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Racial Variation in Willingness to Trade Financial Resources for Life Prolonging Cancer Treatment

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Abstract

Background—Minority patients receive more aggressive care at the end of life, but it is unclear whether this trend is consistent with their preferences. We compared the willingness to use personal financial resources to extend life among White, Black, Hispanic and Asian cancer patients.

Methods—Patients with newly diagnosed lung or colorectal cancer participating in the Cancer Care Outcomes Research and Surveillance (CanCORS) observational study were interviewed about myriad aspects of their care including their willingness to expend personal financial resources in order to prolong life. We evaluated the association of race/ethnicity with preference for life-extending treatment controlling for clinical, sociodemographic, and psychosocial factors using logistic regression.

Results—Among patients (N = 4214), 80% of Blacks reported a willingness to spend all resources to extend life, versus 54% of Whites, 69% of Hispanics and 72% of Asians ($p < 0.001$). In multivariable analyses, Blacks were more likely to opt for expending all financial resources to extend life than Whites (OR = 2.41, 95% CI 1.84–3.17, $p < 0.001$).

Conclusions—Black cancer patients are more willing to exhaust personal financial resources to extend life. Delivering quality cancer care requires an understanding of how these preferences impact cancer care and outcomes.

Keywords

Treatment Preferences; Cancer; Race; Financial Resources; Trade Offs

Introduction

Treatment for cancer involves difficult tradeoffs between quality and quantity of life. Understanding the drivers of patient preferences is important for designing care delivery systems and for ensuring optimal care quality, defined as care that conforms to state of the art medical knowledge and is consistent with individual treatment preferences.

Treatment preferences by patients may be influenced by deeply held personal and cultural values.¹⁻⁴ Studies report that African Americans are more likely to express a preference for, and/or receive, intensive life-prolonging interventions than Whites.^{2, 5-15} Differences in treatment preferences are also observed in other race/ethnicity groups. Korean-Americans, for example, believe that decisions made about life support should be made by the family and not the individual patient, and the family is obligated to prolong the life of the patient for as long as possible.⁸ European-Americans cite concerns about being a burden to family members or existing as a “vegetable” as reasons underlying their less favorable regard for life support.⁸ For Mexican Americans, life support initiated by the physician should be continued as it reflects that the physician is hopeful about the patient’s recovery.⁸

In addition, decisions about life-extending treatment are likely made within the context of a patient’s life. That is, patients may consider economic and psychosocial resources, current and future quality of life, perceived time left to live, medical comorbidities, and other personal life situations. With little exception, research has focused on documenting preferences for life-extending treatment across different race/ethnicity groups of patients without considering many of the trade-offs they face. For example, we know little about a patient’s willingness to spend personal financial resources to receive life prolonging care, and even less about this willingness in patients from different racial/ethnic groups. Understanding the cost at which people choose life extending treatment may play an important role in delivering patient-centered cancer care.

To address this knowledge gap, we compared willingness to spend financial resources in order to extend life among Black, Hispanic, Asian and White participants of the Cancer Care Outcomes Research and Surveillance Consortium (CanCORS) study, a population- and health care system-based, multi-center, observational cohort study of patients with newly diagnosed lung or colorectal cancer.

Methods

Population

In 2001, the National Cancer Institute established the CanCORS Consortium which includes five large geographically based sites, five Cancer Research Network integrated health systems, and 15 Veteran hospitals. The objective was to identify and better understand the reasons that underlie variations in cancer treatment and cancer outcomes. The overall design and goals of CanCORS have been previously published.¹⁶ In brief, recruitment of newly diagnosed lung and colorectal cancer patients began in 2003. Patients were identified soon after diagnosis through state cancer registries using rapid case ascertainment or from health care systems administrative data. Minority patients (Black/African American, Asian/Pacific Islander, and Hispanic) were oversampled. This analysis uses data collected in the “baseline” survey conducted approximately 4 months after diagnosis by trained telephone interviewers in English, Spanish or Chinese, and clinical data abstracted from medical records. Living patients too ill to complete the full survey were offered to complete an abbreviated version. Surrogates were surveyed when patients were too ill or deceased prior to the survey time. Patients also had the option to return a self-administered version of the survey. Since only the full survey included the item on willingness to expend resources to

prolong life, our primary dependent variable, this analysis is restricted to the CanCORS patients who completed the full survey. The survey included previously validated items and scales in addition to items developed specifically for CanCORS. The survey development and initial piloting have been described previously.¹⁷ Institutional Review Board approval from each study site was obtained and patients provided informed consent to their participation.

