

SUPPLEMENTARY MATERIALS

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Supplementary Methods

A classification system for the risk burden of treatment modalities

To summarize the burden of treatment modalities, each participant was assigned to either low, moderate, or high risk burden group. The application of this classification system was evident in distinguishable associations of three risk burden treatment groups with cumulative prevalence of various symptoms. Participants who have received chemotherapy, radiotherapy and invasive surgery, or radiotherapy and invasive surgery were categorized as a high risk burden group; those who received chemotherapy and radiotherapy, chemotherapy and invasive surgery, radiotherapy only, or invasive surgery only were categorized as a moderate risk burden group; and those who received chemotherapy only were categorized as a low risk burden group. Associations of treatment modalities with cumulative prevalence of symptoms were demonstrated in **Supplementary Figure 1**.

Supplementary Table 1. A list of grouped chronic health conditions evaluated by medical assessment

Grouped conditions	CTCAE graded conditions
Myocardial infarction	Acute myocardial infarction
Cardiac disorder	Atrioventricular Heart Block
	Conduction abnormalities
	Prolonged QT interval
	Cardiac dysrhythmia
	Sinus bradycardia
	Sinus tachycardia
	Cardiomyopathy
	Right ventricular systolic dysfunction
	Cor pulmonale
	Pulmonary hypertension
	Heart valve disorder
	Pericarditis
	Aortic root aneurysm
	Atrial myxoma
Peripheral neuropathy	Peripheral sensory neuropathy
	Peripheral motor neuropathy
Stroke	Intracranial hemorrhage
	Cerebrovascular accident
	Cerebrovascular disease
Upper gastrointestinal disease	Dysphagia
	Esophageal stricture
	Esophageal varices
Respiratory disorder	Asthma
	Chronic obstructive pulmonary disease
	Obstructive sleep apnea
	Obstructive pulmonary deficit
	Restrictive pulmonary deficits
	Pulmonary diffusion deficits
Diabetes	Abnormal Glucose Metabolism
Chronic kidney disease	Chronic kidney disease
Hepatic disorder	Fibrosis/Cirrhosis
	Portal hypertension
	Hepatic failure
	Hepatopathy
	Steatohepatitis
	Veno-occlusive disease of liver
Seizures	Seizures

Reproductive disorder	Genitourinary adhesions
	Cervical dysplasia
	Endometriosis
	Dysfunctional uterine bleeding
	Dyspareunia
	Polycystic ovarian syndrome
	Vaginal fistula
	Vaginal stenosis
	Erectile dysfunction
	Retrograde ejaculation
	Prostatic hypertrophy, benign
	Abnormal sperm concentration
	Central hypogonadism
	Primary hypogonadism
Subsequent neoplasm	SMN
Skeletal disorder	Osteonecrosis
	Temporomandibular joint disorder
	Slipped capital femoral epiphysis
	Intervertebral disc disorder
	Kyphosis
	Scoliosis
	Skeletal spine disorder
Hearing loss	Hearing Loss
Amputation	Amputation

Supplementary Table 2. Demographic, socioeconomic, and clinical determinants of financial hardship by the number of hardship domains

