Associations Between End-of-Life Discussions, Patient Mental Health, Medical Care Near Death, and Caregiver Bereavement Adjustment

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Associations Between End-of-Life Discussions, Patient Mental Health, Medical Care Near Death, and Caregiver Bereavement Adjustment

Alexi A. Wright, MD
Baohui Zhang, MS
Alaka Ray, MD
Jennifer W. Mack, MD, MPH
Elizabeth Trice, MD, PhD
Tracy Balboni, MD, MPH
Susan L. Mitchell, MD
Vicki A. Jackson, MD, MPH
Susan D. Block, MD
Paul K. Maciejewski, PhD
Holly G. Prigerson, PhD

Context Talking about death can be difficult. Without evidence that end-of-life discussions improve patient outcomes, physicians must balance their desire to honor patient autonomy against a concern of inflicting psychological harm.

Objective To determine whether end-of-life discussions with physicians are associated with fewer aggressive interventions.

Design, Setting, and Participants A US multisite, prospective, longitudinal cohort study of patients with advanced cancer and their informal caregivers (n=332 dyads), September 2002-February 2008. Patients were followed up from enrollment to death, a median of 4.4 months later. Bereaved caregivers' psychiatric illness and quality of life was assessed a median of 6.5 months later.

Main Outcome Measures Aggressive medical care (eg, ventilation, resuscitation) and hospice in the final week of life. Secondary outcomes included patients' mental health and caregivers' bereavement adjustment.

Results One hundred twenty-three of 332 (37.0%) patients reported having end-of-life discussions before baseline. Such discussions were not associated with higher rates of major depressive disorder (8.3% vs 5.8%; adjusted odds ratio [OR], 1.33; 95% confidence interval [CI], 0.54-3.32), or more worry (mean McGill score, 6.5 vs 7.0; $P=.19$). After propensity-score weighted adjustment, end-of-life discussions were associated with lower rates of ventilation (1.6% vs 11.0%; adjusted OR, 0.26; 95% CI, 0.08-0.83), resuscitation (0.8% vs 6.7%; adjusted OR, 0.16; 95% CI, 0.03-0.80), ICU admission (4.1% vs 12.4%; adjusted OR, 0.35; 95% CI, 0.14-0.90), and earlier hospice enrollment (65.6% vs 44.5%; adjusted OR, 1.65; 95% CI, 1.04-2.63). In adjusted analyses, more aggressive medical care was associated with worse patient quality of life (6.4 vs 4.6; $F=3.61$, $P=.01$) and higher risk of major depressive disorder in bereaved caregivers (adjusted OR, 3.37; 95% CI, 1.12-10.13), whereas longer hospice stays were associated with better patient quality of life (mean score, 5.6 vs 6.9; $F=3.70$, $P=.01$). Better patient quality of life was associated with better caregiver quality of life at follow-up ($\beta=.20$; $P=.001$).

Conclusions End-of-life discussions are associated with less aggressive medical care near death and earlier hospice referrals. Aggressive care is associated with worse patient quality of life and worse bereavement adjustment.

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Author Affiliations: Department of Medical Oncology (Drs Wright and Trice), Center for Psycho-Oncology and Palliative Care Research (Drs Wright, Ray,Trice, Balboni, Block, and Prigerson and Ms Zhang), Department of Pediatric Oncology (Dr Mack), and Center for Outcomes and Policy Research, Dana-Farber Cancer Institute, Boston; Massachusetts General Hospital, Boston (Drs Ray and Jackson), Harvard Radiation Oncology Program (Dr Balboni), Harvard Medical School Center for Palliative Care (Drs Jackson, Block, and Prigerson), Harvard University, Boston; Institute for Aging Research, Hebrew SeniorLife, Roslindale (Dr Mitchell); Beth Israel Deaconess Medical Center, Boston (Drs Mitchell); and Department of Psychiatry, Brigham and Women's Hospital, Boston (Drs Block, Maciejewski, and Prigerson).
Corresponding Author: Alexi A. Wright, MD, Department of Medical Oncology and Center for Psycho-Oncology and Palliative Care Research, Dana-Farber Cancer Institute, 550 Shields Warren, 44 Binney St, Boston, MA 02115 (awright2@partners.org).

END-OF-LIFE DISCUSSIONS OFFER patients the opportunity to define their goals and expectations for the medical care that they want to receive near death. But these discussions also mean confronting the limitations of medical treatments and the reality that life is finite, both of which may cause psychological distress.[1] Studies suggest that physicians and patients are ambivalent about talking about death and often avoid these conversations.[2-13] To date, however, research has not examined whether these discussions are associated with patients' psychological distress or medical care near death. Without this information physicians cannot weigh the risks and benefits of end-of-life discussions.

A decade ago, Weeks et al[14] demonstrated that patients with advanced cancer who preferred life-extending-therapy were often overly optimistic about their chances of survival. These

results suggested that end-of-life discussions might reduce the aggressiveness of medical care near death by making patients more realistic about the benefits of intensive therapies. Consistent with this, a small study showed that end-of-life conversations significantly influenced patients' understanding that their illness was terminal and that this, in turn, was associated with increased integration of hospice.[15] Another study demonstrated that patients who wanted to avoid cardiopulmonary resuscitation and discussed their preferences with physicians were more likely to have do-not-resuscitate orders.[16] Others have shown that hospice is associated with better quality of life near death,[17] and reductions in bereaved caregivers' risk of developing major depressive disorder.[18] To date, however, research has not examined whether end-of-life discussions are associated with patients' medical care in the final week of life, or whether the medical care received at the end of life is correlated with differences in patients' quality of life near death or caregivers' bereavement outcomes.