Measures

Dependent Variable

Treatment preference: Participants were asked, “If you had to make a choice now, would you prefer treatment that extends life as much as possible, even if it means using up all of your financial resources, or would you want treatment that costs you less, even if means not living as long?” The response choices for this question were: “extend life as much as possible,” “less cost.” This item was modeled on an item from the SUPPORT study that examined willingness to trade quality of life for survival.¹⁸ Patients who refused to respond or who responded “don’t know” were excluded from this analysis since we sought to identify racial variation among cancer patients who expressed a clear treatment preference.

Independent Variable

Self reported race and ethnicity: Patients were asked “Are you of Latino or Hispanic origin?” Following this question, patients were asked: “Which of the following would you use to describe yourself. Would you describe yourself as Native Hawaiian, Other Pacific Islander, American Indian, Alaska Native, Asian, Black or African American, or White?” Patients who responded Latino/Hispanic origin were included in the Hispanic group. American Indian/Native, Native Hawaiian, Other Pacific Islander, individuals who were more than one race, or individuals who responded “other” were excluded from the present study (approximately 5.5% of the total sample).

Potential confounders or mediators—Our analysis controls for factors known or hypothesized to influence treatment preference among cancer survivors. These factors include presence of dependents,¹⁹ depression,¹⁹ age, ²⁰ quality of life,²⁰ presence of partner,²⁰ gender,²¹ education²¹ and perceived time left to live.²²

Sociodemographic Variables: Sociodemographic variables were collected by survey and included gender, age, household income, adequacy of savings to maintain standard of living if all income lost (measured in number of months that savings could maintain current standard, dichotomized at 1 year), number of individuals supported by income, education, marital status, number of children in the home under the age of 18 years, and type of health insurance if any.

Clinical and Health Status Variables: Clinical and health status variables collected by medical record abstraction included type of cancer (i.e., lung or colorectal), cancer stage at diagnosis, time since diagnosis, specific medical comorbidities (e.g., cardiovascular disease), and a comorbidity score (mild, moderate, and severe according to the highest ranked single ailment of the 25 in the Adult Comorbidity Evaluation-27). Health status was assessed by survey using the EQ-5D ²³ and the SF-12 ²⁴ (i.e., physical and mental quality of life score). Pain was assessed by the Brief Pain Inventory²⁵–²⁶ and depressive symptoms were measured with the 8-item Center for Epidemiologic Studies Depression Scale (CESD -8). ²⁷–²⁸

Psychosocial Variables: Perceived life expectancy was assessed with the following open-ended question: “Based on your understanding about what your doctors have told you about your cancer, your health in general, and the treatments you are receiving, how long do you think you have to live? Numeric responses were: <1 month, ≥1 month but <3 months; ≥3 months but <6 months; ≥6 months but <1 year; ≥1 year but <2 years; ≥2 years but <5 years; or ≥5 years. We re-classified these categories as < 5 years and ≥5 years. Non-numeric responses were categorized as: “don’t know”; “in God’s hands”; or refused. Fatalism was assessed with a scale adapted from the Powe Fatalism Index,²⁹ and social support with the Medical Outcomes Study Social Support Survey.³⁰

Statistical Analyses—Descriptive statistics summarized all variables of interest. Comparisons between racial groups were performed using the Pearson chi-square test, or Fisher’s exact test when needed (all of these characteristics were analyzed as categorical variables). Sociodemographic, clinical and psychosocial characteristics considered to be potential confounders or mediators were included in the multivariable analyses. Pain ratings were only obtained from patients who indicated that they were receiving treatment for pain or who “screened in” to the Brief Pain Inventory by indicating that they had “pain other than everyday kinds of pain” (e.g., minor headaches, sprains, toothaches). As a result, pain ratings were obtained from approximately half the patients and were therefore not included in the multivariable analyses.

Multiple logistic regression analysis was used to evaluate the association of race with preference for life-extending treatment. Statistical tests were two-sided and were performed using a 5% significance level. SAS software (version 9.1.3; SAS Institute, Inc., Cary, NC) was used to perform all analyses.