Determinants of financial hardship	One domain*		Two domains*		Three domains*	
	RR [95% CI]	P†	RR [95% CI]	P†	RR [95% CI]	P†
Age at evaluation						
18 – 29.9 years	Reference		Reference		Reference	
30 – 39.9 years	1.51 [1.11, 2.04]	0.008	2.07 [1.46, 2.91]	<0.001	2.59 [1.57, 4.26]	<0.001
≥ 40 years	2.04 [1.32, 3.17]	0.001	2.98 [1.78, 4.98]	<0.001	3.59 [1.79, 7.19]	<0.001
Time since diagnosis						
10 – 19 years	0.82 [0.55, 1.22]	0.33	1.68 [1.05, 2.67]	0.03	1.45 [0.77, 2.73]	0.25
20 – 29 years	0.88 [0.64, 1.23]	0.46	1.49 [1.01, 2.20]	0.04	1.29 [0.78, 2.13]	0.32
≥ 30 years	Reference		Reference		Reference	
Sex						
Male	0.85 [0.68, 1.07]	0.16	0.71 [0.54, 0.92]	0.01	1.17 [0.80, 1.71]	0.41
Female	Reference		Reference		Reference	
Race/ethnicity						
White, non-Hispanic	Reference		Reference		Reference	
Black, non-Hispanic	1.22 [0.82, 1.81]	0.32	0.93 [0.60, 1.44]	0.75	1.24 [0.71, 2.14]	0.45
Hispanic	1.50 [0.86, 2.63]	0.16	1.08 [0.54, 2.17]	0.84	0.65 [0.18, 2.37]	0.52
Other‡	1.25 [0.78, 2.00]	0.35	1.20 [0.69, 2.11]	0.52	0.75 [0.29, 1.94]	0.56
Educational attainment						
Below high school	2.52 [1.43, 4.43]	0.001	4.27 [2.36, 7.72]	<0.001	3.70 [1.78, 7.72]	<0.001
High school graduate/GED	2.27 [1.60, 3.22]	<0.001	2.76 [1.85, 4.11]	<0.001	2.39 [1.38, 4.13]	0.002
Some college/training after high school	1.46 [1.12, 1.90]	0.005	1.97 [1.43, 2.70]	<0.001	1.63 [1.02, 2.60]	0.04
College graduate or above	Reference		Reference		Reference	
Employment status						
Currently employed	Reference		Reference		Reference	
Currently unemployed	1.65 [1.13, 2.41]	0.009	1.79 [1.20, 2.67]	0.005	2.15 [1.30, 3.55]	0.003
Annual household income						
≤ \$39,999	2.31 [1.68, 3.19]	<0.001	7.96 [5.26, 12.06]	<0.001	14.64 [7.24, 29.59]	<0.001
\$40,000 – \$79,999	1.68 [1.27, 2.23]	<0.001	2.67 [1.78, 4.00]	<0.001	2.64 [1.27, 5.50]	0.009

≥ \$80,000	Reference		Reference		Reference	
Number of people supported by household income	0.99 [0.90, 1.08]	0.79	1.12 [1.01, 1.24]	0.03	1.11 [0.97, 1.27]	0.14
Marital status						
Married	Reference		Reference		Reference	
Status other than married	1.45 [1.12, 1.87]	0.004	1.78 [1.32, 2.40]	<0.001	1.61 [1.05, 2.47]	0.03
Burden of treatment modalities§						
Low risk burden	Reference		Reference		Reference	
Moderate risk burden	1.62 [1.15, 2.29]	0.006	1.19 [0.80, 1.77]	0.39	3.70 [1.67, 8.21]	0.001
High risk burden	1.49 [1.04, 2.14]	0.03	1.44 [0.95, 2.16]	0.08	3.48 [1.55, 7.82]	0.003
Chronic health conditions (CTCAE grades 2-4 vs. grade 1 or no condition)						
Myocardial infarction	2.08 [1.07, 4.06]	0.03	2.15 [1.01, 4.57]	0.05	3.30 [1.40, 7.75]	0.006
Cardiac disorder	1.08 [0.71, 1.64]	0.72	1.56 [1.00, 2.44]	0.05	1.32 [0.72, 2.39]	0.37
Peripheral neuropathy	1.17 [0.68, 2.02]	0.58	1.95 [1.12, 3.37]	0.02	2.15 [1.11, 4.14]	0.02
Stroke	1.42 [0.67, 3.00]	0.36	1.26 [0.53, 3.02]	0.60	1.40 [0.44, 4.44]	0.56
Upper gastrointestinal disease	1.39 [0.74, 2.62]	0.31	1.63 [0.81, 3.29]	0.17	1.99 [0.86, 4.60]	0.11
Respiratory disorder	1.09 [0.79, 1.52]	0.60	1.12 [0.78, 1.62]	0.54	1.36 [0.83, 2.21]	0.22
Diabetes	1.14 [0.72, 1.80]	0.59	1.21 [0.72, 2.04]	0.48	1.36 [0.69, 2.71]	0.37
Chronic kidney disease	0.92 [0.40, 2.12]	0.85	1.51 [0.63, 3.62]	0.36	0.52 [0.10, 2.57]	0.42
Hepatic disorder	1.87 [0.95, 3.67]	0.07	1.90 [0.90, 4.03]	0.09	1.77 [0.70, 4.51]	0.23
Seizures	1.57 [0.99, 2.47]	0.05	1.34 [0.79, 2.27]	0.28	1.05 [0.50, 2.21]	0.90
Reproductive disorder	1.23 [0.96, 1.57]	0.10	1.47 [1.11, 1.95]	0.007	2.19 [1.49, 3.22]	<0.001
Subsequent neoplasm	1.60 [1.01, 2.54]	0.04	1.31 [0.75, 2.28]	0.35	2.33 [1.19, 4.59]	0.01
Skeletal disorder	1.19 [0.81, 1.74]	0.40	0.99 [0.62, 1.56]	0.95	1.79 [0.99, 3.22]	0.05
Hearing loss	1.12 [0.74, 1.71]	0.58	1.06 [0.66, 1.71]	0.81	0.63 [0.31, 1.26]	0.19
Amputation	0.63 [0.30, 1.32]	0.23	1.00 [0.45, 2.23]	0.99	1.14 [0.39, 3.30]	0.82

