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Comparing Three Life-Limiting Diseases: Does Diagnosis Matter or Is Sick, Sick?

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Abstract

Context—At advanced stages, cancer, congestive heart failure (CHF), and chronic obstructive pulmonary disease (COPD) produce high rates of hospitalization, disability, and annual mortality. Despite similar prognoses, patients with cancer often are treated differently than those with other illnesses, the former being seen as terminal vs. chronic.

Objectives—The purpose of this study was to compare the functional capacity, emotional well-being, and quality of life of patients in three disease groups to assess whether diagnosis distinguishes differences in patient experience, and compare patients with cancer and noncancer diagnoses.

Methods—Baseline data from a cohort study of 210 patients who had an estimated 50% two-year mortality were analyzed. The patients had Stage IV breast, prostate, or colon cancer; Stage IIIb or IV lung cancer; New York Heart Association Stage III or IV CHF with a left ventricular ejection fraction of <40%; or COPD with hypercapnea ($pCO_2 > 46$) and at least one hospitalization or Emergency Department visit during the past year. Measures included the Rosow-Breslau Activities of Daily Living/Instrumental Activities of Daily Living tool, Profile of Mood States anxiety subscale, brief Centers for Epidemiologic Studies Depression Scale, and the Functional Assessment of Cancer Therapy-General quality-of-life instrument. Analyses included descriptive statistics, analysis of variance, and adjusted linear regression models.

Results—A majority of illness outcomes did not differ by diagnostic category. Functional status was associated with diagnosis, with CHF and COPD patients faring worse than those with cancer. Overall, illness experience was most significantly related to disease severity, demographics, and emotional and social well-being.

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Conclusion—Comparing patients with advanced cancer, CHF, and COPD, illness experience was more similar than different. Patients living with life-limiting illnesses other than cancer may benefit from whole-person services often extended to cancer patients.

Keywords

Chronic disease, patient-centered care, quality of life

Introduction

Greater numbers of people are living with serious illnesses that affect functional capacity, emotional well-being, and quality of life.^{1–3} Cancer, chronic obstructive pulmonary disease (COPD), and congestive heart failure (CHF) are among the most prevalent life-limiting conditions. Cancer affects 10.7 million Americans, 11.2 million adults have been diagnosed with COPD, and another 4.8 million live with CHF.^{4–6} Approximately 10% of the adult population lives with serious illness. Each illness produces high rates of hospitalization, disability, and annual mortality.^{4,7}

Although prognostication is challenging, the literature suggests those with advanced stages of each illness demonstrate similar one-year mortality rates.^{8–10} Yet, considerable research shows that physicians treat differently patients with similar prognoses but different diseases.^{11–19} Cancer is more likely to be viewed as terminal, whereas COPD and CHF, even in the advanced stages, tend to be treated as chronic rather than terminal conditions.

Despite having similar prognoses, few studies have directly compared patients' experiences in living with these three illnesses.^{20–27} Previous research comparing cancer, CHF, and COPD has explored decision-making preferences and prognostic awareness, symptom burden, and self-rated health.^{26,28–30} Other recent work has explored one illness with one type of cancer.^{31–34} However, less is known about comparisons of multiple illnesses with multiple types of cancers, examining patient outcomes broadly.²¹ Our aim was to observe patients with similar prognostic estimates, but a variety of diseases, and compare the overall patient illness experience.

Therefore, we conducted an empirical evaluation of quality of life, functional status, and emotional well-being by disease type. We sought to explore whether diagnostic category was the primary correlate of variation in patient outcomes or whether other factors principally influenced illness experience. In particular, we evaluated whether the illness experience differed significantly between people with cancer and noncancer diagnoses.

Methods

Design

We conducted a cross-sectional cohort study of 210 patients living with advanced cancer, CHF, and COPD. Data reported are baseline assessments from a longitudinal study of patients and caregivers followed monthly for up to six years, or until death. The goal of the full study was to capture patients with life-limiting illness and follow them through transitions at the end of life, documenting changes in physical, social, emotional, and spiritual well-being, and health services utilization. These baseline assessments simulate the experience of typical clinic evaluation, in which health care providers meet patients at varying stages of advanced serious illness.

