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Religious Coping and Behavioral Disengagement: Opposing Influences on Advance Care Planning and Receipt of Intensive Care Near Death

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Abstract

Objective—This study examines the relationships between methods of coping with advanced cancer, completion of advance care directives, and receipt of intensive, life-prolonging care near death.

Methods—The analysis is based on a sample of 345 patients interviewed between January 1, 2003, and August 31, 2007, and followed until death as part of the Coping with Cancer Study, an NCI/NIMH-funded, multi-site, prospective, longitudinal, cohort study of patients with advanced cancer. The Brief COPE was used to assess active coping, use of emotional-support, and behavioral disengagement. The Brief RCOPE was used to assess positive and negative religious coping. The main outcome was intensive, life-prolonging care near death, defined as receipt of ventilation or resuscitation in the last week of life.

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Results—Positive religious coping was associated with lower rates of having a living will (AOR=0.39, $p=0.003$) and predicted higher rates of intensive, life-prolonging care near death (AOR, 5.43; $p<0.001$), adjusting for other coping methods and potential socio-demographic and health status confounds. Behavioral disengagement was associated with higher rates of DNR order completion (AOR, 2.78; $p=0.003$) and predicted lower rates of intensive life-prolonging care near death (AOR, 0.20; $p=0.036$). Not having a living will partially mediated the influence of positive religious coping on receipt of intensive, life-prolonging care near death.

Conclusion—Positive religious coping and behavioral disengagement are important determinants of completion of advance care directives and receipt of intensive, life-prolonging care near death.

Keywords

coping; cancer; oncology; advance care planning; end-of-life care

INTRODUCTION

Advanced cancer requires patients to adapt to a variety of intense physical, emotional, and existential stressors. To date, research has focused on the effect of coping on cancer patients' psychological adjustment to illness [1,2]. Strategies patients use to cope with cancer are important determinants of their mood, subjective well-being, and quality of life [1–6]. However, this emphasis on psychological outcomes neglects important consequences of successful coping with a terminal illness, such as preparation for death and medical decision-making. Little is known about how advanced cancer patients' methods of coping with the stress relate to advance care planning (e.g., completion of Do Not Resuscitate, DNR, orders) or to the aggressiveness of the actual medical treatment patients receive at the end-of-life (EOL).

Coping can be defined broadly as the cognitive and behavioral ways that people manage or adapt to stressful circumstances [7,8]. Coping strategies are often classified as problem-focused, emotion-focused, or avoidant [5,7]. Problem-focused coping (e.g., active coping) involves action or problem-solving to alter the stressful situation. Emotion-focused coping (e.g., use of social support) attempts to manage or work through the emotional distress elicited by the stressful event and, thereby, minimize the impact of the stressor. Avoidant coping (e.g., denial) addresses neither the cause nor the effects of the stress, often represents a psychological defense against difficult realities, and, when persistent, often proves maladaptive [5]. Among cancer patients, problem- and emotion-focused coping has been positively associated with better psychological adjustment, mental health, and quality of life, whereas avoidant coping has been negatively associated with these outcomes [1–3,6,9,10]. Questions of whether and how problem-focused, emotion-focused, and avoidant coping influences plans for, and receipt of, EOL medical care remain unanswered.

Religious faith can be a major coping resource for patients facing serious illnesses including cancer [11–13]. Religious people often report the use of positive religious coping [14,15], which is characterized by a constructive reliance on religious faith to promote adjustment (e.g., benevolent religious reappraisals, collaborating with God to cope). Negative religious coping is generally considered a maladaptive way to draw upon faith to cope (e.g., believing illness is divine punishment, passively waiting for God to control a situation), is much less common than positive religious coping, and predicts poor psychosocial adjustment to a variety of stressors [15–17]. Positive and negative religious coping share in a common belief that God is in control of one's fate, but differ in disposition toward God's will (e.g., a tendency to believe positively, "God has called upon me," as opposed to negatively, "God has forsaken me"). We have demonstrated that positive religious coping predicts receipt of

intensive care near death [18]. This relationship between positive religious coping and aggressive EOL care warrants closer examination in the context of other coping methods and completion of advance care directives.