Results

Of the 9,738 individuals who participated in CanCORS, 5,465 completed the full patient survey (the remaining completed fully or partially the brief survey, partially completed the full survey, returned a self-administered survey, or surrogates fully or partially completed the survey on behalf of living or deceased study subjects). Of the 5,465 completing the full survey, 1,341 patients were excluded from the present study because: (1) the participant did not report Black or African American, White, Asian, or Hispanic race/ethnicity, and/or (2) the participant response to our main research question was “don’t know”, “refused” or the data was “not applicable” or “missing”. The proportions that refused to respond to this question were similar among the racial groups (1.6% to 3.2%, $p = 0.57$). Specifically, 3% of Whites, 2.6% of African Americans, 3.2% of Hispanics, and 1.6% of Asians, refused to respond to this question. Whites were more likely to respond “don’t know” than other racial groups (16.1% vs. 11.2% for Blacks, 11.3% for Hispanics, and 11.2% for Asians, $p < 0.001$). The proportions that refused to respond to this question were also similar across the range of income levels (1.8% to 2.9%, $p = 0.33$) and across the racial/ethnic groups for each income level. For example, among those with an income of less than \$20,000, 2.1% of Whites, 2.6% of African Americans, 2.8% of Hispanics, and no Asians, refused to respond to the question, $p = 0.73$). A total of 4,214 CRC and lung cancer patients were included in our analyses. Of these, 3055 (72.5%) were White, 626 (14.9%) Black, 317 (7.5%) Hispanic, and 216 (5.1%) Asian.

Sociodemographic variables and Willingness to expend Resources

Whites were older than minorities and Whites and Asians tended to have higher income, education, and financial reserves than Blacks and Hispanics (Table 1). A higher proportion

of Black patients (80%) were willing to spend all personal resources to extend life compared to Whites (54.1%); Hispanics (69.1%), and Asians (72%); $p < 0.001$ (Table 2).

Multivariable analyses

In multivariable analyses, Blacks were more likely than Whites to indicate a preference for expending resources to extend life (OR = 2.41, 95% CI 1.84–3.17, $p < 0.001$) (Table 3). The preferences of Hispanic and Asian patients were intermediate between White and Black patients.

Several other factors were independently associated with a willingness to expend resources to prolong life. There was a pattern of decreasing willingness with increasing age. Participants were less willing to expend all resources if their income supported three or more individuals compared to participants for whom income supported just one individual. Compared to individuals who were married/living with a partner, divorced/separated individuals were more willing to spend resources to extend life. Compared to individuals who indicated that they did not know how much longer they would live, those who perceived that their life expectancy was under 5 years were less willing to expend resources to extend life, while participants who believed their life expectancy was in God's hands were more willing. Higher social support scores were also associated with a preference for expending resources to extend life.

Because there could be differences in the willingness to spend as a function of insurance type (e.g., public and private insurance), we repeated the multivariable analyses excluding patients who were on Medicaid ($n=359$) and for whom insurance type was missing ($n=265$). The results were very similar; in particular, the effect of race was essentially unchanged (OR for Blacks compared to Whites 2.38, 95% CI 1.75–3.24, $p = 0.004$) (full multivariable model not shown).

We repeated the analyses including the comorbidity score (omitted from prior models because of missing data for 20% of participants). The effect of race was unchanged, with Blacks more willing to spend resources to extend life as much as possible (OR=2.58, 95% CI 1.92–3.49, $p < 0.001$) (Table 4).

Discussion

As new cancer treatment options emerge, patients confront opportunities to make complex decisions about their care. A key tenet of delivering high quality patient centered care is respect for patient preferences.³¹ In this national study, we found important differences between Black and White cancer patients' willingness to "spend all available personal resources" in order to survive longer. This finding was not attributable to a broad array of characteristics including patients' age, education, income, health insurance status, medical comorbidity, stage at diagnosis, marital status, level of social support, fatalism, or perceived time left to live. Minority patients were more likely to report a willingness to deplete financial resources to have life extending treatment. Hispanic and Asian patients' willingness to spend financial resources in pursuit of longer life expectancy was intermediate between those expressed by Blacks and by Whites.

