.98 (0.96,1.00)**	**0.032**
Quality of Life[i]				
Emotional Responses				
"Depressed"	**1.22 (1.13,1.32)**	**0.0001**	**1.23 (1.13,1.33)**	**0.0001**
"Nervous and Worried"	**1.13 (1.04,1.22)**	**0.002**	**1.12 (1.03,1.22)**	**0.007**
"Sad"	**1.20 (1.11,1.30)**	**0.0001**	**1.22 (1.12,1.33)**	**0.0001**
"Terrified"	**1.19 (1.10,1.29)**	**0.0001**	**1.18 (1.08,1.29)**	**0.0002**

	Suicidal Ideation			
	Unadjusted OR (95%CI)	***p*‡ value**	**Adjusted§ OR (95%CI)**	***p*‡ value**
"Feel Completely Supported"	**0.86 (0.81,0.92)**	**0.0001**	**0.86 (0.81,0.92)**	**0.0001**
Physical Symptoms				
Bothered by Physical Symptoms	**1.01 (1.02,1.00)**	**0.002**	**1.01 (1.02,1.00)**	**0.01**
I have felt "physically well"	**0.88 (0.80,0.97)**	**0.008**	**0.88 (0.79,0.98)**	**0.03**
Cognitive and Emotional Acceptance				
Acknowledged being "seriously and terminally ill"[h]	1.35 (0.77,2.37)	0.29	1.19 (0.65,2.17)	0.57
Peacefulness[i]	0.49 (0.28,0.86)	0.01	0.71 (0.38,1.33)	0.28

Notes: Bolded values represent statistically significant responses. The Wald χ^2 was the test performed to determine the significance level, with df=1 for unadjusted/individual predictor models, and df=4 for all remaining models but the SCID adjusted individual disorder models where df=7.

[§]Adjusted for "religion=none", white, and Parkland in all adjusted models. In addition, we added in all the SCID diagnoses (i.e., MDD, GAD, PD, PTSD) for the SCID diagnosis models, except in the "any SCID diagnosis" predictor model.

[a]MDD=Major Depressive Disorder, as diagnosed using Structured Clinical Interview for DSM IV (SCID)

[b]GAD=Generalized Anxiety Disorders, as diagnosed using SCID.

[d]PTSD: Post-traumatic Stress Disorder, as diagnosed using SCID.

[e]AnySCID=Any of these diagnoses; Sum of items from Brief Cope according to type of strategy.

[f]Sum of items from General Self-Efficacy scale.

[g]Sum of items from Religious Coping[i]McGill Quality of Life Questionnaire Items (scale of 0–10) where 0 is desirable and 10 is undesirable

[h]When asked to describe health status, the patient responded "Seriously and Terminally Ill" instead of "seriously, but not terminally ill," or "relatively healthy."

[i]Peacefulness item from NIA/Fetzer Multidimensional Measure of Religiousness/Spirituality (MMRS)