Data from a prospective cohort of advanced cancer patient participants in the Coping with Cancer Study were used to examine relationships between 5 coping methods (positive and negative religious coping, active coping, emotional-support based coping, and behavioral disengagement) and completion of advance care directives and receipt of intensive medical care in the last week of life. We hypothesized that the known association between positive religious coping and aggressive medical care near death would be independent of other coping methods and mediated by non-completion of advance care directives. We hypothesized that active and emotion-focused coping would predict receipt of less aggressive EOL care due to their benefits in psychological adjustment to terminal illness and, therefore, possibly a greater propensity to engage in advance care planning [19]. Analogous to the known effect of positive religious coping, we hypothesized that negative religious coping would predict receipt of more intensive medical care near death. Finally, we hypothesized that behavioral disengagement, an avoidant coping strategy, would be associated with non-completion of advance care directives and therefore increase the likely receipt of intensive, life-prolonging medical care near death.

METHODS

Study sample

Patients were recruited between January 1, 2003, and August 31, 2007, as part of the Coping with Cancer (CwC) Study, an NCI- and NIMH-funded multi-institutional investigation of advanced cancer patients and their informal caregivers. The CwC study was designed to examine relationships between psychosocial factors and EOL outcomes such as utilization of aggressive medical care near death. Participating sites included Yale Cancer Center (New Haven, CT), Veterans' Affairs Connecticut Healthcare System Comprehensive Cancer Clinics (West Haven, CT), Simmons Comprehensive Cancer Care Center (Dallas, TX), and Parkland Hospital Palliative Care Service (Dallas, TX), Massachusetts General Hospital (Boston, MA), Dana-Farber Cancer Institute (Boston, MA), and New Hampshire Oncology-Hematology (Hookset, NH).

Eligibility criteria were 1) diagnosis of an advanced cancer with metastases; 2) disease progression following first-line chemotherapy; 3) age at least 20 years; 4) presence of an informal caregiver (e.g., spouse); 5) adequate stamina to complete the 45 minute interview; and 6) ability to speak either English or Spanish. Patient-caregiver dyads in which either party was significantly cognitively impaired (by neurobehavioral cognitive status examination with more than 5 errors) were excluded [20]. Patients and caregivers underwent written, informed consent in accordance with protocols approved by the institutional review board of each participating site.

Study staff reviewed outpatient clinic lists weekly to identify eligible participants. Of the 941 eligible patients, 664 (70.6%) participated. The most common reasons for nonparticipation were "not interested" (n=106), "caregiver refuses" (n=32), and "too upset" (n=21). Participants and non-participants did not differ significantly in age, gender, race/ethnicity, or years of education.

The sample for the present study (N=345) was restricted to deceased participants with post-mortem data and complete baseline assessments of coping. At the time of analysis 385 (58.1%) participants had died. Post-mortem data were available for 369 (95.8%) deceased patients, and complete coping assessments were present for 345 (93.5%) of these. Patients

participated in baseline interviews (for which they received \$25 in compensation) conducted by assistants trained by Yale University staff, and died a median of 122 days following the baseline assessment. Time from baseline to death was neither significantly associated with any coping method examined in this report, nor with its primary, end-point outcome, intensive, life-prolonging care near death. More complete descriptions of the religious characteristics of the CwC Study sample are published elsewhere [11,18].

Measures

Coping methods—Religious and non-religious coping methods were assessed using the Brief RCOPE [14] and the Brief COPE [21], respectively. Survey items for each of these previously validated instruments were rated on a 4-point Likert scale from 0 (not at all) to 3 (a great deal).

Pargament's 14-item Brief RCOPE [14] questionnaire was used to evaluate the extent to which patients engaged in two, non mutually exclusive, forms of religious coping: positive religious coping (e.g., "seeking God's love and care," "trying to see how God might be trying to strengthen me in this situation") and negative religious coping (e.g., "wondering whether God has abandoned me," "Feeling punished by God for my lack of devotion"). Based on 7 positive religious coping items, the median positive religious coping score was 12 of a possible 21 (Mean=11.1, SD=6.4). As in our prior report [18], patients who scored at or above the median were designated "high" (51.6%), and patients who scored below the median were designated "low" (48.4%), for positive religious coping. Only 43% of patients endorsed 1 or more of 7 items contributing to the negative religious coping score (Mean=2.0, SD=3.5). Patients who scored above 0 were designated "high" (43.2%), and patients who scored 0 were designated "low" (56.8%) for negative religious coping.

