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Anxiety Disorders in Advanced Cancer Patients: Correlates and Predictors of End of Life Outcomes

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Abstract

Background—This study explored associations between anxiety disorders and advanced cancer patients' physical performance status, doctor-patient relationships, end-of-life (EOL) treatment preferences and outcomes, and quality of death.

Methods—The Coping with Cancer study (CwC) was an NCI/NIMH-sponsored prospective, longitudinal, multi-center cohort study of advanced cancer patients. 635 patients completed the Structured Clinical Interview for the Diagnostic Statistical Manual IV (DSM-IV) module for anxiety disorders. These results were compared with patients' baseline physical performance status, treatment preferences, perceptions of the doctor-patient relationship, and advance care planning (ACP).

Results—7.6% of patients met criteria for an anxiety disorder. Patients diagnosed with an anxiety disorder were more likely to be female and younger and have a worse physical performance status. While there were no significant differences in patients' EOL treatment preferences or care, ACP, hospice enrollment, or patients' location of death, there were significant differences in how patients with anxiety disorders perceived the doctor-patient relationship. Patients with anxiety disorders had less trust in their physicians, felt less comfortable asking questions about their health, and felt less likely to understand the clinical information that their physicians presented. They also were more likely to believe their physicians would offer them futile therapies and feel as if their physician did not adequately control their symptoms.

Conclusions—Female patients, more physically impaired and younger advanced cancer patients are more likely to meet criteria for an anxiety disorder. Advanced cancer patients with an anxiety disorder are more likely to experience greater challenges to the doctor-patient relationship.

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Keywords

Anxiety; anxiety disorders; end-of-life; palliative care; physician patient relationship; neoplasm

INTRODUCTION

Although depression has been the focus of the majority of psycho-oncology research, symptoms of anxiety and anxiety disorders have received less attention. Multiple reports cite the incidence of anxiety in this patient population between 6% and 34%¹⁻⁷, with at least one study citing up to 49%⁸. One study using the Structured Clinical Interview for the Diagnostic and Statistical Manual-IV (SCID) showed that 4.8% of patients with advanced cancer meet criteria for generalized anxiety disorder (GAD)⁹. This is notably higher than the incidence of GAD (3.1%) found in the general population¹⁰.

The end-of-life in advanced cancer is a period of time in which the cancer can no longer be controlled and the goals of care focus on making patients comfortable and treating their symptoms¹¹. Psychological disturbances, including anxiety disorders, adversely affect patients at the end-of-life. At a time when many wish to be emotionally engaged with loved ones, these disturbances decrease patients' emotional, social and cognitive function¹. Patients' capacity for pleasure, meaning, and connection erodes¹². Additionally, mental disorders are a major contributor to diminished quality of life¹³. Anxiety is expected to affect psychological and physical health and also may undermine interpersonal relationships with family, friends, and formal and informal caregivers¹⁴. Although much attention has been devoted to patient quality of life at the EOL and interventions to improve it, few studies have examined the associations between anxiety disorders and the doctor-patient relationship, patients' performance status, and quality of life near death.

The doctor-patient relationship has been regarded as critical to patient care in medical writings, philosophy and practice -- both ancient and modern. Especially in oncology, a trusting doctor-patient relationship may be able to minimize patient shame and humiliation, power imbalance, and increase the patient's perception that the physician acknowledges and appreciates his/her suffering¹⁵. It has been posited that a patient afflicted with anxiety will not clearly process information received in a clinical encounter, thereby leading to a communication breakdown that decreases the patient's ability to engage in meaningful dialogue regarding treatment planning, rationale, alternatives, and concerns¹⁶.

The primary aim of this study was to examine the associations between anxiety disorders and advanced cancer patients' relationships with their physician, physical performance status, treatment preferences, EOL medical care, and quality of life near death. We hypothesized that advanced cancer patients with anxiety disorders would be more likely to report a lower physical performance status, choose aggressive interventions at the EOL, and have a poorer quality of life near death. We also expected patients with anxiety disorders to have greater difficulties in their perception of the doctor-patient relationship.

