Financial Hardship Associated With Cancer in the United States: Findings From a Population-Based Sample of Adult Cancer Survivors

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ABSTRACT

Purpose

To estimate the prevalence of financial hardship associated with cancer in the United States and identify characteristics of cancer survivors associated with financial hardship.

Methods

We identified 1,202 adult cancer survivors diagnosed or treated at ≥ 18 years of age from the 2011 Medical Expenditure Panel Survey Experiences With Cancer questionnaire. Material financial hardship was measured by ever (1) borrowing money or going into debt, (2) filing for bankruptcy, (3) being unable to cover one's share of medical care costs, or (4) making other financial sacrifices because of cancer, its treatment, and lasting effects of treatment. Psychological financial hardship was measured as ever worrying about paying large medical bills. We examined factors associated with any material or psychological financial hardship using separate multivariable logistic regression models stratified by age group (18 to 64 and ≥ 65 years).

Results

Material financial hardship was more common in cancer survivors age 18 to 64 years than in those ≥ 65 years of age (28.4% v 13.8%; $P < .001$), as was psychological financial hardship (31.9% v 14.7%, $P < .001$). In adjusted analyses, cancer survivors age 18 to 64 years who were younger, female, nonwhite, and treated more recently and who had changed employment because of cancer were significantly more likely to report any material financial hardship. Cancer survivors who were uninsured, had lower family income, and were treated more recently were more likely to report psychological financial hardship. Among cancer survivors ≥ 65 years of age, those who were younger were more likely to report any financial hardship.

Conclusion

Cancer survivors, especially the working-age population, commonly experience material and psychological financial hardship.

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INTRODUCTION

In the United States, cancer is one of the most costly medical conditions to treat,¹ and these costs are expected to increase in the future due to increasing numbers of cancer survivors,² increasing use of chemotherapy, biologics and other targeted therapies,³ and increasing costs of new cancer therapies.³ Importantly, out-of-pocket payments for cancer care are also escalating,^{4,5} even for patients with health insurance.⁶ Compared with individuals without a cancer history, cancer survivors have greater

medical expenditures by all payers and greater patient out-of-pocket costs, even many years after initial diagnosis,⁷⁻¹⁰ reflecting ongoing cancer care as well as care for any late or lasting treatment effects. In addition, cancer survivors are more likely to report being unable to work because of their health^{7,10,11} or having employment disability, including more missed work days or additional days spent in bed due to poor health.^{7,10,11} Limitations in ability to work may also reduce employment-based health insurance options and resources to pay for medical care, further magnifying the financial impact of cancer.

Thus, cancer survivors are at risk for material aspects of financial hardship, including not only high out-of-pocket costs, but also reduction in income, medical debt, and bankruptcy.^{12,13} They may also experience adverse psychological aspects of financial hardship, including stress, anxiety, and worry about their financial situation.¹⁴⁻¹⁷ Psychological financial hardship may also adversely affect the quality of life.¹⁸ Several studies have shown that indicators of financial hardship from cancer are associated with younger age,^{12,19-21} minority race and/or ethnicity,^{19,21-23} shorter time from diagnosis,¹⁹ type of health insurance coverage,^{21,22} and lower socioeconomic status.²⁰⁻²² To date, the majority of studies have evaluated financial hardship in geographically defined or other selected samples of cancer survivors^{12,13,15,20} or have not distinguished between the material and psychological aspects of financial hardship.¹⁹ Few have evaluated measures that specifically assessed cancer-related medical debt, bankruptcy, or inability to pay bills in large diverse samples. In this study, we estimated the prevalence of both material and psychological aspects of financial hardship associated with cancer, its treatment, and the lasting effects of treatment in the United States. Further, we assessed factors associated with material and psychological aspects of financial hardship associated with cancer.