The primary aim of this prospective, longitudinal, cohort study was to examine the associations between end-of-life discussions with physicians and the medical care that terminally ill cancer patients receive near death. Our a priori hypothesis was that such discussions would be associated with less aggressive medical care and earlier integration of hospice. Our secondary aims were to examine the associations between these discussions and patients' psychological distress, quality of life near death, and caregivers' bereavement outcomes. We hypothesized that end-of-life discussions would be associated with greater psychological distress. Although we did not expect patients' quality of life near death to be directly influenced by these discussions reported at baseline, we did expect that patients' quality of life would be influenced by the medical care that they actually received near death. We also hypothesized that patients' end-of-life experiences (ie, their medical care and quality of life) would affect the surviving caregivers' bereavement adjustment.

METHODS

Study Sample

Coping with Cancer was a National Cancer Institute and National Institute of Mental Health–funded prospective, longitudinal, multisite cohort study of terminally ill cancer patients and their informal caregivers (eg, spouse or adult child) who were followed up through bereavement. Coping with Cancer sought to examine how psychosocial factors influence patients' care and their caregivers' bereavement adjustment.

Patients were recruited from September 1, 2002, to February 28, 2008, from 7 different outpatient sites: Yale Cancer Center, New Haven, and the Veterans Affairs Connecticut Healthcare System Comprehensive Cancer Clinics, West Haven; the Parkland Hospital Palliative Care Service and Simmons Comprehensive Cancer Center, Dallas, Texas; Massachusetts General Hospital and Dana-Farber Cancer Institute, Boston; and New Hampshire Oncology-Hematology, Hookset. Approval was obtained from the human subjects committees of all participating centers; all enrolled patients provided written informed consent.

Eligibility criteria included diagnosis of advanced cancer (presence of distant metastases and disease refractory to first-line chemotherapy); age at least 20 years; presence of an informal caregiver; and clinic staff and interviewer assessment that the patient had adequate stamina to complete the interview. Patient-caregiver dyads in which either the patient or caregiver refused to participate, met criteria for dementia or delirium (by neurobehavioral cognitive status examination), or did not speak either English or Spanish were excluded.

Of the 917 eligible patients, 638 patients (69.6%) consented and enrolled in the larger study. Of the 279 patients who refused participation, 120 were not interested, 69 cited other reasons, and 37 patients' caregivers refused participation. There were no differences in the sociodemographic characteristics between the participants and nonparticipants, except that participants were more likely to be Hispanic (11.8% vs 5.7%, $P = .006$). For the present analysis, we restricted our sample to the 332 patients who died to examine the medical care that patients received in the final week of life. The deceased cohort did not differ significantly ($P < .05$) by cancer type, psychological distress, or rates of psychiatric disorders. However, as expected, this cohort was more debilitated (eg, had worse performance status and higher symptom burden) and more likely to have characteristics associated with lower socioeconomic status (eg, be younger, female, uninsured, and identify as a member of an ethnic minority group).[19,20]

Protocol and Measures

Research staff at each site participated in a 2-day training session covering the study protocol, medical chart extraction, and techniques for interviewing terminally ill patients and their families. Participants were identified from outpatient clinics. All interviews were conducted in English or Spanish. Patient interviews took an average of 30 to 45 minutes to complete; caregiver interviews typically lasted 60 to 75 minutes. Patients and caregivers received $25 as compensation. Upon study enrollment, research staff interviewed the patient and caregiver separately; reviewed the medical record; and confirmed each patient's diagnosis, treatment, and performance status with the physician.

In the baseline interview, patients were asked: "Have you and your doctor discussed any particular wishes you have about the care you would want to receive if you were dying?" Responses were coded as 1 for yes and 2 for no. Psychosocial factors identified in the literature as important predictors of end-of-life care were recorded, including patients' treatment preferences,[14] advance care planning, acknowledgment that their illness was terminal,[15,21] religious-

ness (patients who reported that religion was "very important" were coded as "religious"),[22] and the patient-physician relationship.[23] A close patient-physician relationship was defined as one in which patients trusted and respected their physician, felt respected and "seen as a whole person," and were very comfortable asking questions about their care. Sociodemographic characteristics were recorded as reported by the patient. Race or ethnicity was analyzed as a potential determinant of end-of-life medical care because patients with advanced cancer of different racial or ethnic groups have been found to vary in their treatment preferences, advance care planning, and health care utilization.[24-27] Race or ethnicity was determined by patient self-report in response to the open-ended question: "What race or ethnicity do you consider yourself to be?" Patients who identified themselves as Hispanic were analyzed as such, regardless of whether they reported white or black status. Mental health measures included the Structured Clinical Interview for *DSM-IV* (*Diagnostic and Statistical Manual-Fourth Edition*) (SCID),[28,29] the Endicott Scale,[30] and McGill Quality of Life psychological subscale.[31] Patients' functional status and comorbid medical conditions were measured with the Karnofsky score[32] and the Charlson Comorbidity Index, respectively.[33] Quality of life was assessed with the McGill Quality of Life Index's physical health, symptom, and social support subscales.[31] Caregiver interviews included self-reported sociodemographic characteristics and baseline measures of physical and mental health measures, including the SCID and the Medical Outcomes Study 36-item Short Form Survey (MOS SF-36).[34]