MATERIALS AND METHODS

Data Collection

Coping with Cancer study was a prospective, longitudinal, multi-site study of advanced cancer patients and their primary caregivers, conducted between 2002 and 2008. Patients were recruited from eight institutions: the Yale Cancer Center (New Haven, Connecticut), the Veterans Affairs Connecticut Healthcare System Comprehensive Cancer Clinics (West Haven, Connecticut), Memorial Sloan-Kettering Cancer Center (New York, New York),

Simmons Comprehensive Cancer Center (Dallas, Texas), Parkland Hospital (Dallas, Texas), Massachusetts General Hospital (Boston, Massachusetts), Dana-Farber Cancer Institute (Boston, Massachusetts), and New Hampshire Oncology-Hematology (Hookset, New Hampshire).

Enrollment eligibility included: 1) diagnosis of advanced cancer (defined by presence of distant metastases), 2) diagnosis at one of the participating institutions, 3) age 20 years or older, 4) patient-identified, unpaid, informal caregiver, 5) ability to complete the interview, 6) ability to speak English or Spanish. The institutional review boards on research involving human subjects at each institution approved all aspects of the study design and each participant offered voluntary, written informed consent.

Each patient and caregiver that enrolled participated in a baseline interview and was compensated with \$25. The interviews were conducted by assistants who were trained by Yale University research staff. In order to ensure appropriate administration of the DSM-IV SCID, the study assistants needed to demonstrate concordance with the Yale training director's diagnoses ($\kappa > 0.85$). Interviews were conducted in English or Spanish and took approximately 45 minutes to complete. The patients' charts were reviewed to confirm patient demographics and disease characteristics. Within two weeks of each patient's death, the caregiver most involved in the patient's last week of life was contacted to review information related to the patient's care and quality of death.

Participants were asked to report gender, race, marital status, age at time of interview, educational level achieved, average annual income, treatment center, type of cancer, and religious affiliation.

The Structured Clinical Interview for the DSM-IV (SCID) Axis I Modules was used to diagnose Generalized Anxiety Disorder (GAD), Panic Disorder (PD), and Post-traumatic Stress Disorder (PTSD)¹⁷. Patients who screened positive for a particular disorder then completed the full corresponding SCID module. The reliability for the SCID has been shown elsewhere¹⁸.

An assessment of the patient's perception of their doctor-patient relationships was made using a series of questions that can be found in Table 2. A binary response format (i.e. yes or no) was used for all of the questions except for the final two which assessed the patient's level of comfort in asking about their health and the care that they received. These questions used a Likert scale from "1 – very uncomfortable" to "5 – very comfortable."

To assess the patient level of terminal illness acknowledgement, patients were asked: "How would you describe your current health status?" Out of four possible responses, patients were considered to be able to acknowledge the terminal nature of their illness if they responded either with "Seriously and terminally ill" or "Relatively healthy and terminally ill."

Patients' physical performance status was assessed with the Karnofsky Performance Scale. This tool, which has been shown to be predictive of survival, rates a patient's ability to conduct activities of daily life on a continuum where 0 represents death and 100 signifies perfect health¹⁹⁻²⁰. Comorbid illnesses were determined by the Charlson Comorbidity Index, an age-adjusted measure of chronic illness, where higher numbers signify greater severity of illness²¹.

A post-mortem interview with the patient's primary caregiver was performed within two weeks after the patient's death. Physical distress, psychological distress, and overall quality of the last week of life were rated. Responses ranged from 0 (least desirable) to 10 (most

desirable) with a sum total score of up to 30 to assess the “quality of death.” A combination of the caregiver interview and the patient’s medical record was used to document the location of death, hospice enrollment, ICU admission, chemotherapy administration, mechanical ventilation, and cardiopulmonary resuscitation.

Information regarding advance care planning was obtained from answers to questions posed to patients about do-not resuscitate (DNR) order completion, creation of a living will, or designated health care durable power of attorney. Participants were also asked about their EOL care preferences regarding use of chemotherapy, antibiotics, feeding tubes, and ventilators near death.