METHODS

Data and Sample

The sample was selected from the 2011 Medical Expenditure Panel Survey (MEPS) Experiences With Cancer survey conducted by the Agency for Healthcare Research and Quality. The MEPS is a survey of health care expenditures, insurance, utilization, and access to care and is nationally representative of the civilian noninstitutionalized population of the United States.²⁴ The MEPS Experiences With Cancer survey was a self-administered questionnaire of adult cancer survivors identified from responses to a MEPS question about whether a doctor or other health professional ever told the respondent that he or she had cancer or a malignancy of any kind. The survey contained questions on financial hardship related to cancer, its treatment, and lasting and late effects of treatment.²⁵ Preliminary survey items were identified from a literature review and then evaluated in cognitive testing of more than 60 cancer survivors representing a range of diagnoses, times since diagnosis and last cancer treatment, and educational attainment. Survey items were then modified based on cognitive testing results.^{25,26}

Adult cancer survivors who confirmed a cancer diagnosis or cancer treatment, or both, after age 18 years were eligible to complete the survey. The overall MEPS response rate in 2011 was 54.9%, and among MEPS participants, the Experiences With Cancer survey response rate was 90.0% among cancer survivors, resulting in a final response rate of 49.4%. We identified 1,202 adult cancer survivors for this study. Consistent with previous research, individuals diagnosed solely with nonmelanoma skin cancer were excluded.^{7,27}

Measures

Data obtained on sample characteristics included age, sex, race/ethnicity, marital status, educational attainment, family income as a percentage of the federal poverty level, and health insurance type at the time of the survey. Conditions other than cancer were ascertained with a series of questions about whether a doctor or other health professional ever told the person that he or she had any MEPS priority conditions, which were summed for each individual. Change in employment was measured as any extended paid or unpaid leave or switch to part time due to cancer. We also measured years since the last cancer treatment.

Financial hardship associated with cancer, its treatment, or lasting effects of treatment was measured as material or psychological hardship. Material aspects of financial hardship were measured by four items asking respondents if they ever (1) had to borrow money or go into debt, (2) had to file for bankruptcy, (3) were unable to cover their share of medical care costs, or (4) made other financial sacrifices because of cancer (Data Supplement). We created a dichotomous summary measure of any material financial hardship based on responses to these four items. We measured psychological financial hardship from one item about ever being worried about paying large medical bills because of cancer.

Analyses

Descriptive statistics were calculated separately for cancer survivors age 18 to 64 years and ≥ 65 years because of differences in current employment and insurance coverage between these age groups. The percentage of cancer survivors reporting any material or psychological financial hardship was assessed by health insurance type for each age group and compared using χ^2 statistics. We examined survivor characteristics associated with any material or psychological financial hardship using separate multivariable logistic regression models. Both sets of models were stratified by age group (18 to 64 and ≥ 65 years). We present adjusted predicted margins from the multivariable logistic regression analyses. The predictive margins method directly standardizes the outcome of each group to the covariate distribution of the overall population.²⁸ Standardized results can be compared in the same manner as percentages. Adjusted odds ratios are reported in Appendix Tables A1-A2 (online only). All estimates were weighted to account for the MEPS complex survey design and nonresponse using SUDAAN.²⁹ Wald statistics were used to test the statistical significance of covariates in multivariable analyses (defined as $P < .05$), and all statistical significance tests were two-sided. Sensitivity analyses were conducted to explore the effects of sex and early adulthood on material and psychological financial hardship.

RESULTS

Slightly more than half of cancer survivors were ≥ 65 years of age (Table 1). In both the 18 to 64 and ≥ 65 age groups, survivors were mostly non-Hispanic white, were married, and had private health insurance. Compared with the younger group, a smaller percentage of the older group was female (50.0% v 66.6%; $P < .001$) and had at least some college education (50.1% v 65.5%; $P < .001$). About one third of cancer survivors age 18 to 64 years were employed at or after cancer diagnosis and took extended paid or unpaid leave or switched to part time (30.8%); the remainder were employed, but did not make these changes (41.6%) or were not employed at their diagnosis (27.7%). A significantly greater percentage of survivors in the older group had three or more MEPS priority conditions compared with the younger group (59.8% v 31.7%; $P < .001$). In both age groups, about one quarter of cancer survivors reported cancer treatment within the past year, and the largest portion reported that the last treatment was 5 or more years before the survey.