Research staff reviewed the list of study participants weekly with clinic staff at each site. Within 2 to 3 weeks of a participants' death, research staff reviewed the medical record to document medical care received. This included specific services that have been defined in the literature as indicators of aggressive medical care, including admission to an intensive care unit, ventilation, resuscitation, chemotherapy, or use of a feeding tube near death.[35] In a postmortem interview, research staff interviewed the formal or informal caregiver involved in the patient's care during the final week of life to assess the patient's quality of life near death. Specifically, they asked, "In your opinion, how would you rate the overall quality of the patient's death/last week of life?" Response items were arranged on a Likert scale from 0 "worst possible" to 10 "best possible." Patient's location of death and length of time in hospice was documented.

Bereaved caregivers were interviewed a median of 6.5 months after the patient's death to assess their bereavement adjustment. We chose this point so that caregivers would be likely to be beyond a state of acute grief,[36] but close enough to the death to avoid introduction of recall bias. Interviewers repeated the SCID and MOS SF-36. Caregivers were also asked about their satisfaction and regrets about patient's end-of-life care.

Statistical Analysis

t Test, Cochran-Mantel-Haenszel, and χ^2 test statistics were used, as appropriate, to test for significant differences between patients who did or did not report end-of-life discussions with their physicians at baseline. A Cox proportional hazards model was performed to examine differences in survival between the 2 groups. A log-rank test was used to determine whether the groups differed significantly in survival. Item nonresponse rates were less than 10% for all study variables, except for a question that assessed patients' preferences for life-extending therapy (11.6% responded "don't know"). To preserve the study sample, missing data were imputed at the median value, except for patients' preference for life-extending therapy, which was imputed by the predicted value from a multivariate logistic regression model.

We used a propensity-score weighting technique to balance characteristics that differed significantly ($P<.10$) between the 2 groups (ie, recruitment site, Karnofsky score, Charlson Comorbidity Index, McGill quality of life symptom subscale, survival, religiousness). Logistic regression models estimated the odds of reporting an end-of-life conversation as a function of these characteristics. The predicted probabilities of reporting an end-of-life conversation (propensity scores) were used to derive individual weights equal to the probability of belonging to the opposite group, making the weighted distribution of characteristics among participants in both groups balanced.[37] Therefore, weighted analyses adjusted for potential confounding from measured characteristics associated with end-of-life discussions. Propensity-score weighted logistic regression was used to estimate the effect of these discussions on binary outcomes (eg, psychiatric disorders), whereas propensity-score weighted linear regression models estimated their effect on continuous measures (eg, quality of life). Logistic regression models examining the effect of end-of-life discussion on medical care received in the last week of life were also adjusted for patients' treatment preferences, desire for prognostic information, and terminal illness acknowledgment.

Multivariate relationships between patients' quality of life near death and the intensity of medical services received were examined. Adjusted 1-way analysis of variance models tested the associations between patient quality of life near death and the number of aggressive procedures as well as length of hospice stay, controlling for Karnofsky score and survival. The relationship between patients' quality of life near death, the number of aggressive procedures received in the last week of life, and the length of hospice stay was plotted.

Caregiver bereavement outcomes estimated the effects of patient medical care and quality of life near death on the surviving caregiver's likelihood of meeting criteria for psychiatric disorders, health-

related quality of life, and grief reactions (eg, regret). In these models, baseline measures of each bereavement outcome (eg, overall quality of life) were included to estimate the effect of the death over and above caregiver baseline levels. Other confounding influences were included in the model if they changed the estimate of the main predictor by more than 10%, and were retained if they remained significant at a level of $P < .05$ controlling for other confounders. Confounders considered included sociodemographics characteristics (age, sex, race, education, and religion), kinship relationship, length of caregiving, source of report for patient quality of life, and religiousness. Statistical analyses were performed with SAS version 9.1 (SAS Institute Inc, Cary, North Carolina). We report 2-sided *P* values without adjustment for multiple comparisons.

RESULTS

Patient Characteristics

The cohort consisted of 332 terminally ill cancer patients who died a median of 4.4 months after enrollment. The sociodemographic, clinical, and psychosocial characteristics of the cohort at baseline are described in TABLE 1. Overall, 123 of 332 (37.0%) patients reported having end-of-life discussions with their physicians at baseline.

There were no associations between end-of-life discussions and patients' self-reported sociodemographic characteristics, insurance status, cancer type, relationships with physicians, religiousness, or social support. There were, however, significant site differences with 61.5% of patients at New Hampshire Hematology Oncology reporting having such conversations compared with 16.2% at Yale Cancer Center ($P < .001$). Patients reporting discussions had lower performance status (59.5 vs 65.7; $P < .001$), higher symptom burden (5.0 vs 5.6; $P = .02$), and shorter survival times (95 vs 154 days; $P = .002$) compared with patients who did not.