Non-religious coping methods were assessed using the Brief COPE [21] survey, a well-validated, widely used research tool that assesses 14 coping methods using 2 items for each method. In an attempt to limit the interview burden for our terminally-ill patient sample, CwC included an abbreviated version of this survey with attention to 3 coping methods, i.e., active coping, using emotional support, and behavioral disengagement, demonstrated to be particularly important determinants of psychological adjustment to cancer and QOL [2,3,10,22]. Each coping method was assessed using two Brief COPE survey items: active coping ("I've been concentrating my efforts on doing something about the situation I'm in" and "I've been taking action to try to make the situation better"), using emotional support ("I've been getting comfort and understanding from someone" and "I've been getting emotional support from others"), and behavioral disengagement ("I've been giving up trying to deal with it" and "I've been giving up the attempt to cope"). The median active coping score was 4 of a possible 6 (Mean=3.5, SD=1.6); patients who scored at or above the median were designated "high" (51.0%) for active coping. A slight minority (44.3%) had an emotional support score of less than 6 (Mean=5.0, SD=1.3); patients who scored 6 were therefore designated "high" (55.7%) for using emotional support. Less than a quarter of patients endorsed any behavioral disengagement item (Mean=0.5, SD=1.1); patients who scored above 0 were designated "high" (23.5%) for behavioral disengagement.

Socio-demographic and health status characteristics—Age, sex, race/ethnicity, education, marital status, and insurance status were reported by the patient. Disease information was obtained from medical charts. Performance status was determined by trained interviewers using the Karnofsky scale [23]. The McGill Quality of Life Questionnaire [24] assessed patient QOL at baseline (scale 0–10, where 0=desirable and 10=undesirable). The well-validated Structured Clinical Interview for the DSM-IV (SCID)

Axis I Modules [25] was used to assess if patients met diagnostic criteria for panic disorder, major depressive disorder, generalized anxiety disorder, or post-traumatic stress disorder.

Advance care directives—Intermediate outcomes of this study were the patient's completion of a living will (Y/N), a healthcare proxy/durable power of attorney (Y/N), and/or a do-not-resuscitate (DNR) order (Y/N), as reported by the patient during the baseline interview. In the present sample of patients, 163/336 (48.5%) had completed a living will, 164/336 (48.8%) had completed a health care proxy/durable power of attorney, and 140/339 (41.3%) had completed a DNR order at the time of the baseline interview.

Intensive, life-prolonging medical care near death—The primary, end-point outcome of this study was the patient's receipt of intensive, life-prolonging care near death, defined here as evidenced by use of mechanical ventilation (Y/N) or resuscitation (Y/N) in the last week of life. Within 2–3 weeks of the patient's death, the formal or informal caregiver most involved in the patient's last week of life was contacted to provide information regarding the patient's care near death. Additional information on healthcare received in the last week of life was obtained from the patient's medical chart. In the present sample, 31/343 (9.0%) of patients received intensive, life-prolonging care near death, as defined above.

Statistical analysis

Pair-wise associations among the 5 coping methods were evaluated in terms of odds ratios. Associations between coping methods (high versus low) and patient socio-demographic and health status characteristics were assessed using logistic regression analyses with coping method as the dependent variable. Results of these analyses are presented as odds ratios representing the odds of scoring high, relative to the odds of scoring low, on the coping method associated with having a given patient characteristic. For patient characteristics represented by continuous variables (e.g., age), odds ratios represent the relative change in the odds of scoring high on the coping method per unit change in the value of the patient characteristic.

Associations between patient coping methods and advance directives and intensive, life-prolonging care in the last week of life were assessed using multiple logistic regression analyses with all 5 coping methods included simultaneously as independent variables. Decisions about which patient characteristics to include in each model were made based on results of an analysis in which patient socio-demographic (age, gender, race/ethnicity, education, marital status, religion, health insurance, and recruitment site) and health status (cancer diagnosis, Karnofsky performance score, SCID diagnosis, and McGill QOL score) characteristics were automatically entered into the model at a significance level of $p < 0.20$ and retained in the model at a significance level of $p < 0.05$.

The hypothesis that advance directives mediate associations between patient coping methods and receipt of intensive, life-prolonging care in the last week of life was assessed using criteria for mediation outlined by Baron and Kenney [26]. To establish complete mediation by these criteria, patient coping methods must be significantly predictive of advance directives, significantly predictive of intensive, life-prolonging care in the last week of life without adjustment for advance directives, and unrelated to intensive, life-prolonging care in the last week of life with adjustment for advance directives. To establish partial mediation, the magnitude of associations between patient coping methods and intensive, life-prolonging care in the last week of life must be substantially ($> 20\%$) reduced, but still significant, with adjustment for advance directives. Components of this analysis were examined using

multiple logistic regression models, adjusting for potentially confounding patient socio-demographic and health status characteristics.