Statistical Methods

Comparative tests were performed to examine whether there were significant differences in the sociodemographic variables of patients who met diagnostic criteria for an anxiety disorder (i.e., Generalized Anxiety Disorder, Panic Disorder or Posttraumatic Stress Disorder) from the *SCID-IV* modules and those who did not. T tests were used for continuous variables and chi-square and Fisher’s exact test statistics were used for binary variables. Multivariable logistic regression models examined associations between anxiety disorders and patients’ relationship with their physician, performance status, terminal illness acknowledgement, EOL treatment preferences, advance care planning, EOL medical care, receipt of hospice services, location of death, and quality of life near death. P-values less than 0.05 were considered statistically significant. The criteria used for adjusted analyses was to control for confounders that were significantly associated with both the predictor and the outcome at a p-value<0.10 (Table 1). Potential confounders were age, gender, and Karnofsky Performance Status and therefore were controlled for in all analyses. Statistical analyses were performed with SAS version 9.1 (SAS Institute, Inc, Cary, North Carolina).

RESULTS

As shown in Table 1, among the 635 patients with advanced cancer in this study, 71.2% self-identified as White, 14.8% as Black, 12.1% as Hispanic, and 1.6% of Asian race/ethnicity. 50.2% of participants were male, and 49.8% were female. Participants had an average of 12.9 years of formal education. Most were married (62.4%) and had health insurance (69.9%). The median time to death in this cohort of patients was 117 days from the time of entrance into the study (not shown in table).

Overall, 7.6% of patients met SCID criteria for a diagnosis of an anxiety disorder. 3.2% of patients met criteria for PTSD, 3.0% of patients met criteria for Panic Disorder and 3.0% of patients met criteria for Generalized Anxiety Disorder. These patients were 2.3 times (95% CI=1.2–4.1) more likely to be female (p=0.008), and younger than patients who did not meet criteria for an anxiety disorder (54.60 years vs. 60.11 years respectively, t test=-2.94, df=703, p=0.03). There was no association between anxiety disorders and advanced cancer patients’ number of medical comorbidities, but patients with anxiety disorders had a worse physical performance status (Karnofsky scores of 61.22 vs. 68.97 respectively, t-test=-2.61; df=52.8; p=0.01).

Table 2 shows the questions that were posed to study participants to assess associations between anxiety disorders and the doctor-patient relationship. Patients with anxiety disorders were significantly less likely to trust their doctors (AOR=0.14, 95% CI (0.04–0.47), p-value 0.008). When asked if they thought doctors would offer treatments that were not helpful just because they thought the patients wanted them, participants with anxiety disorders were more likely to report that doctors would offer futile treatments (AOR=3.78, 95% CI(1.61–7.45), p= 0.0017). They were also less likely to report that they understood

most of what their doctor explained to them (AOR=0.35, 95% CI (0.14–0.82), p-value 0.0351), and felt less comfortable asking their doctors questions about their health than patients without anxiety disorders ($\bar{u}=-0.11$, $p=0.0085$). Advanced cancer patients with anxiety disorders were less likely to feel their doctors did a good job of making them feel comfortable, including controlling their pain (AOR=0.302, 95% CI (0.093–0.982), $p=0.047$), or to feel as if their physicians viewed them as a “whole person” (AOR=0.24, 95% CI (0.11–0.52), p-value 0.008).

The diagnosis of an anxiety disorder was not significantly associated with patients’ awareness of their terminal illness, the likelihood of ACP at baseline, or their treatment preferences/desire for life extending measures (Table 3). While one might expect patients with anxiety disorders to be more likely to opt for aggressive care at the end-of-life, this study shows that this is not the case. Patients with and without anxiety disorders were just as likely to be able to acknowledge their terminal illness, expressed similar baseline preferences for aggressive EOL measures, and had participated in similar ACP activities at the time of enrollment in the study. Table 3 also shows that there was no statistically significant difference between rates of pharmacologic therapy prescribed to patients with and without anxiety disorders (AOR=1.440, 95% CI (0.464–4.469), p-value 0.5284).

Additionally, the diagnosis of an anxiety disorder was not significantly associated with an advanced cancer patient’s receipt of aggressive EOL care measures, likelihood of hospice enrollment at the time of death, or the patient’s location of death (Table 4). While patients with anxiety disorders reported more compromise to their doctor-patient relationships, this compromise did not translate to increased aggressive care at the EOL.