Subjects

To identify subjects, we chose clinical criteria associated with an estimated 50% two-year survival. The populations included Stage IV breast, colorectal, and prostate cancer, and Stage IIIb or IV lung cancer, NYHA Stage III or IV CHF with a left ventricular ejection fraction of <40% (we relaxed this criterion for women with diastolic CHF), and COPD with hypercapnea ($pCO_2 > 46$) and at least one hospitalization or ED visit during the past year.³⁵ These three broad illness categories (cancer, CHF, COPD) represent the most common causes of chronic disease death in Durham County, North Carolina, USA that do not primarily impair cognitive function, which would disrupt patients' abilities to report on their experiences. Because the above illnesses may impact cognitive function secondarily (e.g., chronic hypoxia with COPD),³⁴ subjects were screened for cognitive capacity using the Short Portable Mental Status Questionnaire.³⁶

To identify eligible patients, we used hospital databases (Duke University Medical Center, and Durham Veterans Administration [VA] Medical Center) and tumor registries, scanning for eligible clinical criteria and residence within a 35-mile radius of Durham, thus allowing regular home interviews. A majority of patients in this geographical location receive care from these institutions. This facilitated a quasi-population based vs. clinician prognostication recruiting approach. Additional detail regarding this sample has been reported previously.³⁵ The study was approved by the Institutional Review Boards of the Durham VA and Duke University Medical Centers.

Measures

Outcome Variables—The goal of these analyses was to compare key outcomes of patient experience while living with life-limiting illness with similar prognoses. Therefore, we focused on functional status, emotional well-being, and quality of life. We assessed functional status using the Rosow-Breslau Activities of Daily Living/Instrumental Activities of Daily Living (ADL/IADL) tool.³⁷ This includes instrumental activities of daily living; high-order functional status such as walking up and down stairs; and fundamental assessments of toileting, grooming, and mobility. Emotional well-being was assessed using the brief Profile of Mood States' anxiety subscale and the brief Centers for Epidemiologic Studies Depression Scale 10-item measure.^{38,39} All participants completed the Functional Assessment of Cancer Therapy-General (FACT-G) subscales assessing physical, emotional, social, functional, and spiritual well-being (FACIT-Sp).⁴⁰⁻⁴²

Predictor Variables—For all respondents, we recorded diagnostic category and demographics, including sex, ethnicity, age, level of education, marital status, and perceived financial security (Table 1). This latter item asked respondents how they would describe their household's financial security with regard to ease or difficulty in paying bills and availability of extra spending money. This item has been shown to have less missing data than standard income assessment and uses more practical language identifying levels of respondent economic security.⁴³ Finally, we calculated a measure of disease severity at baseline. We created a variable as the cross product of number of bed days and self-rated health and compared by disease group. The bed days question included, "During the past three months, about how many days did you spend most of your time in bed or on a chair/couch?" Possible responses included "none," "just a few days," "half the time," "more than half," and "all the time." On the basis of the distributions, we collapsed these five categories to high and low bed days, with high constituting at least half of the time in bed. Self-rated health was the standard four-category response range of "poor," "fair," "good," and "excellent."

Analyses

Means and standard deviations for continuous variables and proportions for categorical variables were calculated to describe the participant population for the entire sample and each diagnostic group. To assess whether patient experience outcomes varied by diagnostic category, comparisons of means between diagnostic categories were performed by analysis of variance. Then, to account for diagnostic group subsample variation, adjusted linear regression models were fit. Covariates included in each model were gender, race (Caucasian or African American), level of education (high school or less or greater than high school), perceived economic security (to improve parsimony in adjusted analyses, four categories described in Table 1 were collapsed into three categories—low, moderate, or high) and disease severity. All covariates were included in the final models. A *P*-value of ≤ 0.05 was considered statistically significant. SAS v. 9.1 (SAS Institute, Inc., Cary, NC) was used for all the analyses.