* Reference group: no hardship on any domains; GED = General Equivalency Diploma

† P values were computed based on multinomial logistic regression model (two-sided).
‡ Other: American Indian, Alaska Native, Asian, and Pacific Islander.
§ High risk burden: chemotherapy, radiotherapy and invasive surgery, or radiotherapy plus invasive surgery. Moderate risk burden: chemotherapy plus radiotherapy, chemotherapy plus invasive surgery, radiotherapy only, or invasive surgery only. Low risk burden: chemotherapy only (see Supplementary Methods)

Supplementary Table 3. Associations of financial hardship with health and life insurance affordability and retirement planning by the number of hardship domains

Number of hardship domains	Difficulty in acquiring health insurance		Difficulty in acquiring life insurance		Impact on retirement planning	
	OR [95% CI]	P*	OR [95% CI]	P*	OR [95% CI]	P*
Bivariate analysis						
One domain†	2.00 [1.56, 2.57]	<0.001	1.72 [1.31, 2.26]	<0.001	6.54 [4.02, 10.63]	<0.001
Two domains†	4.64 [3.61, 5.97]	<0.001	2.91 [2.18, 3.89]	<0.001	13.26 [8.19, 21.48]	<0.001
Three domains†	5.59 [4.06, 7.70]	<0.001	4.09 [2.77, 6.02]	<0.001	51.36 [30.83, 85.57]	<0.001
Multivariable analysis‡						
	OR [95% CI]	P	OR [95% CI]	P	OR [95% CI]	P
One domain	2.09 [1.55, 2.83]	<0.001	1.72 [1.26, 2.36]	0.001	5.71 [3.13, 10.40]	<0.001
Two domains	4.87 [3.52, 6.75]	<0.001	2.62 [1.82, 3.78]	<0.001	13.92 [7.55, 25.65]	<0.001
Three domains	7.28 [4.78, 11.08]	<0.001	4.70 [2.86, 7.72]	<0.001	53.97 [27.91, 104.38]	<0.001

* P values were computed based on logistic regression models (two-sided).