Propensity-score weighting successfully adjusted for significant differences in the baseline characteristics of patients who reported having end-of-life conversations and those who did not. After adjustment participants no longer differed by their Karnofsky score, symptom burden, survival time, recruitment site, or religiousness.

Caregiver Characteristics

Caregivers' sociodemographic characteristics were similar to those of the patients, except that they were significantly younger (mean age: 51.2 vs 57.9 years), more likely to be women (77.0% vs 44.9%), and more highly educated (mean, 13.2 vs 12.6 years). The caregiver-patient kinship relationships were spouse (51.4%), adult child (24.0%), other relative (13.9%), friend (6.6%), and parent (4.2%). The median length of time spent caregiving prior to baseline was 11.5 months (interquartile range, 5.0-30.0 months).

Mental Health, Treatment Preferences, and Advance Care Planning

As shown in TABLE 2, end-of-life discussions were not associated with patients feeling "depressed," "sad," "terrified," "worried," or meeting *DSM-IV* criteria for a mental disorder in propensity-weighted analyses. Patients who reported engaging in these conversations were significantly ($P \leq .001$) more likely to accept that their illness was terminal (52.9% vs 28.7%), prefer medical treatment focused on relieving pain and discomfort over life-extending therapies (85.4% vs 70.0%), and have complete a do-not-resuscitate order (63.0% vs 28.5%).

Medical Care at the End of Life

In propensity-score weighted analyses, adjusted for patients' desire for prognostic information, terminal illness acceptance, and treatment preferences, patients who reported having end-of-life conversations with their physicians at baseline received significantly fewer aggressive medical interventions near death. As shown in TABLE 3, patients who reported having these discussions were less likely to receive mechanical ventilation (1.6% vs 11.0%; $P = .02$), undergo resuscitation (0.8% vs 6.7%; $P = .02$), or be admitted to the intensive care unit (4.1% vs 12.4%; $P = .02$). They were also more likely to be enrolled in outpatient hospice for more than a week (65.6% vs 44.5%, $P = .03$).

Patients' Quality of Life at the End of Life

Patients who received aggressive medical interventions had worse quality of life in the final week of life. Patients' quality of life decreased with increasing numbers of aggressive medical therapies, even after adjusting for their severity of illness (FIGURE). Patients who received no aggressive care had a mean quality of life score of 6.4, whereas patients who received 3 or more therapies had a mean quality of life score of 4.6 ($F = 3.61_3$, $P = .01$). The inverse was true for hospice care, where patients' quality of life improved the longer they were enrolled, except for patients who received less than a week of services. Patients who did not receive hospice had a mean quality of life score of 5.6; those enrolled for a week or less had a quality of life score of 5.6; and those enrolled for 2 months or more had quality of life scores of 6.9 ($F = 3.70_3$, $P = .01$).

Bereavement Outcomes

In TABLE 4, we display analyses that examined the associations between patients' experience in the last week of life and caregivers' bereavement adjustment, controlling for significant confounds (caregivers' sociodemographics, mental health, and baseline measures, and quality of life). Caregivers of patients who received any aggressive care were at higher risk for developing a major depressive disorder (adjusted odds ratio, 3.37; 95% confidence interval, 1.12-10.13), experiencing regret ($\beta = .17$; $P = .01$), and feeling unprepared for the patient's death ($\beta = -.30$; $P < .001$), compared with caregivers of patients who did not receive aggressive care. They also had worse quality of life outcomes, including overall quality of life ($\beta = -.15$;

Table 1. Participant Characteristics by End-of-Life Care Discussion With a Physician[a]