Results

Sample Composition

Two hundred ten patients completed the baseline patient interview, including 70 from each diagnostic category: cancer, CHF, and COPD (Table 1). Fifty-nine percent were male and the majority (61%) were Caucasian, with 34% of respondents identifying as African American. Approximately, half the sample was married. The average age was 66 years; 42% had a high school education or less, 44% at least some college, and 14% received graduate-level training. A majority of the sample were not working, with 50% retired and 25% on disability. The sample displayed a broad distribution in financial well-being: 24% reported difficulty paying bills, 13% had to cut back to pay bills, 27% described themselves as having a little extra money to spare, and about one-third (36%) reported having money for special things.

Participants with cancer were more likely to be married (59%), working (23%), have a college or graduate degree (51%), and have enough money for special things (56%). Respondents with CHF were more likely to be African American and male. The cross-product of number of bed days and self-rated health showed that those rated as having poor health and a high number of bed days constituted 21% of patients with cancer, 33% of those with COPD, and 39% of CHF participants (Table 2).

Observed Means

Table 3 lists mean scores and standard deviations for all outcome measures stratified by disease type. Results showed that most quality-of-life subscales—social, physical, and emotional well-being—did not differ for those with cancer vs. CHF or COPD. Spiritual well-being showed no difference between cancer and COPD, but a slight difference between CHF and cancer, with CHF demonstrating lower spiritual well-being. In contrast, functional well-being and functional status (IADLs and ADLs) did differ by disease category, with CHF and COPD faring worse in all measures. The greatest differences were observed in IADLs and high-function ADLs. Those with CHF and COPD, as compared with persons with cancer, also had higher levels of anxiety and depression. Patients living with CHF exhibited the highest anxiety levels.

Adjusted Analyses

We found the dimensions of quality of life, including social, emotional, spiritual, or physical, did not differ by diagnostic group (Table 4). With the exception of social well-being, other dimensions of quality of life did vary by disease severity. Social and spiritual subscales did vary significantly by gender and ethnicity, with men and non-Caucasians

having worse social well-being. Men had almost four times poorer spiritual well-being. Physical well-being was most strongly influenced by disease severity, education, and financial status.

Functional impairment, as measured by IADLs, ADLs, and the functional well-being subscale, was associated with disease type. As noted in the univariate analysis, higher rates of functional dependence were seen in those with CHF and COPD, vs. cancer. Functional impairment also varied by disease severity. Education was associated with IADLs; those with high school or less were more likely to need assistance with IADLs.

Controlling for demographic differences attenuated the diagnostic differences in anxiety and depression yet the influence of disease severity remained. When controlling for subsample demographic differences, depression was related to financial status difficulties. Poorer respondents reported higher rates of depression.

Discussion

The goal of this study was to examine the experience of patients living with three types of life-limiting diseases and to compare their illness experience, namely functional status, emotional well-being, and quality of life. In particular, we were interested in assessing whether patients with cancer expressed higher levels of need and illness burden as compared with their sample complements living with CHF or COPD. We designed a sampling frame that was quasi-population based by identifying participants through local databases in one geographic region, rather than relying on physician prognostication and its well-known selection biases. Furthermore, by studying participants in cross-section, we describe patients as they might appear to a health care provider first meeting them at a typical clinic appointment. The sample presented herein shows a predominantly older population, with a nearly even split of men and women, considerable ethnic diversity and broad variation in socioeconomic status.

Our results suggest that disease category was predictive only for functional status; patients with COPD and CHF had less functional ability than those with cancer. For the majority of outcomes, illness experience was most strongly influenced not by diagnosis but by disease severity and emotional or social factors. For example, after controlling for subsample differences, patient outcomes of quality of life, depression, and anxiety were most strongly associated with socio-demographic factors, such as gender, ethnicity, education, or perceived economic security. Recent study of functional status changes in older adults demonstrates that underlying cause of death, disease category, was not the strongest factor in predicting functional trajectory.⁴⁴

Confirming other research, women in our study had greater social well-being and non-Caucasians scored higher on assessments of spiritual well-being.⁴⁵ Although gender and ethnic heritage may be nonmodifiable, an extensive social science and growing clinical medical literature demonstrates the extent to which gender and ethnicity serve as proxies for issues of differential access and social capital affecting health.^{46,47} Moreover, emotional functioning, as measured by anxiety and depression scales, was most associated with the patient's perceived financial security.