The preference for life-prolonging care among Blacks may reflect deeply rooted cultural values. The ethic of overcoming and struggling is central to African-American culture.³² Historical and persistent health inequities and social injustices (e.g., slavery, racial profiling, medical experimentation, and economic inequalities etc.) have created a "denial of death" sentiment among many African Americans.³² The willingness to exhaust personal financial resources to extend life may reflect a readiness to struggle and overcome.

Alternatively, cultural belief systems related to the ‘right’ time to die may explain study findings. For African American cancer patients, for example, the ‘right’ time to die may occur after life-prolonging care has been rendered. A small exploratory study showed the variation across demographic groups with regard to the ‘right’ time to die. For example, 69% of Mexican Americans, 64% of African Americans, but only 33% of whites indicated that “patient suffering” signaled that it was the ‘right’ time to die. The ‘right’ time to die being “when the patient achieves tranquility in dying” was a sentiment shared by 28% of Whites, 12% of Mexican Americans and 7% of African Americans. For African Americans, the ‘right time to die’ was “when the family was present” at the time of death or had visited shortly before the death (43% of the sample endorsed these items). In contrast, 31% and 23% of Mexican Americans expressed these beliefs respectively, and 17% of whites.³³ Understanding how patients decide on the ‘right’ time to die may offer insight to the trade-offs they are willing to make in the medical setting.

Among Blacks, the willingness to exhaust personal resources for life-sustaining treatment may reflect openness to emerging medical intervention. For example, in one study, the preference among African Americans for life-prolonging intervention reflected a “try it” attitude with a willingness to discontinue treatment if it seemed hopeless.⁸ This openness may also explain in part the finding that African Americans are less likely to have advance directives (e.g., power of attorney measures; 27·34 living wills; 27·35 and do not resuscitate orders^{35–36}). In one study, minorities were just as likely to engage in end-of-life discussions with health care providers, yet were less likely to have written documentation of treatment preferences.¹⁵ In another study,³⁶ while White patients generally put advance directives in place on the first day of hospitalization, African Americans were more likely to do so several days later. The factors that drive the willingness of Blacks to spend all personal resources to extend life observed in our study may also drive openness to future medical interventions, and thus, less desire for advance directives. However, it’s possible that key unmeasured factors may be playing a role. One study found that African Americans were just as likely to possess an advance directive when the predictive model included spirituality, preference for end-of-life care, beliefs about dying and advance care planning, distrust in the health care system, demographic variables and health status.³⁷

Our study has several strengths. First, we engaged a racially/ethnically diverse sample of cancer patients from across the United States. This is an important contribution that builds on previous treatment preference studies that involved primarily White and African American patients and/or cancer patients from a single site. Second, because CanCORS included a thorough survey and a detailed medical record abstraction, detailed information about patients’ background, clinical status, living situation, psychosocial characteristics, and socioeconomic position were available. This allowed us to control for a broader array of potentially confounding factors than most prior studies.

Our study also has limitations. First, while the CANCORS survey was fairly comprehensive, it did not include detailed information on domains that would have been of interest in this analysis including patients’ trust in the health care system or their experiences of discrimination. We also did not assess religiosity in any detail. Highly religious/spiritual individuals typically prefer and/or receive life-prolonging interventions,^{1·34} and in one study, believing that God could intervene (and physicians were not all knowing) played a role in the preference for life-prolonging care.⁸ In fact, we found that participants who perceived that their life expectancy to be “in God’s hands” (compared to those who did not have a sense of how much time they had left), were more willing to spend resources to extend life as much as possible, suggesting that religious belief systems likely played a role in treatment preferences. Another important limitation is that we did not link preferences about expending resources to actual treatment decisions.

There were also insufficient numbers of patients to allow an assessment of the effect of specific cultural backgrounds (e.g., Vietnamese and Japanese or Mexican versus Dominican or American Black versus Caribbean Black). Because research suggests that attitudes toward death and dying vary by ethnicity,³⁸ future studies with larger samples sizes in specific cultural groups would be informative. Finally, we asked a single generic question about willingness to expend resources to prolong life that was not specific to particular types of medical intervention. It is possible that across racial/ethnic groups, patients may vary in their acceptance and willingness to avail themselves of different treatment (e.g., surgery may be more or less accepted in different populations).