Statistical analyses were conducted using SAS statistical software, version 9.1 (Cary, NC). Statistical inferences were based on two-sided tests with $p < 0.05$ taken to be statistically significant. Statistical inferences for multiple, related tests were based on critical p -values adjusted for the number of tests, as described below.

RESULTS

Coping Methods

Table 1 presents associations between 5 coping methods. To account for 10 pairwise statistical tests presented in Table 1, tests with $p < 0.005$ were taken to be statistically significant. Patients scoring high on positive religious coping were more likely to score high on negative religious coping ($OR = 3.61$, $p < 0.001$). Patients scoring high on negative religious coping were more likely to score high on behavioral disengagement ($OR = 3.83$, $p < 0.001$). Patients scoring high on active coping were more likely to score high on using emotional support ($OR = 3.54$, $p < 0.001$) and less likely to score high on behavioral disengagement ($OR = 0.33$, $p < 0.001$).

Patient characteristics and coping methods

Table 2 presents associations between patient socio-demographic and health status characteristics and the 5 coping methods. To account for 5 statistical tests for each patient characteristic presented in Table 2 (i.e., 1 test for each coping method), tests with $p < 0.01$ were taken to be statistically significant. Increased age was associated with lower positive religious coping ($OR = 0.97$, $p < 0.001$) and active coping ($OR = 0.98$, $p = 0.009$). Compared to White patients, Black patients were more likely to score high on positive ($OR = 10.42$, $p < 0.001$) and negative ($OR = 4.32$, $p < 0.001$) religious coping, and Hispanic patients were more likely to score high on positive religious coping ($OR = 4.80$, $p < 0.001$), negative religious coping ($OR = 5.82$, $p < 0.001$), and behavioral disengagement ($OR = 4.55$, $p < 0.001$). Increased education was associated with lower positive religious coping ($OR = 0.85$, $p < 0.001$), negative religious coping ($OR = 0.81$, $p < 0.001$), and behavioral disengagement ($OR = 0.85$, $p < 0.001$). Married patients were less likely to score high on positive religious coping ($OR = 0.45$, $p < 0.001$). Compared to Catholics, Protestants were less likely to score high on behavioral disengagement ($OR = 0.24$, $p = 0.003$), and Baptists were more likely to score high on positive religious coping ($OR = 5.28$, $p < 0.001$) and less likely to score high on behavioral disengagement ($OR = 0.33$, $p = 0.009$). Patients with health insurance were less likely to score high on positive religious coping ($OR = 0.21$, $p < 0.001$), negative religious coping ($OR = 0.26$, $p < 0.001$), and behavioral disengagement ($OR = 0.50$, $p = 0.008$). Compared to patients recruited at the Yale Cancer Center, patients recruited at the Simmons Comprehensive Cancer Center were more likely to score high on positive religious coping ($OR = 3.43$, $p = 0.005$), and patients recruited at Parkland Hospital were more likely to score high on positive ($OR = 5.15$, $p < 0.001$) and negative ($OR = 4.11$, $p < 0.001$) religious coping. Higher Karnofsky scores were associated with lower behavioral disengagement ($OR = 0.97$, $p = 0.001$). Patients meeting SCID criteria for a mental disorder were more likely to score high on negative religious coping ($OR = 3.21$, $p = 0.004$) and behavioral disengagement ($OR = 2.93$, $p = 0.005$). Higher McGill Quality of Life scores were associated with higher active coping ($OR = 1.23$, $p = 0.004$) and use of emotional support ($OR = 1.27$, $p = 0.001$) and lower behavioral disengagement ($OR = 0.76$, $p = 0.001$).

Coping methods, advance care directives, and intensive, life-prolonging care near death

Table 3 presents results from multiple logistic regression models relating 5 coping methods to 3 intermediate outcomes, i.e., the advance care directives living will, health care proxy/durable power of attorney, and DNR order, and a single, primary, end-point outcome, intensive, life-prolonging care near death. For advance care directives, to account for 3 statistical tests for each coping method (i.e., one test for each directive), tests with $p < 0.017$ were taken to be statistically significant. Each regression model included all 5 coping methods and potentially confounding socio-demographic and health status variables (see Table 3 footnotes for variables included in each model as potential confounds). Patients scoring high on positive religious coping were less likely to have of a living will at baseline (AOR=0.39, $p=0.003$) and more likely to receive intensive, life-prolonging care near death (AOR=5.43, $p<0.001$). Patients who scored high on using emotional support were more likely to have completed a DNR order at baseline (AOR=2.02, $p<0.008$). Patients who scored high on behavioral disengagement were more likely to have completed a DNR order at baseline (AOR=2.78, $p<0.003$) and less likely to receive intensive, life-prolonging care near death (AOR=0.20, $p=0.036$).