The results of these analyses testing the influence of diagnostic category on outcomes have implications for clinical practice. When evaluating a new patient, clinicians are taught to follow the path of differential diagnosis and subsequently develop a treatment plan to address consequents of the particular presenting disease. Of course, this makes sense for planning disease-modifying treatments. However, for interventions directed primarily at relief of suffering and promotion of quality of life, this study revealed that severity of illness

may be more relevant than the particular disease category. These data countervail the trend toward subspecialty management by disease, at least for patients in the advanced stages. They argue for management that places greater emphasis on the impact of illness, rather than only the physiology that causes it. Nonbiomedical factors strongly affect overall illness experience. Clinicians may focus on their most basic assessment, that is, identifying sick and nonsick patients, remembering that what influences illness is more than disease. These data point to the usefulness of systems that acknowledge and address the common pathway of illness burden.

Furthermore, study results showing that non-biomedical factors, such as gender, ethnicity, educational level, and financial security, had stronger impact on a majority of illness outcomes than disease type add to the empirical base supporting the biopsychosocial-spiritual model for treatment.⁴⁸ For patients with serious illness, a more complete history, which includes social and emotional factors, is critical for good care. For example, in gathering a social history, clinicians may consider the extent to which nondisease factors will drive illness experience, and, therefore, explore patient access and support issues or use social work consultation more broadly. Although many physicians may not be trained to address each of these areas in depth, comprehensive care may be offered through use of the interdisciplinary team.

A second task was to assess whether cancer respondents' outcomes compared unfavorably with those of patients with the "chronic" illnesses of CHF and COPD. The results showed study respondents with cancer have a similar or better functional status, anxiety, depression, or quality of life compared with patients with CHF and COPD. These results are supported by other recent findings showing, for example, that health status of hospitalized older adults was not worse for cancer as compared with those with CHF, COPD, or diabetes.²¹ Other research has demonstrated that functional status declined more sharply among those with cancer, in the weeks preceding death; however, one year prior to mortality, functional decrements were greater among those with noncancer diagnoses.⁴⁹ Another study of community-dwelling older adults with serious illness demonstrated a majority of respondents experienced moderate to severe symptom burden, with the greater levels reported among those with COPD, rather than cancer.²⁶ In other work, specific symptoms varied by disease, but overall burden was not greater for cancer vs. noncancer illnesses.⁵⁰ In sum, although often viewed differently, these three disparate life-limiting illnesses exhibited similar levels of illness burden.

Metastatic cancer denotes, for many patients and clinicians, a diagnosis that likely will end the patient's life, whereas a diagnosis of advanced COPD or a CHF diagnosis is viewed less ominously. A variety of explanations have been given for this including differing etiologies, varying functional trajectories prognostic uncertainty, and societal symbolism.^{1,49,51-54} Although these illnesses can act systemically (e.g., COPD affects peripheral muscle strength), CHF and COPD are traditionally understood by most physicians as representing single-organ malfunctions, in which treating clinicians attempt to manage the decline of that organ system with the hope of returning patients to as normal functioning as possible. Metastatic cancer's systemic nature hosts greater uncertainty with regard to cause and course. Diagnosis is seen as a life-altering event, with the specter of end of life on the horizon. Advanced cancer's relatively predictable illness pattern shows precipitous functional decline in the last months of life, whereas COPD and CHF trajectories are punctuated with acute exacerbations and periods of rebound, yet exhibiting graduated overall decline.^{1,53-55} Prognostically, performance status is the single most predictive factor in cancer. More heterogeneous CHF and COPD prognostic models augment performance status with an array of covariates including age, weight, dyspnea, serum albumin, prior mechanical ventilation, blood pressure, ventricular ejection fraction, recent hospitalizations,

and comorbidities,^{56,57} thus making estimates more complex. Finally, resources have been marshaled historically to fight a “war” on cancer, hoping to win a battle against an opponent that may strike early in the life span and without warning. COPD and CHF occur, more exclusively, at older ages and are associated with lifestyle behaviors such as smoking and obesity. To date, a similar societal “war” has not been waged. Although many factors may guide clinicians to approach cancer and noncancer illnesses differently, these data suggest common ground in treatment approaches during advanced stages. Furthermore, these data provide evidence for that common palliative approach among patients with not only months but also years to live, in which those years are characterized by high illness burden.