Material Financial Hardship Associated With Cancer

Overall, 20.4% (95% CI, 17.7% to 23.4%) of cancer survivors reported ever having any material financial hardship associated with cancer, its treatment, or late and lasting effects of treatment (Table 2). This included 7.1% of cancer survivors who reported having to borrow money or go into debt, 11.9% who were unable to cover their share of medical care costs associated with cancer,

Table 1. Characteristics of Cancer Survivors

	Age Group				χ^2 <i>P</i>
	18-64 Years		$\geq$ 65 Years*		
	No.	Weighted Percentage	No.	Weighted Percentage	
Total	565	100.0	637	100.0	
Current age, years	59	9.8	—	—	—
18-39					
40-54	221	38.3	—	—	
55-64	285	51.9	—	—	
65-74			317	50.3	
$\geq$ 75*			320	49.7	
Sex	166	33.4	301	50.0	< .001
Male					
Female	399	66.6	336	50.0	
Race/ethnicity	397	81.7	513	89.4	< .001
Non-Hispanic white only					
All other race/ethnicities	168	18.3	124	10.6	
Current marital status	310	61.0	330	54.0	.049
Married					
Not married†	255	39.0	307	46.0	
Education					< .001
Less than high school graduate	68	8.4	119	13.8	
High school graduate	177	26.1	242	36.1	
Some college or more	319	65.5	275	50.1	
Current family income as percent of poverty level (in quartiles)‡	186	23.1	235	26.6	.103
Q1: < 185.24					
Q2: 185.24-328.31	125	21.8	172	27.6	
Q3: 328.32-589.40	144	27.4	124	23.0	
Q4: $\geq$ 589.41	110	27.7	106	22.9	
Change in employment status due to cancer					—
Employed at or after diagnosis and took extended paid or unpaid leave or switched to part time	173	30.8	—	—	
Employed, but did not take extended leave or switch to part time	223	41.6	—	—	
Not employed at or after diagnosis/missing	169	27.7	—	—	
Current health insurance§	380	75.2	—	—	—
Age < 65, any private					
Age < 65, public only	120	15.8	—	—	
Age < 65, uninsured	65	9.1	—	—	
Age $\geq$ 65, Medicare and private*			361	62.9	
Age $\geq$ 65, Medicare and other public*			61	5.9	
Age $\geq$ 65, Medicare only*			210	30.4	
Number of known MEPS priority conditions (excluding cancer)	138	24.5	42	6.4	< .001
0					
1	114	22.5	74	13.0	
2	117	21.3	124	20.8	
3-8	196	31.7	397	59.8	
Years since last cancer treatment	129	24.8	149	23.5	.321
1					
1 to < 5	137	24.2	127	20.1	
$\geq$ 5¶	241	41.9	274	43.9	
Never treated/missing	58	9.1	87	12.5	

NOTE. N = 1,202. Data from the 2011 MEPS Experiences With Cancer Survey. Boldface type indicates statistical significance.

Abbreviations: MEPS, Medical Expenditure Panel Survey; Q, quartile (Q1 is the lowest income as a percentage of poverty line quartile, and Q4 is the highest income quartile).

*Age top-coded ≥ 85 by the MEPS.

†Not married includes widowed, divorced, separated, or never married.

‡Quartiles of family income as a percent of poverty level defined based on distribution in full sample.

§Public insurance included Medicare, Medicaid, State Children's Health Insurance Program, and/or other public hospital/physician coverage. Age < 65, public only, comprised people younger than 65 years who had one or more types of public coverage and did not have private coverage. Age ≥ 65 , Medicare and other public, comprised people age 65 and older who had both Medicare and one or more of other types of public coverage. TRICARE/CHAMPVA was treated as private coverage, as were employer-based, union-based, and other private insurance.

||MEPS priority conditions include arthritis, asthma, diabetes, emphysema, heart disease (angina, coronary heart disease, heart attack, other heart condition/disease), high cholesterol, hypertension, and stroke.