Table 4 presents results of an analysis of advance care directives, living will and DNR order at baseline, as potential mediators of significant associations between positive religious and behavioral disengagement coping methods and receipt of intensive, life-prolonging care near death, according to criteria for mediation outlined in Baron and Kenney [26]. Based on results presented in Table 3, patients scoring high on positive religious coping were more likely to receive intensive, life-prolonging care near death and less likely to have a living will at baseline. According to Table 4, the association between patients who score high on positive religious coping and receipt of intensive, life-prolonging care near death was substantially ($> 20\%$) lower in the model including living will (AOR=3.31, $p=0.014$) as compared to the base model (AOR=5.08, $p<0.001$, but still statistically significant). Therefore, non-completion of a living will at baseline partially mediates the association between scoring high on positive religious coping and receipt of intensive, life-prolonging care near death. Based on results presented in Table 3, patients scoring high on behavioral disengagement were less likely to receive intensive, life-prolonging care near death and more likely to have completed a DNR order at baseline. According to Table 4, the association between patients who score high on behavioral disengagement and receipt of intensive, life-prolonging care near death was not substantially (not $> 20\%$) different in the model including DNR (AOR=0.20, $p=0.033$) as compared to the base model (AOR=0.17, $p=0.019$), but still statistically significant. Consequently, completion of a DNR order at baseline does not mediate the association between scoring high on behavioral disengagement and receipt of intensive, life-prolonging care near death.

COMMENT

This study demonstrates that patient methods of coping with advanced cancer are associated with advance care planning and predict aggressiveness of EOL medical care. In particular, positive religious coping and behavioral disengagement, had significant and opposing influences on completion of advance care directives and receipt of intensive, life-prolonging care near death. Positive religious coping was associated with lower rates of having a living will and predicted higher rates of aggressive EOL care. Behavioral disengagement was associated with higher rates DNR order completion and predicted lower rates of aggressive care near death. These findings suggest that, beyond the previously recognized effects of unalterable patient characteristics [27,28] (e.g., race), patient methods of coping with advanced cancer affect the aggressiveness of EOL care. Furthermore, contrary to the view that EOL health service utilization is largely determined by healthcare system access and physician characteristics [29–31], results of the present study indicate that potentially

modifiable patient characteristics, i.e., patient strategies for coping with a terminal illness, contribute significantly to the use of healthcare services near death.

The finding that positive religious coping is predictive of aggressive EOL care in CwC data was presented initially in a prior report [18]. According to theorists, religion functions in coping processes by supporting a sense of meaning, control, comfort, intimacy, and facilitating life transformation [14], all of which may influence medical decisions. Given strong religious beliefs about the sanctity of life, patients may believe DNR orders or withholding life-sustaining therapies are morally wrong [32]. In the present study, we found that positive religious coping is unrelated to other, non-religious methods of coping with advanced cancer, that its effect on aggressive EOL care is independent of the effects of other coping methods, and that non-completion of a living will, perhaps as an expression of leaving one's fate in God's hands, partially mediates the effect of positive religious coping on aggressive EOL care. Although a large body of research supports associations between positive religious coping and favorable adjustment to a variety of life-stressors [15], our findings here and in our prior report [18] suggest that positive religious coping influences decisions to undergo ineffective (i.e., not curative), yet physically burdensome, medical procedures that still result in death.

Contrary to our hypotheses, active coping was neither related to completion of any advance care directive nor predictive of a lesser likelihood of receipt of aggressive EOL care. Although active coping may be an adaptive response to fixable problems, it might be a less constructive approach to the unalterable stress of a terminal illness [33]. In keeping with our initial hypothesis, emotional-support based coping was associated with higher rates of DNR order completion. This is consistent with previous studies that have found social and emotional support promotes acceptance of a terminal prognosis [34] which may enable patients to engage in advance care planning. Emotional-support based coping was not associated with lower rates of intensive, life-prolonging care near death, possibly because sources of emotional support may encourage some patients to continue fighting and not "give-up" on treatment at the EOL.

Negative religious coping was neither associated with advance care planning nor predictive of aggressive EOL care. For some patients who use negative religious coping, an unresolved sense of divine punishment and spiritual abandonment may degrade spiritual wellbeing which could instill hopelessness and the desire for a hastened death [35] to the point where patients become unable to advocate for their care preferences. Oddly, patients who employed negative religious coping were more likely to employ positive religious coping and also more likely to employ behavioral disengagement, i.e., the 2 coping methods found to have opposing influences on completion of advance care directives and receipt of aggressive care near death.