In recent decades, most clinicians have become particularly sensitized to consider the wide-ranging needs of their patients with cancer, attending to symptom management, functional status, and emotional distress.^{48,58} Findings from this study suggest that patients living with noncancer life-limiting disease may benefit from similar models of extended services focused on improving the experience of illness. These might address concomitant functional burden and financial and emotional stressors. For example, emotional stressors may include responses associated with lack of awareness regarding illness progression. In contrast to those with cancer, many CHF and COPD patients in our study (reported separately, qualitatively) were unable to verbalize an understanding of the likely course of illness. This prognostic uncertainty may contribute to anxiety and depression, and limit facilitation of end-of-life legal, financial, or other preparation, shown to be valued by patients with life-limiting illness.⁵⁹ Hospital inpatient and outpatient palliative care programs are expanding to cover noncancer diagnoses. This is congruent, given the data suggesting that these programs decrease symptoms and improve quality of life.^{60–62} Additionally, improved models of hospice eligibility prognostication are available to assist clinicians with noncancer advanced illness referrals.⁶³ This benefit provides for broad biopsychosocial and spiritual needs and is appropriate for many with patients treated for advanced disease, not only those in the last days of life.^{64,65}

The study is limited by the cross-sectional nature of data. Statistical associations and overtime trends will be evaluated longitudinally, centering the cohort in time from death and stage of illness progression. As a result, cross-sectional conclusions should be regarded as tentative, pending fuller testing longitudinally. Although we did control for disease severity, these analyses were not able to control for prior treatment trials, prior interaction with health care systems, or premorbid interpersonal characteristics. Yet, in cross-section, these data have the advantage of reflecting the circumstances in which many providers meet patients for the first time. Those with CHF and COPD were sicker longer and previous studies demonstrate variation in illness trajectory such that those with advanced heart and lung disease face extended periods of morbidity, disability, and high rates of sudden death.^{49,56,57} To improve generalizability, participants were recruited in a quasi-population method using databases from one geographic area rather than from clinics or clinician referral. This regional approach afforded ethnic diversity of sample participants, yet caution is warranted when generalizing to other geographic regions.

Conclusion

Comparing patients with advanced cancer, CHF, and COPD, illness experience was more similar than different. Rather than diagnostic category, the strongest outcome correlates were severity of illness and demographic, emotional, and social factors. When disease category was predictive, in functional status, those with CHF and COPD fared worse than patients living with cancer.

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Table 1

Sample Characteristics

Demographic	Total (n = 210)	Cancer (n = 70)	COPD (n = 70)	CHF (n = 70)
Mean (SD), age (years)	66.1 (12.3)	64.5 (13.2)	68.3 (9.9)	65.4 (13.4)
Gender (%)				
Male	59	51	51	73
Female	41	49	49	27
Ethnicity (%)				
African American	34	21	24	57
Caucasian	61	74	69	40
Other	5	4	7	3
Marital status (%)				
Never married	8	3	10	10
Married	49	59	44	46
Divorced	22	14	26	26
Widowed	21	24	20	18
Education (%)				
Less than high school	20	14	24	23
High school graduate	22	16	23	27
Some college	24	19	33	20
College degree	20	18	17	23
Graduate school	14	33	3	7
Employment (%)				
Full time	7	19	0	1
Part time	1	4	0	0
Not working	6	9	4	6
Retired	50	47	49	53
Disability	25	14	30	31
Multiple categories	11	7	17	9
Insurance (%)				
Yes	98	99	97	97
No	2	1	3	3
Financial security (%)				
Difficulty paying bills	24	17	21	33
Cut back to pay bills	13	4	13	21
Little extra to spare	27	23	29	29
Enough for special things	36	56	37	17