† Reference group: no hardship on any domains

‡ Analysis adjusted for age at evaluation, time since diagnosis, sex, race/ethnicity, educational attainment, employment status, annual household income, the number of people supported by household income, marital status, burden of treatment modalities, and 15 groups of chronic health conditions

Supplementary Table 4. Associations of financial hardship with symptom prevalence by the number of hardship domains

Number of hardship domains	Physical symptoms				Emotional symptoms			
	Sensation abnormality	Cardiac symptom	Pulmonary symptom	Pain	Somatization	Anxiety	Depression	Suicidal ideation
Bivariate analysis								
	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]
One domain*	1.87 [1.51, 2.32]	1.51 [1.11, 2.04]	1.43 [0.84, 2.45]	1.96 [1.60, 2.41]	3.52 [2.45, 5.06]	2.75 [1.84, 4.13]	3.42 [2.32, 5.05]	3.29 [1.97, 5.52]
Two domains*	3.55 [2.83, 4.46]	3.19 [2.37, 4.28]	4.72 [2.93, 7.60]	4.01 [3.06, 5.26]	10.22 [7.19, 14.54]	6.81 [4.61, 10.05]	9.14 [6.26, 13.33]	6.68 [4.04, 11.04]
Three domains*	5.23 [3.87, 7.07]	3.99 [2.78, 5.75]	5.83 [3.36, 10.10]	10.14 [5.71, 18.01]	20.69 [13.88, 30.85]	13.23 [8.61, 20.34]	15.93 [10.45, 24.30]	10.77 [6.23, 18.61]
Multivariable analysis†								
	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]
One domain	1.69 [1.29, 2.21]	1.28 [0.88, 1.88]	1.42 [0.74, 2.73]	1.93 [1.49, 2.49]	3.20 [2.05, 4.99]	1.84 [1.15, 2.95]	2.12 [1.35, 3.31]	2.65 [1.43, 4.92]
Two domains	3.13 [2.33, 4.20]	2.54 [1.71, 3.77]	3.37 [1.78, 6.36]	3.13 [2.22, 4.40]	7.71 [4.93, 12.05]	3.89 [2.42, 6.24]	5.32 [3.41, 8.30]	5.55 [3.00, 10.26]
Three domains	4.50 [3.03, 6.69]	3.14 [1.91, 5.16]	3.48 [1.65, 7.30]	5.65 [2.99, 10.66]	13.76 [8.20, 23.09]	7.02 [4.09, 12.05]	7.67 [4.58, 12.84]	5.99 [2.97, 12.10]

* Reference group: no hardship on any domains

† Analysis adjusted for age at evaluation, time since diagnosis, sex, race/ethnicity, educational attainment, employment status, annual household income, the number of people supported by household income, marital status, burden of treatment modalities, and 15 groups of chronic health conditions

Supplementary Table 5. Associations of financial hardship with SF-36 physical and mental component summary scores by the number of hardship domains