Unexpectedly, behavioral disengagement was associated with higher rates of DNR order completion and predicted less aggressive EOL care. Although behavioral disengagement is generally regarded as an avoidant coping strategy and maladaptive in other contexts [1,2], results of the present study suggest that, in the context of advanced, terminal cancer, behavioral disengagement may be an adaptive response to the realities of death and dying. Reminiscent of Kubler-Ross' final stage of acceptance in which dying patients recede from social life and contemplate their end with quiet expectation [36], terminally-ill cancer patients in the present study who used behavioral disengagement strategies were less likely to engage in active methods of coping, more likely to prepare for death through the completion of DNR orders, and less likely to receive aggressive, life-prolonging treatments near the EOL.

Consistent with coping theory [37,38], results of the present study support the notion that the efficacy of a particular coping method depends on the circumstances of the stressor, e.g., the stage of the illness [33], and is, therefore, context-specific. Problem- and emotion-focused coping strategies that may be adaptive in the setting of an early-stage malignancy (or other temporary stressors) might be maladaptive in the context of advanced disease. These strategies, shown to be adaptive in a variety of controllable stressful circumstances, may be counterproductive in the setting of terminal illness, where patients are often powerless to change their situation. Behavioral disengagement and other avoidant coping strategies are typically poor responses to situations that require action or emotional preparation to resolve the problem. However, in the context of advanced, terminal cancer, where a problem- or an emotion-focused coping strategy is unlikely to alter the ultimate outcome, disengagement may be a helpful, protective coping method for patients. Relinquishing the struggle against cancer may allow patients to accept death and focus on more achievable life-completion goals. Coping strategies that promote acceptance or resignation (e.g., disengagement) may be more adaptive at EOL than problem-focused (e.g. active coping) or consequence-focused (e.g., using emotional support) coping strategies that are likely to result in frustration.

Strengths of this study include ethnic and socioeconomic diversity among its participants, its use of validated interview-based assessments, inclusion of an extensive set of psychosocial variables, and its prospective design. Although coping traits appear to be stable [39], this study is limited by its single assessment of coping methods that may evolve over time. Future research including longitudinal assessments of coping would likely provide a more refined understanding of the psychological processes involved in adjusting to one's impending death, and the effects these processes have on medical decisions and care near death. Furthermore, given the broad aims of the larger CwC Study and the limited stamina of its terminally ill patient sample, the present study did not include a comprehensive assessment of coping. Although the Brief COPE and Brief RCOPE provided valuable information about complex psychosocial constructs, the coping measures employed in this study were limited in variability and scope. Coping methods other than those examined in this report might also influence advance care planning and EOL care. The applicability of the present findings to non-Christian and non-oncology populations is uncertain.

Clinicians should appreciate that the effects of coping, particularly religious coping, are likely to be moderated by the patient's environment and belief system [40]. We have shown elsewhere that, among high-positive religious coping patients, spiritual support from medical providers predicts a 5-fold reduction in aggressive, life-prolonging EOL care [41]. Given the vastly different paradigms of religious faith and clinical medicine, special efforts from oncology and palliative care clinicians may be required to help religious patients draw more constructively upon spiritual resources as they cope with illness, plan for EOL, and make medical decisions near death. Results of our present and prior [18,41] studies underscore the importance of religious coping in EOL decision-making, and highlight the need for medical and pastoral care providers to attend to spiritual issues at life's end [42]. Furthermore, adaptation to terminal illness may require a repertoire of coping strategies including those that promote acceptance or resignation. Counseling and support groups that enable cancer patients to develop coping skills commensurate to the stress of terminal illness might empower patients to set and achieve appropriate goals at the EOL.

According to Folkman [43], "Believing that an event is controllable does not always lead to a reduction in stress or to a positive outcome, and believing that an event is uncontrollable does not always lead to an increase in stress or to a negative outcome." The present investigation appears to support Folkman's claim. Positive religious coping, with its commitment to the belief that God is in control of one's life, leads to what EOL experts consider negative outcomes, i.e., less advance care planning and more aggressive, non-

curative, burdensome EOL care [42]. Conversely, behavioral disengagement, with its implicit acceptance that death is impending and inevitable, leads to what EOL experts consider positive outcomes, i.e., more advance care planning and less aggressive, EOL care.