Our study identifies important areas for future study. Understanding how treatment preferences align with the care that is actually delivered is an important aspect of delivering patient-centered care. For example, in a study among patients with advanced cancer, Black patients were more likely to prefer intensive end-of-life of care but were less likely to receive such intervention compared to Whites with the same preference.³⁹ Interestingly, White patients who indicated a preference not to receive intensive end-of-life care, in fact, did not receive intensive treatment.³⁹ Understanding variations in cancer treatment and outcomes across demographic groups requires conceptual models that reflect the complexity of treatment preferences and the delivery of cancer care. Researchers should also consider how the present study findings may impact other aspects of care. For example, a willingness to exhaust all personal resources may also indicate a willingness to participate in clinical trials and receive promising investigational treatments. Exploring how preferences extend across clinical and research settings may facilitate the delivery of coordinated cancer care that consistently reflects patient values and preferences.

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Table 1
Sociodemographic Characteristics of Colorectal and Lung Cancer CanCORS Participants (N=4214)

	White n (%) N=3055	Black n (%) N=626	Hispanic n (%) N=317	Asian n (%) N=216	P-value
Gender					
Female	1386 (45.4)	277 (44.2)	167 (52.7)	90 (41.7)	0.041
Age					
≤54	548 (17.9)	192 (30.1)	124 (39.1)	92 (42.6)	
55–59	384 (12.6)	99 (15.8)	37 (11.7)	16 (7.4)	
60–64	433 (14.2)	96 (15.3)	38 (12.0)	26 (12.0)	
65–69	474 (15.5)	95 (15.2)	45 (14.2)	27 (12.5)	< 0.001
70–74	460 (15.1)	54 (8.6)	31 (9.8)	26 (12.0)	
75–79	406 (13.3)	53 (8.5)	28 (8.8)	14 (6.5)	
≥80	350 (11.5)	37 (5.9)	14 (4.4)	15 (6.9)	
Income					
< 20,000	729 (25.4)	266 (46.0)	89 (34.1)	49 (26.3)	
≥20,000—< 40,000	864 (30.1)	155 (26.8)	67 (25.7)	48 (25.8)	
≥40,000—< 60,000	514 (17.9)	82 (14.2)	42 (16.1)	33 (17.7)	< 0.001
≥60,000	767 (26.7)	75 (13.0)	63 (24.1)	56 (30.1)	
Adequacy of Savings					
< 1 year	1402 (52.1)	407 (75.0)	175 (70.6)	83 (52.9)	< 0.001
Number of people supported by income					
1	1036 (34.0)	266 (42.5)	67 (21.5)	46 (21.7)	
2	1609 (52.8)	240 (38.3)	124 (39.7)	87 (41.0)	< 0.001
≥3	405 (13.3)	120 (19.2)	121 (38.8)	79 (37.3)	
Education					
Less than high school	431 (14.1)	151 (24.3)	127 (41.1)	13 (6.1)	
High School graduate/GED	951 (31.2)	211 (34.0)	74 (23.9)	39 (18.3)	
Some College/Vocational School	887 (29.1)	167 (26.9)	60 (19.4)	55 (25.8)	< 0.001
≥4 year college degree	782 (25.6)	92 (14.8)	48 (15.5)	106 (49.8)	
Marital Status					

	White n (%)	Black n (%)	Hispanic n (%)	Asian n (%)	P-value
	N=3055	N=626	N=317	N=216	
Married/living with partner	1936 (63.4)	312 (49.9)	219 (69.1)	168 (77.8)	
Widowed	516 (16.9)	82 (13.1)	28 (8.8)	14 (6.5)	
Divorced/Seperated	474 (15.5)	172 (27.5)	50 (15.8)	15 (6.9)	< 0.001
Never Married	128 (4.2)	59 (9.4)	20 (6.3)	19 (8.8)	
Number of children under 18 in the home					
None	2762 (90.6)	523 (83.5)	217 (69.6)	160 (75.5)	< 0.001
One or more	288 (9.4)	103 (16.5)	95 (30.4)	52 (24.5)	
Disease Type					
Colorectal cancer	1620 (53.0)	390 (62.3)	222 (70.0)	151 (69.9)	< 0.001
Lung cancer	1435 (47.0)	236 (37.7)	95 (30.0)	65 (30.1)	
Covered by Health Insurance					
Yes	2999 (98.2)	596 (95.2)	302 (95.3)	209 (97.2)	< 0.001
No	54 (1.8)	30 (4.8)	15 (4.7)	6 (2.8)	