		End-of-Life Discussion					
		Unadjusted Comparison			Adjusted Comparison[b]		
	Total Sample (N = 332)	Yes (n = 123)	No (n = 209)	*P* Value	Yes (n = 123)	No (n = 209)	*P* Value
Sociodemographics							
Age, mean (SD), y	57.9 (12.2)	57.7 (12.0)	58.0 (12.3)	.79	57.1 (10.6)	57.1 (13.8)	>.99
Sex, No. (%)							
Men	183 (55.1)	66 (53.7)	117 (56.0)	.68	68 (55.0)	115 (55.0)	>.99
Women	149 (44.9)	57 (46.3)	92 (44.0)		55 (45.0)	94 (45.0)	
Race/ethnicity, No. (%)[c]							
White, non-Hispanic	212 (63.9)	84 (68.3)	128 (61.2)	.48	76 (61.9)	129 (61.9)	.91
Black, non-Hispanic	66 (19.9)	23 (18.7)	43 (20.6)		27 (22.0)	46 (22.0)	
Hispanic	49 (14.8)	15 (12.2)	34 (16.3)		19 (15.1)	32 (15.1)	
Asian or other	5 (1.4)	1 (0.8)	4 (1.9)		1 (1.0)	2 (1.0)	
Married, No. (%)	196 (59.8)	77 (64.2)	119 (57.2)	.22	77 (62.6)	112 (53.4)	.28
Education, mean (SD), y	12.6 (4.0)	12.8 (3.7)	12.5 (4.1)	.51	12.6 (3.2)	12.6 (4.2)	>.99
Health insurance, No. (%)	186 (57.1)	69 (57.0)	117 (57.1)	.99	67 (54.2)	107 (51.3)	.74
Religion, No. (%)							
Catholic	121 (36.6)	48 (39.0)	73 (35.1)	.45	44 (35.9)	69 (32.8)	.81
Protestant	57 (17.2)	20 (16.3)	37 (17.8)		21 (17.3)	37 (17.7)	
Baptist	55 (16.6)	19 (15.5)	36 (17.3)		21 (17.4)	44 (19.4)	
Jewish	10 (3.0)	1 (0.8)	9 (4.3)		1 (0.5)	5 (2.5)	
Muslim	3 (0.9)	1 (0.8)	2 (1.0)		1 (0.9)	2 (0.8)	
Pentecostal	9 (2.7)	5 (4.1)	4 (1.9)		6 (4.4)	5 (2.5)	
Other	60 (18.1)	20 (16.3)	40 (19.2)		20 (16.3)	44 (21.1)	
None	16 (4.8)	9 (7.3)	7 (3.4)		9 (7.4)	7 (3.2)	
Recruitment site, No. (%)							
Yale Cancer Center	76 (22.9)	13 (11.0)	63 (30.7)	<.001	17 (13.7)	29 (13.7)	.86
Veterans Affairs CCC	18 (5.4)	9 (7.3)	9 (4.3)		10 (8.0)	9 (4.0)	
Parkland Hospital	148 (44.6)	57 (46.3)	91 (43.5)		62 (50.8)	99 (47.4)	
Simmons Center	29 (8.7)	9 (7.6)	20 (9.6)		9 (7.3)	24 (11.5)	
Dana Farber and Massachusetts General	9 (2.7)	3 (2.4)	6 (2.9)		3 (2.2)	8 (4.0)	
New Hampshire Oncology Hematology	52 (15.7)	32 (26.0)	20 (9.6)		20 (16.4)	34 (16.4)	
Cancer type, No. (%)							
Breast	38 (11.5)	17 (13.8)	21 (10.1)	.42	17 (13.6)	26 (12.3)	.96
Colorectal	50 (15.1)	22 (17.9)	28 (13.4)		23 (18.8)	28 (13.6)	
Pancreatic	29 (8.7)	9 (7.3)	20 (9.6)		8 (6.9)	19 (9.0)	
Other GI tract	39 (11.8)	13 (10.6)	26 (12.4)		13 (10.4)	28 (13.3)	
Lung	76 (22.9)	22 (17.9)	54 (25.8)		24 (19.8)	41 (19.8)	
Other[d]	101 (30.4)	40 (32.5)	61 (29.2)		38 (30.5)	67 (32.1)	
Performance status, mean (SD)							
Karnofsky[e]	63.4 (15.4)	59.5 (15.1)	65.7 (15.1)	<.001	62.1 (13.0)	62.1 (16.9)	>.99
Charlson[f]	8.2 (2.6)	8.5 (2.7)	8.0 (2.5)	.09	8.2 (2.2)	8.2 (2.9)	>.99
McGill physical[g]	5.7 (2.7)	5.5 (2.8)	5.8 (2.6)	.27	5.7 (2.3)	5.6 (3.0)	.62
McGill symptom[g]	5.4 (2.1)	5.0 (2.1)	5.6 (2.1)	.02	5.3 (1.8)	5.3 (2.3)	>.99
Survival, median, (25%-75% quartiles), d	131.5 (59.5-258.5)	95.0 (44.0-211.0)	154.0 (72.0-292.0)	.002	104.0 (52.0-224.0)	104.0 (50.0-225.0)	.87
Patient-physician relationship, No. (%)[h]	228 (68.7)	88 (71.5)	140 (67.0)	.39	90 (73.1)	139 (66.5)	.41
Religious, No. (%)[i]	230 (69.3)	78 (63.4)	152 (72.7)	.08	85 (69.3)	145 (69.3)	>.99
Social support, mean (SD)[i]	8.6 (1.7)	8.6 (1.6)	8.6 (1.8)	.86	8.7 (1.5)	8.7 (1.9)	.92

Abbreviation: CCC, Comprehensive Cancer Center; GI, gastrointestinal.
[a] Percentages may not sum to 100 due to rounding, and some responses may not sum to the total number of patients because of lack of data. Nos. in the adjusted comparison columns reflect the propensity-weighted sample.
[b] In adjusted comparisons, responses were weighted according to the estimated propensity score of participants reporting an end-of-life discussion. In cases for which there were no differences in the characteristics between groups after propensity score weighting, the *P* value is >.99.
[c] Race/ethnicity was determined by patient self-report in response to the open-ended question: "What race or ethnicity do you consider yourself to be?"
[d] The remaining patients had cancer types each representing less than 5% of the sample. Due to rounding, this totals to more than 100%.
[e] Karnofsky score is a measure of functional status that is predictive of survival, where 0 is dead and 100 is perfect health.
[f] The Charlson comorbidity index is an age-adjusted measure of comorbid illness, where higher numbers signify a greater burden.
[g] Subscales of the McGill Quality of Life Questionnaire (scale 0-10) where 0 is undesirable and 10 is desirable.
[h] Percentage of patients with a "close doctor-patient relationship," defined as one in which patients trusted and respected their physician, felt respected and "seen as a whole person," and were very comfortable asking questions about their care.
[i] Percentage of patients who reported religion was "very important."