¶Years since last treatment top-coded at ≥ 20 by the MEPS.

and 9.4% who made other financial sacrifices. The percentage of cancer survivors reporting any material financial hardship was significantly greater for those age 18 to 64 years compared with those ≥ 65 years of age (28.4% v 13.8%; $P < .001$). Among

those age 18 to 64 years, financial hardship varied by current health insurance in univariate analysis, with the highest level for the uninsured (43.3%) and those with public health insurance only (42.3%) compared with those with private

Table 2. Financial Hardship Associated With Cancer, Its Treatment, or Lasting Effects of Treatment, by Age Group

	All Ages	Age 18-64 Years	Age ≥ 65 Years*
	Weighted Percentage (95% CI)	Weighted Percentage (95% CI)	Weighted Percentage (95% CI)
Had to borrow money or go into debt	7.1 (5.7 to 8.9)	12.9 (10.2 to 16.2)	2.3 (1.3 to 4.1)
Filed for bankruptcy	1.7 (1.0 to 2.8)	2.3 (1.2 to 4.2)	1.2 (0.5 to 2.9)
Unable to cover share of the costs of medical care	11.9 (9.8 to 14.3)	16.9 (13.8 to 20.6)	7.7 (5.6 to 10.5)
Other financial sacrifices	9.4 (7.6 to 11.5)	12.5 (9.7 to 15.9)	6.8 (4.9 to 9.4)
Any material financial hardship†	20.4 (17.7 to 23.4)	28.4 (24.3 to 32.8)	13.8 (10.8 to 17.4)
Any psychological financial hardship‡	22.5 (19.6 to 25.7)	31.9 (27.5 to 36.7)	14.7 (11.5 to 18.5)

NOTE. Data from 2011 Medical Expenditure Panel Survey Experiences With Cancer Survey. Boldface type indicates summary measure.

*Age top-coded ≥ 85 by the Medical Expenditure Panel Survey.

†Any material financial hardship was defined as having responded yes to one or more of the individual material financial hardship measures.

‡Any psychological financial hardship was defined as having responded yes to ever being worried about paying large medical bills.

insurance (23.7%; Fig 1A; $P < .001$). For cancer survivors ≥ 65 years of age, material financial hardship was similar across insurance types.

In adjusted analyses, younger age (eg, 18 to 54 v 55 to 64 years and 65 to 74 v ≥ 75 years) was associated with greater material financial hardship in both age groups (Table 3). Minority race/

Fig 1. (A) Any material financial hardship associated with cancer by age group and type of health insurance. (B) Psychological financial hardship associated with cancer, by age group and type of health insurance. Data from the 2011 Medical Expenditure Panel Survey Experiences With Cancer Survey.

Table 3. Patient Factors Associated With Any Material Financial Hardship Associated With Cancer, Its Treatment, or Lasting Effects of Treatment, by Age Group

	Age 18-64 Years			Age ≥ 65 Years*		
	Adjusted Probability†	95% CI	Wald F P	Adjusted Probability†	95% CI	Wald F P
Current age, years			.009			.012
18-54	34.1	27.7 to 41.2		—	—	—
55-64	22.9	18.2 to 28.3		—	—	—
65-74	—	—	—	17.8	13.5 to 23.2	
≥ 75*	—	—	—	9.7	6.4 to 14.5	
Sex			.034			.415
Male	22.0	16.0 to 29.5		15.2	10.8 to 20.9	
Female	31.3	26.5 to 36.6		12.5	8.7 to 17.5	
Race/ethnicity			.008			.052
Non-Hispanic white only	26.1	21.8 to 31.0		13.0	9.8 to 16.9	
All other race/ethnicities	37.3	29.7 to 45.5		20.4	13.7 to 29.4	
Current marital status			.469			.660
Married	27.1	22.2 to 32.6		13.1	9.5 to 17.8	
Not married‡	30.1	23.8 to 37.4		14.6	9.9 to 21.0	
Current family income as percent of poverty level§			.433			.816
Q1: < 185.24	33.6	25.5 to 42.8		16.0	10.1 to 24.3	
Q2: 185.24-328.31	31.5	23.0 to 41.3		11.9	7.6 to 18.0	
Q3: 328.32-589.40	27.8	20.8 to 36.0		13.5	8.0 to 21.8	
Q4: ≥ 589.41	20.0	11.2 to 33.2		13.8	7.8 to 23.2	
Employment change due to cancer			< .001			
Employed at or after diagnosis and took extended paid or unpaid leave or switched to part time	49.1	40.9 to 57.3		—	—	—
Employed, but did not take extended leave or switch to part time	20.2	15.4 to 26.2		—	—	—
Not employed at or after diagnosis/missing	17.3	12.2 to 23.9		—	—	—
Current health insurance			.106			.629
Age 18-64, any private	24.8	20.3 to 29.9		—	—	—
Age 18-64, public only	36.6	25.6 to 49.2		—	—	—
Age 18-64, uninsured	40.6	25.7 to 57.6		—	—	—
Age ≥ 65, Medicare and private*	—	—	—	12.9	9.4 to 17.4	
Age ≥ 65, Medicare and other public*	—	—	—	12.0	6.1 to 22.3	
Age ≥ 65, Medicare only*	—	—	—	16.1	10.9 to 23.1	
Number of MEPS priority conditions (excluding cancer)¶			.749			.131
0-1	29.0	23.5 to 35.2		19.0	11.8 to 29.1	
2-8	27.8	22.6 to 33.7		12.5	9.4 to 16.4	
Time since last treatment			.014			.490
1 year	36.1	28.3 to 44.7		13.9	8.6 to 21.6	
1 to < 5 years	33.3	25.6 to 42.0		13.3	7.6 to 22.2	
≥ 5 years#	24.3	18.7 to 31.0		15.5	10.8 to 21.7	
Never treated/missing	16.7	8.6 to 29.8		7.7	3.2 to 17.3	