Number of colorectal and Lung Cancer Participants Indicating a Willingness to Exhaust all resources to Extend Life as Much as Possible in CanCORS (N=4214)

	White n (%)	Black n (%)	Hispanic n (%)	Asian n (%)	P-value
Spend All Resources to Extend Life	1652 (54.1)	500 (79.9)	219 (69.1)	155 (71.8)	< 0.001
Treatment that cost you less, even if (it)means not living as long	1403 (45.9)	126 (20.1)	98 (30.9)	61 (28.2)	

Table 3

Adjusted Odds Ratios and 95% Confidence Intervals for Willingness to Exhaust all Resources in order to Extend Life: Colorectal Cancer and Lung Cancer patients in CanCORS (N = 2751)[‡]

Variable	OddsRatio	95% Confidence Interval
Racial Group		
Black(vs. White)	2.41	(1.84, 3.17)
Hispanic (vs. White)	1.45	(1.02, 2.08)
Asian (vs. White)	1.59	(1.02, 2.48)
Female (vs. Male)	0.91	(0.76, 1.08)
Age		
55–59 (vs. ≤54)	0.50	(0.37, 0.67)
60–64 (vs. ≤54)	0.54	(0.40, 0.72)
65–69 (vs. ≤54)	0.50	(0.36, 0.68)
70–74 (vs. ≤54)	0.41	(0.29, 0.56)
75–79 (vs. ≤54)	0.39	(0.27, 0.55)
80 + (vs. ≤54)	0.25	(0.17, 0.37)
Income		
≥20,000–< 40,000 (vs. <20,000)	0.80	(0.64, 1.02)
≥40,000–< 60,000 (vs.<20,000)	0.80	(0.60, 1.06)
≥60,000 (vs. <20,000)	1.03	(0.76, 1.39)
Savings ≥1 Year (vs. <1 Year)	0.95	(0.80, 1.14)
Number of Individuals Supported by Income		
2 (vs. 1)	0.78	(0.57, 1.06)
≥3 (vs. 1)	0.57	(0.37, 0.87)
Educational Level		
High School Graduate (vs. Did Not Complete High School)	0.89	(0.69, 1.16)
Some College (1–3 years) (vs. Did Not Complete High School)	0.86	(0.65, 1.13)
Four Year College Degree or More (vs. Did Not Complete High School)	0.82	(0.61, 1.11)
Marital status		
Never Married (vs. Married/Living with Partner)	0.93	(0.59, 1.47)
Divorced/Separated (vs. Married/Living with Partner)	1.63	(1.17, 2.28)
Widowed (vs. Married/Living with Partner)	1.05	(0.74, 1.49)
Number of Children Under 18 in the Home (≥1 vs. 0)	1.20	(0.83, 1.74)
Cancer Stage		
II (vs. I)	1.10	(0.86, 1.39)
III (vs. I)	1.21	(0.97, 1.50)
IV (vs. I)	1.30	(1.02, 1.67)
Heart Disease (CVD vs. No CVD)	1.03	(0.85, 1.26)
Lung Disease (Yes or No)	0.95	(0.77, 1.17)
Diabetes (Yes or No)	0.97	(0.78, 1.21)

Variable	OddsRatio	95% Confidence Interval
Kidney Disease (Yes or No)	0.90	(0.69, 1.18)
Time Since Diagnosis (months) [‡]	1.00	(0.98, 1.01)
EQ Index [‡]	0.90	(0.45, 1.82)
CES-D [‡]	0.98	(0.93, 1.03)
SF-12 MCS [‡]	0.99	(0.98, 1.01)
SF-12 PCS [‡]	1.01	(1.00, 1.02)
Social Support Score [‡]	1.00	(1.00, 1.01)
Perceived Time to Live		
<5 Years (vs. Don't Know)	0.70	(0.52, 0.94)
≥5 Years (vs. Don't Know)	1.09	(0.88, 1.35)
In God's Hands (vs. Don't Know)	1.53	(1.12, 2.09)
Fatalism score [‡]	0.97	(0.94, 1.01)
Disease Type (Colorectal Cancer vs. Lung Cancer)	1.03	(0.85, 1.23)
Covered by Health Insurance (Yes or No)	0.77	(0.43, 1.39)

[†] Overall model P-value is < 0.001.