$P = .004$), self-reported health ($\beta = -.12$; $P = .04$), and increased role limitations ($\beta = .17$; $P = .008$).

A direct relationship existed between patients' quality of life near death and their bereaved caregivers' quality of life at follow-up. High patient quality of life was associated with better caregiver outcomes, including overall quality of life ($\beta = .20$; $P = .001$), self-reported health ($\beta = .17$, $P = .004$), physical functioning ($\beta = .14$, $P = .02$), mental health ($\beta = .13$, $P = .04$), and improvements in self-rated change in health (adjusted odds ratio, 1.17; 95% confidence interval, 1.05-1.29). Caregivers of patients with high quality of life felt better prepared for the death ($\beta = 0.23$, $P = .002$) and experienced less regret ($\beta = -.30$, $P < .001$) at follow-up.

Table 2. Associations Between Advanced Cancer Patients' End-of-Life Discussions, Mental Health, Terminal Illness Acceptance, Treatment Preferences, and Planning

	No. (%)				
		End-of-Life Discussion			
	Total Sample (N = 332)	Yes (n = 123)	No (n = 209)	Adjusted OR (95% Confidence Interval)[a]	*P* Value
Mental disorders					
Major depressive disorder[b]	22 (6.7)	10 (8.3)	12 (5.8)	1.33 (0.54-3.32)	.53
Major depressive disorder-Endicott[c]	20 (6.1)	7 (5.8)	13 (6.3)	0.73 (0.26-2.06)	.56
Generalized anxiety disorder[b]	7 (2.1)	4 (3.3)	3 (1.4)	2.50 (0.51-12.1)	.26
Panic disorder[b]	10 (3.1)	2 (1.7)	8 (3.9)	0.55 (0.16-1.90)	.34
Posttraumatic stress disorder[b]	9 (2.7)	4 (3.3)	5 (2.4)	0.95 (0.24-3.75)	.94
Any mental disorder[b]	33 (10.2)	11 (9.2)	22 (10.7)	0.73 (0.35-1.55)	.41
McGill psychological subscale, adjusted least square means (SE)[d]					
Depressed	7.4 (2.9)	7.3 (0.2)	7.4 (0.2)		.79
Nervous or worried	6.9 (3.2)	6.5 (0.3)	7.0 (0.3)		.19
Sad	7.2 (3.0)	7.3 (0.2)	7.2 (0.2)		.79
Terrified	7.2 (3.1)	7.1 (0.3)	7.2 (0.3)		.68
Any psychological distress	5.4 (0.1)	5.3 (0.2)	5.4 (0.2)		.55
Acceptance, preferences, and planning					
Accepts illness is terminal	125 (37.7)	65 (52.9)	60 (28.7)	2.19 (1.40-3.43)	<.001
Wants to know life expectancy	242 (72.9)	103 (83.7)	139 (66.5)	2.40 (1.43-4.04)	<.001
Values comfort over life-extension	245 (73.8)	105 (85.4)	140 (70.0)	2.63 (1.54-4.49)	<.001
Against death in ICU	118 (35.5)	60 (48.8)	58 (27.8)	2.13 (1.35-3.37)	<.001
Completed DNR order	134 (41.1)	75 (63.0)	59 (28.5)	3.12 (1.98-4.90)	<.001
Completed living will, durable power of attorney, or health care proxy	181 (55.2)	86 (71.7)	95 (46.1)	1.96 (1.25-3.07)	.003

Abbreviation: DNR, do not resuscitate; ICU, intensive care unit; OR, odds ratio.
[a]The propensity-weighted sample was used in these analyses.
[b]Diagnosed according to Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition) for mental disorders.
[c]The Endicott scale has been validated for depression in terminally-ill cancer patients. It measures nonsomatic symptoms of depression.
[d]Subscales of the McGill Quality of Life Questionnaire (scale 0-10) for which 0 is undesirable and 10 is desirable.

Table 3. Medical Care Received in the Last Week of Life by End-of-Life Discussion

	No. (%)				
		End-of-Life Discussion			
	Total (N=332)	Yes	No	Adjusted OR (95% Confidence Interval)[a]	*P* Value
Medical care received in the last week	332	123 (37.0)	209 (63.0)		
ICU admission	31 (9.3)	5 (4.1)	26 (12.4)	0.35 (0.14-0.90)	.02
Ventilator use	25 (7.5)	2 (1.6)	23 (11.0)	0.26 (0.08-0.83)	.02
Resuscitation	15 (4.5)	1 (0.8)	14 (6.7)	0.16 (0.03-0.80)	.02
Chemotherapy	19 (5.7)	5 (4.1)	14 (6.7)	0.36 (0.13-1.03)	.08
Feeding tube	26 (7.9)	11 (8.9)	15 (7.3)	1.30 (0.55-3.10)	.52
Outpatient hospice used	213 (64.4)	93 (76.2)	120 (57.4)	1.50 (0.91-2.48)	.10
Outpatient hospice ≥1 wk	173 (52.3)	80 (65.6)	93 (44.5)	1.65 (1.04-2.63)	.03

Abbreviation: ICU, intensive care unit; OR, odds ratio.
[a]The propensity-score weighted sample was used for these analyses. Logistic regression models were also adjusted for patients' treatment preferences, desire for prognostic information, and acceptance of terminal illness.