Using the post-mortem assessment completed by patients’ primary caregivers as described above, we found that there was a significantly lower quality of life during the last week of life reported for patients who met criteria for an anxiety disorder compared to patients who did not meet criteria (mean 5.00 vs. 6.39, $\beta -0.11$, $p=0.027$). This association was no longer significant, however, when the analysis was adjusted for significant confounds, including age, gender, and Karnofsky performance status.

DISCUSSION

Perhaps the most intriguing and interesting findings of this report come from the analysis of the effect of anxiety disorders on aspects of the doctor-patient relationship. We were unable to locate other studies addressing how psychological disorders in cancer patients affect trust, patient understanding, comfort, and how they feel their physicians view them and their care. In this study we found that advanced cancer patients with anxiety disorders have less trust in their physicians, are less comfortable asking questions about their health, and also feel less able to understand the medical information that their physicians share with them. These patients were also more likely to believe that their physicians would provide futile care, and less likely to believe that their physicians did an adequate job controlling their pain. Finally, they were also less likely to feel as if their physicians treated them as a whole person.

The trust that a patient places in his/her physician is the foundation of the therapeutic relationship and it is what makes the patient an effective partner and participant in health care delivery²². Trust has been shown to be one of the attributes valued most by patients and is taught from the first day of medical school^{23,24}. The relationship between anxiety disorders and decreased trust is vitally important as diminished trust can be a factor in communication breakdown, missing appointments, decreased adherence to therapeutic regimens and recommendations, and an overall sense of dissatisfaction with care^{16,22,25}.

Additionally, advanced cancer patients with anxiety disorders were more likely to report a decreased understanding of doctors' explanations of their health and care. This is a concern since patients that feel knowledgeable and informed are more likely to adhere to prescribed medication regimens and health-related behavioral modifications²⁶. Health care providers should be aware that patients who are not adherent to recommendations or those not comfortable in discussing and asking questions about their health status and care may be suffering from an anxiety disorder and merit further evaluation.

Another finding that could have significant clinical implications is that advanced cancer patients with anxiety disorders feel like their physicians do a poorer job at making them comfortable – including poorer pain control. The importance of this finding is that the primary treatment strategy for many patients with advanced cancer (i.e. those with distant metastases) is pain control and comfort given that cure is not the therapeutic goal. This finding suggests that the efforts of the oncologist, primary care physician, or palliative care specialist to alleviate pain and provide comfort for these patients could be subverted, and further suggests the importance of screening patients for psychiatric disorders in order to treat patients appropriately.

Interestingly, while advanced cancer patients with anxiety disorders reported increased difficulties with their doctor-patient relationships, this did not lead to an increase in aggressive care measures utilized at the EOL. This may seem contrary to what we would expect or have experienced in caring for advanced cancer patients, anxious patients, and those with diagnosed/diagnosable anxiety disorders. One explanation is that only 7.6% of the studied advanced cancer patients met diagnostic criteria for an anxiety disorder. A much larger percentage may have sub-syndromal levels of anxiety. Statistical power limitations associated with the relative rarity of anxiety disorders may have inhibited our ability to detect more subtle associations between anxious symptoms and care.

As mentioned above, we found the prevalence of anxiety disorders (i.e., Generalized Anxiety Disorder, Panic Disorder, Posttraumatic Stress Disorder) among advanced cancer patients to be 7.6%. Several studies have previously reported a wide range of estimates for the incidence of anxiety in cancer patients—from 6–34%^{1–7}. In this study we used the SCID to diagnose anxiety disorders. Although this method requires intensive interviews, it is the gold standard for diagnosing psychiatric disorders, unlike other survey instruments that estimate cases using cut-off scores based upon symptoms; e.g. the Schedules for Clinical Assessment in Neuropsychiatry (SCAN), Hospital Anxiety and Depression Scale (HADS), Composite International Diagnostic Interview (CIDI), Monash Interview for Liaison Psychiatry (MILP), Memorial Anxiety Scale for Prostate Cancer (MAX-PC), or the Generalized Anxiety Disorder Questionnaire (GAD-Q).