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Table 1

Associations between coping methods (N=345)

Coping Method	n	(%)	Odds Ratio with							
			NRC		AC		ES		BD	
			OR	p	OR	p	OR	p	OR	p
Positive Religious Coping (PRC), High	178	(51.6)	3.61	<0.001	1.54	0.048	0.95	0.818	1.50	0.116
Negative Religious Coping (NRC), High	149	(43.2)			0.72	0.128	0.72	0.130	3.83	<0.001
Active Coping (AC), High	176	(51.0)					3.54	<0.001	0.33	<0.001
Using Emotional Support (ES), High	192	(55.7)							0.63	0.072
Behavioral Disengagement (BD), High	81	(23.5)								

To account for 10 pair-wise statistical tests, tests with $p < 0.005$ were taken to be statistically significant.

Table 2

Associations between patient characteristics and coping methods (N=345)

Patient Characteristic			Odds Ratio with									
			PRC		NRC		AC		ES		BD	
			O.R.	p	O.R.	p	O.R.	p	O.R.	p	O.R.	p
Age in years, mean (SD)	58.4	(12.7)	0.97	<0.001	0.98	0.027	0.98	0.009	1.01	0.471	1.00	0.827
Gender, male, n (%)	186	(53.9)	0.69	0.086	0.90	0.611	0.96	0.848	0.93	0.742	0.90	0.671
Race/ethnicity, n (%)												
White	215	(62.3)	1.00	ref.	1.00	ref.	1.00	ref.	1.00	ref.	1.00	ref.
Black	67	(19.4)	10.42	<0.001	4.32	<0.001	0.91	0.734	0.70	0.202	0.66	0.294
Hispanic	58	(16.8)	4.80	<0.001	5.82	<0.001	0.87	0.651	0.72	0.268	4.55	<0.001
Other	5	(1.5)	2.74	0.275	1.61	0.607	3.75	0.241	n.e.	1.000	1.06	0.958
Education in years, mean (SD)	12.3	(4.1)	0.85	<0.001	0.81	<0.001	1.05	0.050	1.07	0.013	0.85	<0.001
Married, n (%)	187	(54.7)	0.45	<0.001	0.74	0.162	1.38	0.137	1.31	0.224	0.87	0.572
Religion, n (%)												
Catholic	130	(37.7)	1.00	ref.	1.00	ref.	1.00	ref.	1.00	ref.	1.00	ref.
Protestant	56	(16.2)	1.06	0.867	0.45	0.024	0.86	0.632	1.50	0.213	0.24	0.003
Baptist	57	(16.5)	5.28	<0.001	1.48	0.219	1.18	0.600	1.33	0.370	0.33	0.009
Other	84	(24.4)	2.41	0.002	1.18	0.548	1.64	0.080	1.29	0.362	0.63	0.148
None	18	(5.2)	0.18	0.024	0.36	0.081	0.68	0.448	1.52	0.413	0.58	0.359
Health Insurance, n (%)	195	(57.4)	0.21	<0.001	0.26	<0.001	1.04	0.864	1.04	0.869	0.50	0.008
Recruitment Site, n (%)												
Yale Cancer Center	67	(19.5)	1.00	ref.	1.00	ref.	1.00	ref.	1.00	ref.	1.00	ref.
West Haven VA Cancer Center	13	(3.8)	0.54	0.379	2.17	0.212	0.54	0.318	2.46	0.165	0.48	0.497
Simmons Comprehensive Cancer Center	35	(10.2)	3.43	0.005	1.01	0.982	1.88	0.151	3.16	0.012	0.74	0.627
Parkland Hospital	155	(45.2)	5.15	<0.001	4.11	<0.001	0.90	0.706	1.20	0.539	2.48	0.018
Partners (DFCI, MGH) Cancer Centers	8	(2.3)	n.e.	1.000	1.52	0.593	0.52	0.391	1.82	0.436	1.90	0.469
New Hampshire Oncology-Hematology	65	(19.0)	0.41	0.027	0.69	0.367	0.65	0.222	1.54	0.219	1.86	0.165
Cancer Diagnosis, n (%)												
Lung	75	(22.0)	1.00	ref.	1.00	ref.	1.00	ref.	1.00	ref.	1.00	ref.