Table 2

Self-Rated Health by Bed Days by Disease Type

Item	Descriptive Statistics	Total (n = 210)	Cancer (n = 70) Cancer	COPD (n = 70)	CHF (n = 70)
Poor or fair health with high number of bed days (half time or more)	Frequency	65	15	23	27
	Column %	30.95	21.43	32.86	38.57
Poor or fair health with low number of bed days	Frequency	30	6	17	7
	Column %	14.29	8.57	24.29	10.00
Good/excellent health with high number of bed days	Frequency	58	21	15	22
	Column %	27.14	30.00	21.43	31.43
Good or excellent health with low number of bed days	Frequency	57	28	15	14
	Column %	27.14	40.00	21.43	20.00

Table 3

Patient Experience Domains by Diagnosis

Measure	Cancer	COPD	CHF
	Observed Means (SD)		
Quality of life (FACT-G)			
Social well-being	21.0 (4.8)	19.6 (5.4)	19.3 (5.2)
Physical well-being	20.8 (7.0)	21.0 (5.7)	19.4 (5.6)
Spiritual well-being	36.2 (8.7)	35.6 (7.8)	33.1 (9.9) ^a
Emotional well-being	19.5 (3.6)	19.9 (4.0)	18.8 (4.5)
Functional well-being	20.5 (5.6)	16.8 (5.5) ^b	17.4 (6.3) ^b
Functional status—IADL/ADLs			
IADLs (Q1–7)	8.6 (2.3)	11.0 (3.2) ^c	10.3 (3.0) ^c
Q8–10 (high functioning)	5.0 (1.9)	7.1 (1.6) ^c	6.9 (2.0) ^c
Q11–13	2.1 (0.3)	2.4 (0.8) ^a	2.3 (0.7) ^a
Q12, Q14–J17	5.1 (0.5)	5.8 (1.5) ^b	5.4 (0.8)
Anxiety—Profile of Mood States subscale	4.3 (3.8)	5.4 (4.4)	6.2 (5.5) ^a
Depression—CES-D subscale	5.8 (4.8)	8.0 (5.4) ^a	8.5 (6.5) ^b

Note: Q8–10—heavy work, stairs, ½ mile, Rosow subscale; Q11–13—walk across small room, groom self, Branch subscale; Q12, 14–17—bathe, dress, feed, bed to chair, toilet, Katz subscale. Superscripts indicate that category differs significantly from reference category cancer.

^a $P < 0.05$.

^b $P < 0.01$.

^c $P < 0.001$.