We also report here that advanced cancer patients who are younger and female are more likely to meet diagnostic criteria for an anxiety disorder. These findings differ from Stark's and House's²⁷ earlier findings which showed that traditional risk factors for anxiety—age, marital status, social class and education—did not apply to cancer patients. Our results, while novel within the cancer literature, are consistent with studies in outpatient and inpatient settings, which have shown that younger, female patients are at higher risk for anxiety disorders^{28,29}. It is likely that a confluence of factors explain why these individuals are at risk for anxiety, including contributions from genetic and heritable traits, perceived external trauma, stress, and distinct neural pathways^{30,31}. With the exception of PTSD, which occurs after a traumatic event, anxiety disorders usually present earlier in life with peak ages of onset years before the mostly mid- to late-life diagnoses of cancer.

We also found that anxiety disorders were associated with lower Karnofsky scores among advanced cancer patients. Patients with anxiety disorders had nearly a 10 point difference in their performance status, which is roughly equivalent to the difference between being able to care for oneself (KPS score of 70) and having to depend upon others for assistance in activities of daily living (KPS score of 60). This distinction is not trivial. It marks a difference between a patient who has total independence and one who has begun to lose a portion of that independence. The initiation of a loss of independence can be itself psychologically detrimental to both patient and family as well as economically challenging as increased care either inside or outside of the home is often required.

Although cancer-care providers often use giving information and reassurance to these patients as first line “treatment,” we know that does not effectively combat the anxiety that advanced cancer patients experience -- especially as they approach death. Stark et al³² showed that reassurance may not reduce cancer patients’ anxiety; and may actually serve to increase anxiety in the most severely afflicted patients.

Those who care for advanced cancer patients at the EOL must be attuned to the fact that an anxiety disorder may be undermining the physical, emotional and psychological well-being of their patients. Reports continue to show that physicians are notoriously poor at recognizing patients with psychiatric morbidity³³⁻³⁶, referring them for the appropriate services, or adequately treating the disorder⁹. Our study supports this assertion by demonstrating that advanced cancer patients with anxiety disorders are no more likely than advanced cancer patients without anxiety disorders to receive anxiolytic therapy (Table 3). This suggests a need for clinicians to become better versed in screening for anxiety disorders and making referrals to mental health professionals in order to provide appropriate treatment.

The development of a screening system for anxiety disorders in cancer patients would be a valuable step forward in helping affected patients while ideally not requiring a burdensome amount of already scarce clinician time and effort. We advocate screening for advanced cancer patients to not only aid in the diagnosis and treatment of those with anxiety disorders, but also to distinguish them from patients who have adjustment disorders with anxious features—a more prevalent diagnosis that is often given to patients with poorly defined distress related to their cancer diagnosis. Effective treatments for anxiety disorders exist whereas those for adjustment disorders are not well established. The comparisons and intricacies of these two distinct diagnoses still need to be investigated within a population of advanced cancer patients and is an important area of focus for future research.

We are unaware of any published, randomized clinical trials for the treatment of anxiety among advanced cancer patients. Nevertheless, we can extrapolate from other work that has suggested that prompt diagnosis and appropriate treatment of anxiety disorders alleviates patients’ suffering along with its associated physical and psychological sequelae^{4,5,36}.

These results were generated from a prospective cohort study of advanced cancer patients assessed at baseline and followed through death after which a postmortem assessment was conducted. Future research that examines the effects of the treatment of anxiety in advanced cancer patients is needed to show that anxiety can be effectively reduced in this population--and that appropriately treated anxiety is associated with improvements in physician-patient relationships, advanced cancer patients’ quality of life and quality of death.

While this study shows how anxiety disorders can be detrimental to the physical, interpersonal, medical, and emotional well-being of advanced cancer patients, it is possible that some additional effects are not able to be seen because of the relatively low prevalence of anxiety disorders in this population (i.e. possible effects on EOL outcomes or EOL care

decisions). This sample may also underestimate the rates of anxiety disorders because all of the participants were required to have an informal caregiver, which may have excluded patients who had less social support, perhaps because of their anxiety. Our hope is that this work will continue to bring to the forefront the necessity of careful assessment of anxiety disorders in advanced cancer patients.