Note. Data from 2011 Medical Expenditure Panel Survey Experiences With Cancer Survey. Boldface type indicates statistical significance.

Abbreviations: MEPS, Medical Expenditure Panel Survey; Q, quartile (Q1 is the lowest income quartile as a percentage of poverty line and Q4 is the highest income quartile).

*Age top-coded ≥ 85 by the MEPS.

†Predicted marginals from a multivariable logistic regression.

‡Not married includes widowed, divorced, separated, or never married.

§Quartiles of family income as a percent of poverty level defined based on distribution in full sample.

||Public insurance included Medicare, Medicaid, State Children's Health Insurance Program, and/or other public hospital/physician coverage. Age < 65, public only, comprised people younger than 65 years who had one or more types of public coverage and did not have private coverage. Age ≥ 65, Medicare and other public, comprised people age 65 and older who had both Medicare and one or more other types of public coverage. TRICARE/CHAMPVA was treated as private coverage, as were employer-based, union-based, and other private insurance.

¶MEPS priority conditions include arthritis, asthma, diabetes, emphysema, heart disease (angina, coronary heart disease, heart attack, other heart condition/disease), high cholesterol, hypertension, and stroke.

#Years since last treatment top-coded at ≥ 20 by the MEPS.

ethnicity was also associated with greater financial hardship in both age groups, although the association was only marginally significant in those ≥ 65 years of age. Among cancer survivors age 18 to 64 years, women, and those treated more recently were more likely to report any material financial hardship than were men, those last treated 5 or more years prior to the survey, or those never treated or with missing data on time since the last treatment. Cancer survivors who were employed and took extended leave or switched to part time were more likely to report financial hardship

(49.1%) compared with those who were employed but did not make these changes (20.2%) or who were not employed at diagnosis (17.3%).

Psychological Financial Hardship Associated With Cancer

Almost one quarter (22.5%; 95% CI, 19.6% to 25.7%) of cancer survivors reported ever having psychological financial hardship associated with cancer, its treatment, or late and lasting

Table 4. Patient Factors Associated With Psychological Financial Hardship Associated With Cancer, Its Treatment, or Lasting Effects of Treatment, by Age Group