[‡] Variables are continuous and therefore there is no reference category.

Table 4

Adjusted Odds Ratios and 95% Confidence Intervals for Willingness to Exhaust all Resources in order to Extend Life, including comorbidity score adjustment : Colorectal Cancer and Lung Cancer patients in CanCORS (N = 2341)[†]

Variable	OddsRatio	95% Confidence Interval
Racial Group		
Black (vs. White)	2.58	(1.92, 3.49)
Hispanic (vs. White)	1.28	(0.84, 1.95)
Asian (vs. White)	1.82	(1.08, 3.88)
Female (vs. Male)	0.94	(0.77, 1.13)
Age		
55–59 (vs. ≤54)	0.46	(0.33, 0.65)
60–64 (vs. ≤54)	0.50	(0.36, 0.69)
65–69 (vs. ≤54)	0.48	(0.34, 0.68)
70–74 (vs. ≤54)	0.37	(0.25, 0.53)
75–79 (vs. ≤54)	0.34	(0.23, 0.51)
80+ (vs. ≤54)	0.23	(0.15, 0.35)
Income		
≥20,000–<40,000 (vs. <20,000)	0.82	(0.63, 1.05)
≥40,000–<60,000 (vs. <20,000)	0.84	(0.62, 1.15)
≥60,000 (vs. <20,000)	1.22	(0.88, 1.70)
Savings ≥1 Year (vs. <1 Year)	0.94	(0.77, 1.14)
Number of Individuals Supported by Income		
2 (vs. 1)	0.84	(0.59, 1.19)
≥3 (vs. 1)	0.63	(0.39, 1.03)
Educational Level		
High School Graduate (vs. Did Not Complete High School)	0.89	(0.67, 1.19)
Some College (1–3 Years) (vs. Did Not Complete High School)	0.87	(0.64, 1.16)
Four Year College Degree or More (vs. Did Not Complete High School)	0.74	(0.53, 1.03)
Marital Status		
Never Married (vs. Married/Living with Partner)	0.99	(0.60, 1.63)
Divorced/Separated (vs. Married/Living with Partner)	1.83	(1.25, 2.67)
Widowed (vs. Married/Living with Partner)	1.15	(0.78, 1.70)
Number of Children Under 18 in the Home (≥1 vs. 0)	1.07	(0.71, 1.61)
Cancer Stage		
II (vs. I)	1.10	(0.85, 1.43)
III (vs. I)	1.15	(0.91, 1.46)
IV (vs. I)	1.24	(0.95, 1.63)
Heart Disease (CVD vs. No CVD)	0.96	(0.77, 1.19)
Lung Disease (Yes or No)	0.88	(0.70, 1.11)

Variable	OddsRatio	95% Confidence Interval
Diabetes (Yes or No)	1.11	(0.87, 1.42)
Kidney Disease (Yes or No)	0.90	(0.67, 1.20)
Time Since Diagnosis (months) [‡]	1.00	(0.98, 1.02)
EQ Index [‡]	1.14	(0.53, 2.46)
CES-D [‡]	0.98	(0.93, 1.03)
SF-12 MCS [‡]	0.99	(0.98, 1.01)
SF-12 PCS [‡]	1.01	(1.00, 1.02)
Social Support Score [‡]	1.00	(1.00, 1.01)
Perceived Time to Live		
< 5 Years (vs. Don't Know)	0.75	(0.54, 1.04)
≥5 Years (vs. Don't Know)	1.08	(0.85, 1.36)
In God's Hands (vs. Don't Know)	1.56	(1.11, 2.19)
Fatalism Score [‡]	1.00	(0.96, 1.03)
Disease Type (Colorectal Cancer vs. Lung Cancer)	1.01	(0.82, 1.23)
Covered by Health Insurance (Yes or No)	0.76	(0.39, 1.49)
Co-morbidity Score		
Mild (vs. None)	0.89	(0.71, 1.12)
Moderate (vs. None)	1.03	(0.78, 1.36)
Severe (vs. None)	1.13	(0.82, 1.56)

[‡] Overall model P-value is <0.001.

[‡] Variables are continuous and therefore there is no reference category.