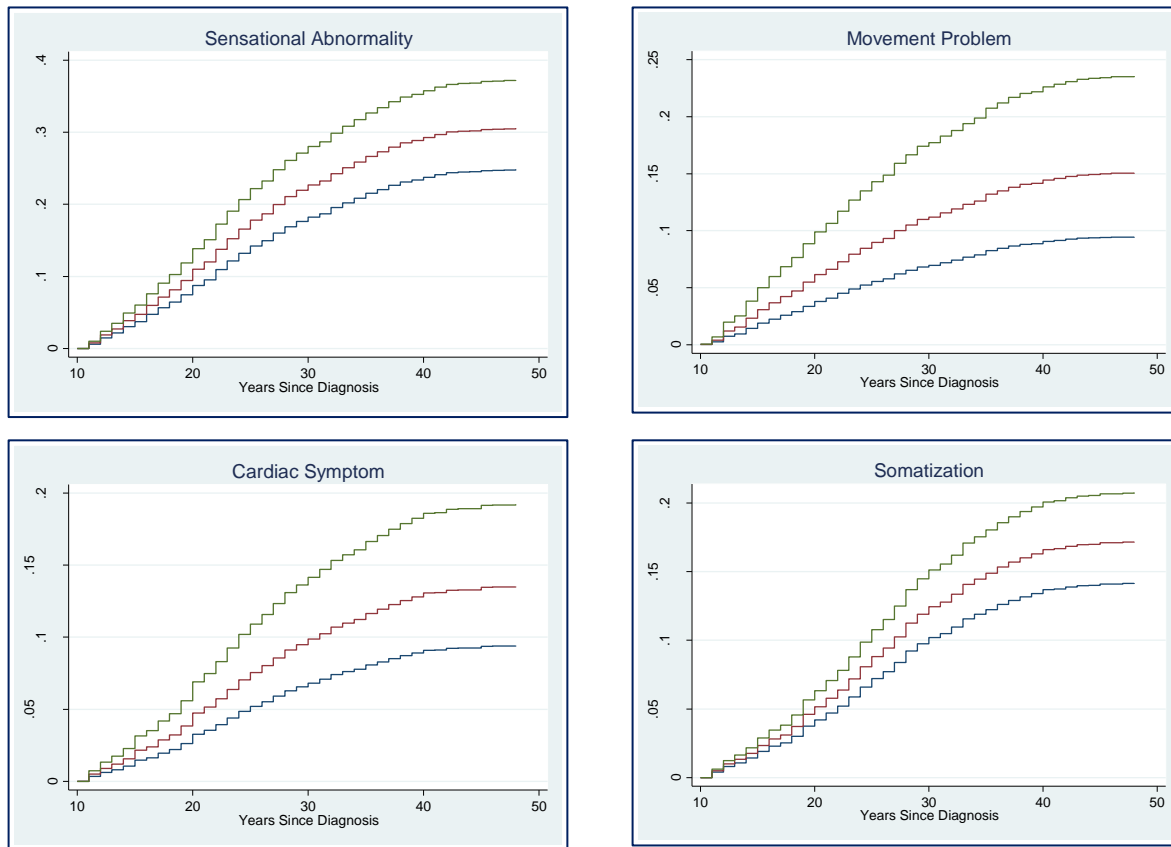
	Physical component summary		Mental component summary	
Number of hardship domains	Raw scores [SD]		Raw scores [SD]	
None	55.14 [5.65]		53.86 [6.45]	
One domain	50.96 [8.13]		49.67 [8.47]	
Two domains	45.93 [9.81]		44.76 [9.74]	
Three domains	39.92 [10.31]		38.87 [10.42]	
Bivariate analysis				
	Beta [95% CI]	P*	Beta [95% CI]	P*
One domain†	-4.18 [-4.92, -3.44]	<0.001	-4.19 [-4.96, -3.42]	<0.001
Two domains†	-9.21 [-10.02, -8.39]	<0.001	-9.11 [-9.95, -8.26]	<0.001
Three domains†	-15.23 [-16.36, -14.09]	<0.001	-14.99 [-16.17, -13.81]	<0.001
Multivariable analysis‡				
	Beta [95% CI]	P	Beta [95% CI]	P
One domain	-2.98 [-3.75, -2.21]	<0.001	-3.47 [-4.33, -2.60]	<0.001
Two domains	-6.53 [-7.43, -5.64]	<0.001	-7.27 [-8.28, -6.27]	<0.001
Three domains	-11.41 [-12.67, -10.16]	<0.001	-12.47 [-13.88, -11.05]	<0.001

* P values were computed based on multivariable linear regression models (two-sided).

† Reference group: no hardship on any domains

‡ Analysis adjusted for age at evaluation, time since diagnosis, sex, race/ethnicity, educational attainment, employment status, annual household income, the number of people supported by household income, marital status, burden of treatment modalities, and 15 groups of chronic health conditions

Supplementary Figure 1. Associations of treatment modalities with cumulative prevalence of symptoms



Footnote: blue line: low risk burden group; red line: moderate risk burden group; green line: high risk burden group