To our knowledge this is the first study to show that anxiety disorders have a detrimental effect on the doctor-patient relationship and by extension may lead to poorer outcomes for these patients. Oncologists, palliative care specialists, and primary care physicians alike have the opportunity to alleviate at least some of the anxiety and subsequent suffering of the advanced cancer patients for whom they provide care. In order to further develop a comprehensive understanding of the effects of anxiety disorders on advanced-cancer patients, the focus of future research includes determining the best approaches to screening, referral and treatment of anxiety disorders in this population. Additionally, future work should explore if, and how patients with anxiety disorders have been treated prior to their cancer diagnosis, with particular reference to treatment failures, successes, and relapses.

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TABLE 1

Characteristics of the Sample of Patients with Advanced Cancer

Attribute	Total Sample N (%)	Patients with Anxiety Disorders	Patients without Anxiety Disorders	Comparative Test (t or χ^2) p value
No. of cases	635	48 (7.6)	587 (92.4)	
Gender				0.006
Women no. (%)	316 (49.8)	31 (64.6)	285 (48.6)	
Men no. (%)	319 (50.2)	17 (35.4)	302 (51.5)	
Race/ethnicity ^b , N (%)				0.82
White, non- Hispanic	452 (71.2)	35 (72.9)	417 (71.0)	
Black, non-Hispanic	94 (14.8)	7 (14.6)	87 (14.8)	
Hispanic	77 (12.1)	5 (10.4)	72 (12.3)	
Asian	10 (1.6)	1 (2.1)	9 (1.5)	
Other	2 (0.3)	0 (0)	2 (0.3)	
Married				
Yes	377 (62.4)	33 (71.7)	344 (61.7)	
No	227 (37.6)	13 (28.3)	214 (38.4)	
Age at evaluation (yrs)				0.03
Mean (SD)	59.70 (13.09)	54.60 (13.43)	60.11 (12.98)	
Median (range)	60 (22–93)	56 (28–78)	60 (22–93)	
Education				0.88
Mean (SD)	12.89 (3.95)	12.81 (4.01)	12.89 (3.95)	
Median (range)	12 (0–24)	12 (0–20)	12 (0–24)	
Income ^b N (%)				0.41
<\$31,000		16 (51.6)	179 (41.2)	
≥\$31,000		15 (48.4)	256 (58.9)	
Treatment center ^b , N (%)				0.41
Yale Cancer Center	152 (24.1)	15 (31.3)	137 (23.5)	
VA	22 (3.5)	2 (4.2)	20 (3.4)	
Simmons	55 (8.7)	1 (2.1)	54 (9.3)	
Parkland	191 (30.2)	12 (25.0)	179 (30.7)	
DFCI	43 (6.8)	2 (4.2)	41 (7.0)	
NHOH	159 (25.2)	16 (33.3)	143 (24.5)	
Other	10 (1.6)	0 (0)	10 (1.7)	
Cancer Site ^b , N (%)				0.96
Lung	147 (23.4)	12 (25.0)	135 (23.3)	
Colon	76 (12.1)	7 (14.6)	69 (11.9)	
Pancreatic	50 (8.0)	3 (6.3)	47 (8.1)	
Breast Cancer	76 (12.1)	6 (12.5)	70 (12.1)	
Other	279 (44.4)	20 (41.7)	259 (44.7)	

Attribute	Total Sample N (%)	Patients with Anxiety Disorders	Patients without Anxiety Disorders	Comparative Test (t or χ^2) p value
Insurance Status ^b , N (%)				0.92
Insured	436 (69.9)	33 (71.7)	403 (69.7)	
Uninsured	188 (30.1)	13 (28.3)	175 (30.3)	
Religion: N (%)				0.98
Catholic	266 (41.9)	22 (45.8)	244 (41.6)	
Protestant	122 (19.2)	9 (18.8)	113 (19.3)	
Baptist	75 (11.8)	7 (14.6)	68 (11.6)	
Jewish	17 (2.7)	0 (0)	17 (2.9)	
Other	118 (18.6)	7 (14.6)	111 (18.9)	
None	37 (5.8)	3 (6.3)	34 (5.8)	
Patient Physical Health: Mean (SD)				
Charlson Comorbidity	8.28 (2.75)	8.49 (3.31)	8.26 (2.70)	0.63
Karnofsky	68.40 (16.47)	61.22 (20.27)	68.97 (16.01)	0.01

Note: Bolded p-values represent significant differences between patients with and without anxiety disorders.