COMMENT

Our results suggest that end-of-life discussions may have cascading benefits for patients and their caregivers. Despite physicians' concerns that patients may experience psychological harm due to end-of-life discussions,[5-7,9] we found no evidence that they were significantly associated with increased emotional distress or psychiatric disorders. Instead, the worst outcomes were seen in patients who did not report having these conversations. This group received significantly more aggressive medical care in their final week of life, which was associated with worse patient quality of life near death. In addition, their bereaved caregivers experienced worse quality of life, more regret, and were at higher risk of developing a major depressive disorder in a median of 6.5 months later.

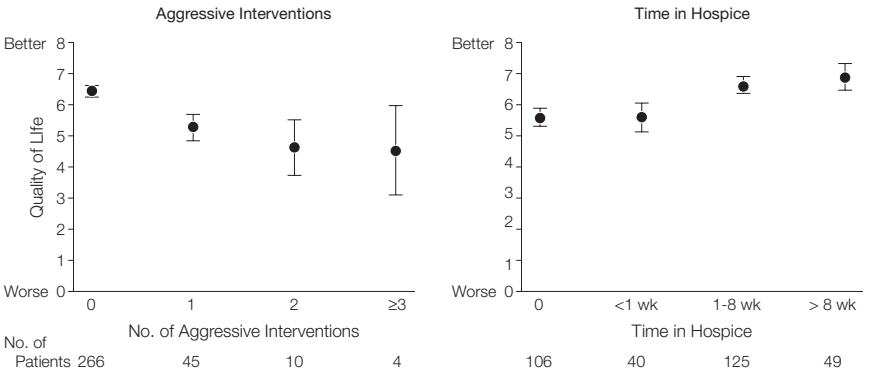
On the other hand, patients who reported having end-of-life discussions received less aggressive medical care and were more likely to receive hospice services for more than a week. Less aggressive care and earlier hospice referrals were associated with better patient quality of life near death. Of note, patients who received less than a week of hospice care had the same quality of life scores as patients who did not receive hospice at all, suggesting that patients benefit more from early hospice referrals. Better patient quality of life near death, in turn, was associated with better qual-

ity of life among surviving caregivers who experienced less regret and showed improvements in self-reported health, physical functioning, mental health, and overall quality of life during the bereavement period.

To date, most of the communications literature in cancer has focused on physicians' and patients' preferences surrounding prognostication with little attention paid to the psychological and medical outcomes of these conversations.[38] The bereavement literature has begun to explore the associations between patients' place of death, the receipt of hospice care, and caregivers' subsequent risk for psychiatric disorders.[17,39,40] Recent studies have shown that communication interventions in the intensive care unit can reduce psychological distress among bereaved family members.[41] Our results suggest that bereavement-related distress might be offset by interventions aimed at reducing aggressive care.

Our findings must be interpreted within the context of an observational study that could not randomize patients whose cancer is terminal to end-of-life discussions for ethical and logistical reasons. In lieu of a trial, propensity-score weighting enabled us to examine our primary outcome independent of observed differences. Although this technique cannot correct

Figure. Relationship Between Quality of Life and End-of-Life Care



Results are adjusted for illness severity, as measured by Karnofsky score and survival. Caregivers were asked, "In your opinion, how would you rate the overall quality of the patient's death or last week of life?" Response items were arranged on a Likert scale from 0 "worst possible" to 10 "best possible." The hospice statistical scores were $F=4.04_3$, $P<.001$. Interventions included ventilation, resuscitation, chemotherapy, or feeding tube ($F=3.61_3$; $P=.01$). Error bars represent 95% confidence intervals.

Table 4. Associations Between Caregivers' Outcomes and Patients' End-of-Life Care and Quality of Life (N = 202)

Caregiver Bereavement Outcomes	Aggressive Medical Care		Hospice Care		Patients' Quality of Life	
	Standardized β Coefficient[a]	*P* Value	Standardized β Coefficient[a]	*P* Value	Standardized β Coefficient[a]	*P* Value
Health-related quality of life[b]						
Overall	–0.15[c,d]	.004	0.06[c,d]	.31	0.20[c,e,f]	<.001
Self-reported health	–0.12[c]	.04	–0.06[c]	.30	0.17[c,e]	.004
Physical function	–0.10[c,g]	.05	0.010[c,g]	.85	0.14[c,e,h]	.02
Mental health	–0.11[c,i]	.06	0.01[c,j]	.81	0.13[c,e,j]	.04
Role limitation	0.17[c,k]	.008	–0.03[c]	.62	–0.10[c,e]	.15
Change in health adjusted OR, (95% CI)	0.57 (0.29 to 1.11)[c]	.10	1.55 (0.89 to 2.69)[c]	.12	1.17 (1.05 to 1.29)[c,e]	.003
Grief reaction						
Felt prepared for death	–0.30[c,l]	<.001	0.13[c,l]	.05	0.23[c,e,l]	.002
Regret	0.17	0.01	–0.08[f]	.25	–0.30[e]	<.001
Mental disorders[m]						
Any mental disorder adjusted OR (95% CI)	2.25 (0.81 to 6.23)[c,n]	.12	0.87 (0.38 to 1.97)[c,n]	.78	0.87 (0.73 to 1.03)[c,e]	.10
Major depressive disorder adjusted OR (95% CI)	3.37 (1.12 to 10.13)[c,n]	.03	0.46 (0.17 to 1.21)[c,n]	.12	0.86 (0.71 to 1.05)[e]	.09