Table 4

Adjusted Analyses—Domain Score Predictors

Parameter		Social Well-Being	Emotional Well-Being	Spiritual Well-Being	Anxiety	Depression
Diagnosis						
CHF	Estimate (CL)	0.12 (−1.72, 1.95)	−0.26 (−1.68, 1.16)	−1.78 (−4.88, 1.32)	0.30 (−1.34, 1.93)	0.62 (−1.27, 2.52)
COPD	Estimate (CL)	−0.75 (−2.46, 0.97)	0.87 (−0.46, 2.19)	0.45 (−2.45, 3.34)	0.43 (−1.1, 1.95)	1.04 (−0.73, 2.81)
Cancer		— (Ref)	— (Ref)	— (Ref)	— (Ref)	— (Ref)
Disease severity						
Good health/ low bed days	Estimate (CL)	0.21 (−1.64, 2.05)	1.75 ^a (0.32, 3.18)	4.31 ^b (1.18, 7.43)	−1.31 (−2.96, 0.33)	−3.43 ^b (−5.34, −1.52)
Good health/ high bed days	Estimate (CL)	−1.34 (−3.59, 0.92)	0.30 (−1.44, 2.05)	−0.53 (−4.34, 3.29)	−0.76 (−2.77, 1.25)	−0.72 (−3.05, 1.61)
Poor health/ high bed days	Estimate (CL)	−1.62 (−3.42, 0.18)	−2.12 ^b (−3.51, −0.73)	−1.81 (4.85, 1.23)	1.87 ^a (0.27, 3.48)	2.92 ^b (1.06, 4.78)
Poor health/ low bed days		— (Ref)	— (Ref)	— (Ref)	— (Ref)	— (Ref)
Male	Estimate (CL)	−1.48 ^a (−2.89, −0.07)	0.37 (−0.72, 1.46)	−3.27 ^b (5.66, −0.89)	0.92 (−0.34, 2.18)	0.27 (−1.19, 1.72)
Non-Caucasian	Estimate (CL)	−2.67 ^b (−4.26, −1.09)	1.03 (−0.2, 2.25)	3.15 (0.47, 5.82)	0.03 ^a (−1.38, 1.44)	−0.14 (−1.78, 1.49)
Education level						
High school or less	Estimate (CL)	0.66 (−0.89, 2.21)	0.06 (−1.14, 1.26)	0.94 (1.68, 3.55)	−0.42 (−1.81, 0.96)	−0.43 (−2.03, 1.17)
Financial security						
Level 1 and 2 —Difficulty paying bills or cut back to pay bills	Estimate (CL)	−1.06 (−2.91, 0.8)	−0.56 (−1.99, 0.88)	−1.82 (−4.96, 1.31)	2.59 ^b (0.93, 4.24)	2.19 ^a (0.27, 4.11)
Level 3— Little extra to spare	Estimate (CL)	−0.28 (−2.11, 1.56)	0.48 (−0.94, 1.9)	−1.09 (−4.19, 2.0)	1.52 (−0.11, 3.16)	1.56 (−0.33, 3.45)
Level 4— Enough for special things		— (Ref)	— (Ref)	— (Ref)	— (Ref)	— (Ref)
Parameter		Functional Well-Being	Physical Well-Being	IADLs	ADLs	
Diagnosis						
CHF	Estimate (CL)	−0.79 (−2.61, 1.04)	0.49 (−1.49, 2.46)	1.07 ^a (0.11, 2.03)	1.55 ^b (0.91, 2.18)	
COPD	Estimate (CL)	−2.01 ^a (−3.72, −0.31)	1.46 (−0.39, 3.3)	1.52 ^b (0.62, 2.41)	1.65 ^b (1.06, 2.24)	
Cancer		— (Ref)	— (Ref)	— (Ref)	— (Ref)	
Disease severity						
Good health/low bed days	Estimate (CL)	3.92 ^b (2.08, 5.76)	3.57 ^b (1.58, 5.57)	−0.57 (−1.54, 0.39)	−0.63 (−1.27, 0.01)	
Good health/high bed days	Estimate (CL)	−0.29 (−2.53, 1.95)	0.38 (−2.05, 2.81)	2.06 ^b (0.88, 3.24)	0.53 (−0.25, 1.31)	
Poor health/high bed days	Estimate (CL)	−4.35 ^b (−6.14, −2.57)	−3.90 ^b (−5.84, −1.96)	2.12 ^b (1.18, 3.06)	1.08 ^b (0.46, 1.7)	
Poor health/low bed days		— (Ref)	— (Ref)	— (Ref)	— (Ref)	
Male	Estimate (CL)	0.18 (−1.23, 1.58)	0.87 (−0.65, 2.39)	−0.69 (−1.43, 0.04)	−0.63 ^a (−1.12, −0.15)	

Parameter		Functional Well-Being	Physical Well-Being	IADLs	ADLs
Non-Caucasian	Estimate (CL)	-0.19 (-1.77, 1.38)	0.68 (-1.03, 2.39)	0.28 (-0.55, 1.1)	0.01 (-0.53, 0.56)
Education level					
High school or less	Estimate (CL)	0.05 (-1.49, 1.59)	1.98 ^a (0.31, 3.65)	1.18 ^b (0.37, 1.98)	0.45 (-0.09, 0.98)
Economic security					
Levels 1 and 2	Estimate (CL)	-1.73 (-3.58, 0.11)	-3.41 ^b (-5.41, -1.4)	-0.35 (-1.32, 0.62)	0.15 (-0.49, 0.79)
Level 3	Estimate (CL)	-2.28 ^a (-4.1, -0.46)	-2.59 ^a (-4.56, -0.61)	-0.53 (-1.49, 0.43)	0.21 (-0.42, 0.85)
Level 4		— (Ref)	— (Ref)	— (Ref)	— (Ref)

^a $P < 0.05$.

^b $P < 0.01$.