^a Cochran-Mantel-Haenszel Statistics

^b Missing Responses (No.): Marriage (31), Income (222), Treatment Center (3), Cancer Site (7), Insurance Status (11)

Table 2
Baseline Characteristics Associated with Advanced Cancer Patient Having Anxiety Disorder

Measure	Full Sample (N=635)	Patients With Anxiety Disorders (N=48)	Patients Without Anxiety Disorders (N=587)	Unadjusted Analyses	Adjusted Analyses	
	N (%)	N (%)	N (%)	O.R.	O.R.	
				p-value	p-value	
1. Do you think doctors here see you as a whole person?	560 (89.3)	36 (76.6)	524 (90.3)	0.35	0.24	0.0003
2. Do you think your doctors here treat you with respect?	622 (98.6)	47 (97.9)	575 (98.3)	0.65	0.50	0.5244
3. Do you respect your doctors here?	627 (99.2)	47 (97.9)	580 (99.3)	0.32	0.20	0.1694
4. Do you understand most of what your doctor explains to you?	594 (93.8)	41 (85.4)	553 (94.5)	0.34	0.35	0.0351
5. Are there things about your health or treatments that you do not understand but want to know about?	196 (31.1)	20 (42.6)	176 (30.1)	1.72	1.70	0.1037
6. If your doctor knew how long you had left to live, would you want him or her to tell you?	448 (71.5)	33 (68.8)	415 (71.5)	0.87	0.84	0.6025
7. Do you believe in taking the medicines your doctor gives you?	620 (98.3)	45 (97.8)	575 (98.3)	0.78	0.77	0.8097
8. Do you trust your doctors here?	617 (98.3)	43 (91.5)	574 (98.8)	0.13	0.14	0.0081
9. Do you think your doctor would offer you treatment that you are told would not help you just because he thought you wanted it?	51 (8.1)	10 (20.8)	41 (7.1)	3.47	3.78	0.0017
10. Do you think your doctor would offer you treatment that would not help you but would help others with the information its effect on you would provide?	168 (27.3)	12 (26.1)	156 (27.4)	0.94	1.08	0.8285
11. Do you think your doctors do a good job of making you comfortable, like controlling your pain?	607 (96.7)	44 (91.7)	563 (97.1)	0.33	0.30	0.0466
$\bar{U} (\sigma)$	$\bar{U} (\sigma)$	$\bar{U} (\sigma)$	$\bar{U} (\sigma)$	β	B	p-value
12.* How comfortable are you asking your doctor questions about your health?	4.59 (0.91)	4.29 (1.11)	4.62 (0.88)	-0.10	0.016	-0.11 .0085
13.* How comfortable are you asking	4.60 (0.90)	4.38 (1.06)	4.62 (0.88)	-0.07	0.071	-0.07 .0738

Measure	Full Sample (N=635)	Patients With Anxiety Disorders (N=48)	Patients Without Anxiety Disorders (N=587)	Unadjusted Analyses	Adjusted Analyses
	N (%)	N (%)	N (%)	O.R.	O.R.
your doctor questions about your care?				p-value	p-value

Note: Bolded p-values represent significant differences between patients with and without anxiety disorders. Item numbers added post-hoc.

Adjusted Analyses control for age, gender and Karnofsky performance score. Missing Data: 1:8, 2:4, 3:3, 4:2, 5:4, 6:8, 7:4, 8:7, 9:6, 10:19, 11:7, 12:7, 13:0

* Answer choices range from 1-very uncomfortable to 5-very comfortable. Answer choices to all other questions were binary yes/no format.