Abbreviation: CI, confidence interval; OR, odds ratio.
[a] Except where noted, data are expressed as standardized coefficients that reflect the effect of a change of 1 standard deviation in the predictor on the outcome variable.
[b] Quality of life was measured with the 36-item Medical Outcome Study Short-Form Health Survey; linear and logistic regression models adjusted for significant confounders as noted in the annotations of the footnotes.
[c] Baseline measures assessed a median of 10.8 months earlier.
[e] Source of report (formal or informal caregiver) for quality of life measure, and the following variables.
[d] Sex and education.
[f] Education.
[g] Age, education, length of caregiving.
[h] Age and length of caregiving.
[i] Sex and relationship with patient (spouse vs other).
[j] Sex, education, and relationship with patient (spouse vs other).
[k] Sex.
[l] Race.
[m] Diagnosed according to Structured Clinical Interview for *DSM-IV* for mental disorders.
[n] Age.

for unmeasured or hidden biases, such as how a patient's prior experiences with death may influence their attitudes about end-of-life discussions or decision making, it is one of the most robust statistical methods available to correct for potential selection bias and confounding. Nevertheless, it is possible that patients who have a preference for less aggressive medical care may be more likely to initiate these discussions with their physicians. Alternatively, it is possible that the timing of such discussions is important, or that they are a proxy for physician factors, which may determine medical treatment at the end of life (eg, physicians who engage in these discussions may limit their patients' exposure to aggressive medical measures by choosing not to hospitalize patients with terminal illness).

We were further constrained by the limited information available on the discussions. For example, we do not know who initiated the conversation, when it happened, or what was said. Our study did not include interviews with physicians or audiotaped conversations. Unfortunately, end-of-life discussions are often poorly documented in the medical record, and other studies have revealed that patients and caregivers recall of conversations are often discrepant.[9] Absent such independent validation, the accuracy of patients' reported rates of discussions remains unknown, and we suspect our results are a conservative estimate of the true point prevalence of end-of-life conversations.[9,42] In addition, it worth noting that our sample had disproportionately high rates of ethnic minority patients who were highly symptomatic and had poor performance statuses. Future research is needed to determine whether these findings generalize to patients who are less debilitated and have higher socioeconomic status.

One of the strengths of this study is that it includes well-validated structured clinical interviews for the diagnosis of mental disorders. Although there was no evidence that end-of-life discussions were associated with greater psychological distress, it is possible that results may differ in samples with higher rates of psychiatric morbidity. Because our data were cross-sectional, we cannot make causal inferences about patients' psychological state at the time of the discussion or about their immediate reactions following it. However, if end-of-life discussions did evoke substantial psychological distress, we would expect to detect a positive association between the two.

The association between end-of-life discussions and patients' preference for less aggressive care is noteworthy. End-of-life discussions may make patients more realistic about the benefits of aggressive therapies, and thereby reduce the likelihood that they receive intensive treatments near death.[15,43] In this study, we cannot confirm the direction of this association because we did not examine changes in preferences resulting from them.

In this study, more than 60% of dying patients do not recall having end-of-life discussions with their physicians. Several possible explanations exist. Cancer patients frequently misunderstand or fail to recall prognostic discussions, even when they occur.[42,44-46] Physicians also often avoid these conversations, communicate euphemistically, are overly optimistic, or delay discussions until patients are close to death, perhaps because their own feelings of failure or loss.[4,5,10,13,47,48] Consistent with this hypothesis, patients with lower Karnofsky scores, higher symptom burdens, and shorter median survivals were more likely to report having had conversations. Interestingly, patients' recall of them varied significantly by site, with fewer patients reporting end-of-life discussions at a major academic center. Future studies are needed to examine factors influencing patient selection of medical centers for care and whether centers have distinct cultures that dictate the style and content of end-of-life conversations.

Given the adverse outcomes associated with not having end-of-life discussions, there appears to be a need to increase the frequency of these conversations. By acknowledging that death is near, patients, caregivers, and physicians can focus on clarifying patients' priorities and improving pain and symptom management.[1,49]

Author Contributions: Dr Prigerson (principal investigator) had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Dr Wright and Ms Zang were cofirst authors.
Study concept and design: Wright, Ray, Trice, Balboni, Mitchell, Jackson, Prigerson.
Acquisition of data: Prigerson.
Analysis and interpretation of data: Wright, Zhang, Ray, Mack, Trice, Balboni, Mitchell, Jackson, Block, Maciejewski, Prigerson.
Drafting of the manuscript: Wright, Zhang, Prigerson.
Critical revision of the manuscript for important intellectual content: Wright, Zhang, Ray, Mack, Trice, Balboni, Mitchell, Jackson, Block, Maciejewski, Prigerson.
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