Patient Characteristic			Odds Ratio with									
			PRC		NRC		AC		ES		BD	
			O.R.	p	O.R.	p	O.R.	p	O.R.	p	O.R.	p
Colon	48	(14.1)	1.87	0.099	1.38	0.388	1.25	0.545	1.46	0.318	1.95	0.140
Breast	34	(10.0)	0.91	0.826	1.33	0.490	1.39	0.430	0.98	0.970	1.62	0.349
Pancreas	24	(7.0)	0.62	0.314	0.62	0.342	0.97	0.955	1.03	0.943	2.16	0.160
Other	160	(46.9)	1.08	0.784	1.17	0.588	0.90	0.716	1.10	0.742	1.81	0.103
Karnofsky Performance Score, mean (SD)	63.2	(15.8)	1.00	0.617	0.99	0.086	1.01	0.294	1.01	0.486	0.97	0.001
SCID Diagnosis, n (%)	32	(9.6)	1.86	0.112	3.21	0.004	0.97	0.943	0.87	0.701	2.93	0.005
McGill Quality of Life, mean (SD)	7.5	(1.5)	1.10	0.186	0.83	0.010	1.23	0.004	1.27	0.001	0.76	0.001

Coping Methods: Positive Religious Coping (PRC), High, 178/345 (51.6 %); Negative Religious Coping (NRC), High, 149/345 (43.2 %); Active Coping (AC), High, 176/345 (51.0 %); Using Emotional Support (ES), High, 192/345 (55.7 %); Behavioral Disengagement (BD), High, 81/345(23.5 %)

Missing data: Married (3), Insured (5), Recruitment Site (2), Cancer Diagnosis (4), Karnofsky (9), SCID (13), McGill (2)

To account for 5 statistical tests for each patient characteristic (i.e., one test for each coping method), tests with p<0.01 were taken to be statistically significant.

Table 3
Associations between coping methods and advance care directives and intensive life-prolonging care near death

Coping Method	Adjusted Odds Ratio with							
	Living Will		Health Care Proxy		DNR		Life-Prolonging Care	
	AOR	p	AOR	p	AOR	p	AOR	p
Positive Religious Coping	0.39	0.003	0.72	0.340	0.72	0.223	5.43	<0.001
Negative Religious Coping	0.82	0.553	1.05	0.888	0.74	0.278	0.76	0.530
Active Coping	1.61	0.128	1.73	0.088	0.75	0.273	0.92	0.841
Using Emotional Support	1.30	0.389	1.03	0.931	2.02	0.008	1.50	0.365
Behavioral Disengagement	0.82	0.611	2.10	0.073	2.78	0.003	0.20	0.036

Advance Care Directives: Living Will, 163/336 (48.5%); Health Care Proxy/Durable Power of Attorney, 164/336 (48.8%); Do-Not-Resuscitate (DNR), 140/339 (41.3%)
Intensive, Life-Prolonging Care Near Death, 31/343 (9.0%)
Odds ratio estimates for Living Will, Health Care Proxy/Durable Power of Attorney, DNR, and Intensive, Life-Prolonging Care Near Death are all adjusted for each of the other four coping methods listed in this table.
Odds ratio estimates for Living Will also adjusted for age, race/ethnicity, recruitment site, and Kamofsky score
Odds ratio estimates for Health Care Proxy/Durable Power of Attorney also adjusted for age, gender, race/ethnicity, years of education, marital status, religion, and recruitment site
Odds ratio estimates for DNR also adjusted for race and Kamofsky score Odds ratio estimates for Intensive, Life-Prolonging Care Near Death also adjusted for marital status
Sample size for regression analysis: Living Will, N=325; Health Care Proxy/Durable Power of Attorney, N=331; DNR, N=330; Intensive, Life-Prolonging Care Near Death, N=340
For advance care directives, to account for 3 statistical tests for each coping method (i.e., one test for each directive), tests with $p < 0.017$ were taken to be statistically significant.
For intensive, life-prolonging care near death, tests with $p < 0.05$ were taken to be statistically significant.

Analysis of advance care directives as mediators of significant associations between coping methods and intensive life-prolonging care near death

Table 4

Coping Method	Adjusted Odds Ratio with Intensive Life-Prolonging Care Near Death		Base Model + Living Will		Base Model + DNR	
	Base Model		Base Model + Living Will		Base Model + DNR	
	AOR	p	AOR	p	AOR	p
Positive Religious Coping	5.08	<0.001	3.31	0.014	4.04	0.003
Behavioral Disengagement	0.17	0.019	0.16	0.017	0.20	0.033
Living Will			0.27	0.008		
DNR order					0.25	0.013

Base model odds ratio estimates adjusted for marital status and one other coping method listed in this table.

Sample size for regression analysis: Base Model, N=340; Base Model + Living Will, N=331; Base Model + DNR, N=334