Table 3
Baseline Characteristics Associated with Advanced Cancer Patient Having Anxiety Disorder

Measure	Full Sample (N=635)	Patients With Anxiety Disorders (N=48)	Patients Without Anxiety Disorders (N=587)	Unadjusted Analyses	Adjusted Analyses
	N (%)	N (%)	N (%)	O.R.	O.R.
Treatment with anxiolytics	36 (5.70)	5 (10.4)	31 (5.10)	2.07	1.44
Terminal Illness Acknowledgement	204 (34.6)	19 (42.2)	185 (33.9)	1.42	1.27
Treatment Preferences					
Preference for chemotherapy	327 (52.6)	27 (56.3)	300 (52.3)	1.17	1.18
Preference for antibiotics	287 (46.9)	23 (47.9)	264 (46.8)	1.05	0.96
Preference for feeding tube	216 (36.1)	22 (50.0)	194 (35.0)	1.86	1.58
Preference for respirator	160 (25.6)	16 (33.3)	144 (25.0)	1.50	1.34
Preference for any type of advanced treatment	448 (71.0)	34 (70.8)	414 (71.0)	0.99	0.91
Extend Life Versus Relieve Pain	165 (28.8)	17 (40.5)	148 (27.8)	1.77	1.57
Heroic Measures	129 (20.8)	9 (18.8)	120 (21.0)	0.87	0.62
Advance Care Planning					
DNR	242 (38.8)	17 (35.4)	225 (39.1)	0.86	0.78
Living will	335 (53.9)	22 (45.8)	313 (54.5)	0.71	0.85
Health Care Proxy and/or Durable Power of Attorney	339 (54.5)	24 (50.0)	315 (54.9)	0.82	0.96

Note: Bolded p-values represent significant differences between patients with and without anxiety disorders.

Adjusted Analyses control for age, gender and karnofsky performance score; Missing Data: Anxiolytics (3), Terminal Illness Acknowledgement (45), Chemotherapy Preference (13), Antibiotics Preference (23), Feeding Tube Preference (37), Respirator Preference (11), Any Aggressive Preference (74), Life Extension (61), Heroic Measures (16), DNR (11), Living Will (13), Health Care Proxy (13)

Table 4
End-of-Life (EOL) Characteristics Associated with Advanced Cancer Patient Having Anxiety Disorder

Measure	Full Sample (N=387)	Patients With Anxiety Disorders (N=23)		Patients Without Anxiety Disorders (N=364)		Unadjusted Analyses		Adjusted Analyses	
		N (%)	N (%)	N (%)	N (%)	O.R.	p-value	O.R.	p-value
EOL Treatments									
Ventilator	28 (7.3)	4 (17.4)	24 (6.6)	2.97	0.064	2.88	0.134		
Feeding Tube	31 (8.1)	3 (13.6)	28 (7.8)	1.88	0.334	1.28	0.757		
Intensive Care Unit	39 (10.1)	4 (17.4)	35 (9.6)	1.97	0.240	1.65	0.466		
Resuscitation	16 (4.2)	2 (8.7)	14 (3.9)	2.37	0.275	2.73	0.243		
Hospice									
Outpatient Hospice	247 (63.8)	16 (69.6)	231 (63.5)	1.32	0.556	1.27	0.660		
Inpatient Hospice	60 (15.5)	4 (17.4)	56 (15.4)	1.16	0.797	1.24	0.741		
Location of Death									
Intensive Care Unit	28 (7.2)	3 (13.0)	25 (6.9)	2.03	0.277	1.35	0.725		
Hospital (Non ICU)	83 (21.5)	4 (17.4)	79 (21.7)	0.76	0.626	1.06	0.923		
Home	212 (54.8)	13 (56.5)	199 (54.7)	1.08	0.863	1.28	0.621		
Hospice	46 (11.9)	2 (8.7)	44 (12.1)	0.69	0.628	0.49	0.493		
<hr/>									
	Mean (std dev)	Mean (std dev)	Mean (std dev)	β	p-value	β	p-value		
Quality of Death	6.31 (2.93)	5.00 (2.39)	6.39 (2.94)	-0.11	0.027	-0.08	0.135		

Note: Bolded p-values represent significant differences between patients with and without dependent children

Adjusted Analyses control for age, gender and Karnofsky performance score; Missing Data: Ventilator (1), Feeding Tube (4), ICU (1), Resuscitation (2), Quality of Death (3)