	Age 18-64 Years			Age ≥ 65 Years*		
	Adjusted Probability†	95% CI	Wald F P	Adjusted Probability†	95% CI	Wald F P
Current age			.120			< .001
18-54	35.8	29.7 to 42.5		—	—	—
55-64	28.4	22.2 to 35.4		—	—	—
65-74	—	—	—	21.5	16.4 to 27.6	
≥ 75*	—	—	—	8.2	5.2 to 12.7	
Sex			.057			.240
Male	25.4	18.1 to 34.4		16.8	11.7 to 23.5	
Female	35.0	29.9 to 40.5		12.9	9.6 to 17.1	
Race/ethnicity			.362			.251
Non-Hispanic white only	31.1	26.1 to 36.7		14.1	10.7 to 18.4	
All other race/ethnicities	35.2	28.1 to 43.0		19.5	12.0 to 30.2	
Current marital status			.825			.333
Married	32.4	27.0 to 38.2		13.3	9.7 to 17.9	
Not married‡	31.3	24.2 to 39.4		16.7	11.5 to 23.7	
Current family income as percent of poverty level§			.019			.597
Q1: < 185.24	29.6	22.2 to 38.4		18.1	12.4 to 25.8	
Q2: 185.24-328.31	36.1	27.2 to 46.1		14.5	8.7 to 23.3	
Q3: 328.32-589.40	40.3	31.6 to 49.7		13.8	8.3 to 22.1	
Q4: ≥ 589.41	21.2	13.9 to 30.9		12.5	7.4 to 20.3	
Employment change due to cancer			.074			
Employed at or after diagnosis and took extended paid or unpaid leave or switched to part time	39.3	31.5 to 47.6		—	—	—
Employed, but did not take extended leave or switch to part time	27.3	20.7 to 35.1		—	—	—
Not employed at or after diagnosis/missing	29.9	22.3 to 38.8		—	—	—
Current health insurance			.043			.279
Age 18-64, any private	30.0	24.6 to 35.9		—	—	—
Age 18-64, public only	31.1	19.9 to 43.1		—	—	—
Age 18-64, uninsured	48.9	34.3 to 63.7		—	—	—
Age ≥ 65, Medicare and private*	—	—	—	14.2	10.1 to 19.6	
Age ≥ 65, Medicare and other public*	—	—	—	9.8	5.0 to 18.1	
Age ≥ 65, Medicare only*	—	—	—	17.0	12.0 to 23.6	
Number of MEPS priority conditions (excluding cancer)¶			.404			.667
0-1	29.8	23.8 to 36.7		16.2	9.5 to 26.3	
2-8	33.8	27.5 to 40.7		14.3	11.0 to 18.5	
Time since last treatment			.024			.081
1 year	43.5	31.8 to 56.0		21.3	14.4 to 30.5	
1 to < 5 years	31.0	23.5 to 39.7		14.8	8.7 to 24.0	
≥ 5 years#	29.1	22.9 to 36.2		13.1	8.9 to 18.9	
Never treated/missing	17.1	9.4 to 29.0		6.9	3.1 to 14.7	

NOTE. Data from 2011 MEPS Experiences With Cancer Survey. Boldface type indicates statistical significance.

Abbreviations: MEPS, Medical Expenditure Panel Survey; Q, quartile (Q1 is lowest income quartile as a percentage of poverty line and Q4 is highest income quartile).

*Age top-coded ≥ 85 by the MEPS.

†Predicted marginals from a multivariable logistic regression.

‡Not married includes widowed, divorced, separated, or never married.

§Quartiles of family income as a percent of poverty level defined based on distribution in full sample.

||Public insurance included Medicare, Medicaid, State Children's Health Insurance Program, and/or other public hospital/physician coverage. Age less than 65, public only, comprised people younger than 65 who had one or more types of public coverage and did not have private coverage. Age ≥ 65 years, Medicare and other public, comprised people age 65 and older who had both Medicare and one or more other types of public coverage. TRICARE/CHAMPVA was treated as private coverage, as were employer-based, union-based, and other private insurance.

¶MEPS priority conditions include arthritis, asthma, diabetes, emphysema, heart disease (angina, coronary heart disease, heart attack, other heart condition/disease), high cholesterol, hypertension, and stroke.

#Years since last treatment top-coded at ≥ 20 by the MEPS.

effects of treatment (Table 2). Psychological financial hardship was more common among those age 18 to 64 years than among those ≥ 65 years of age (31.9% v 14.7%; $P < .001$). Psychological financial hardship also varied by current health insurance coverage in the 18-to-64-year-old age group, with less hardship in the privately insured than in the uninsured group in univariate analysis (Fig 1B), although differences were marginally significant ($P = .07$). Psychological financial hardship varied little by type of health insurance in the elderly.

In adjusted analyses of the age group ≥ 65 years, younger age (65 to 74 v ≥ 75 years) was associated with greater psychological

financial hardship (Table 4). In the 18-to-64-year-old age group, hardship was more common among those with lower family income as a percentage of the federal poverty level and more recent treatment (all $P \leq .05$). Psychological financial hardship was also higher among the uninsured (48.9%) than among those with public (31.1%) or any private (30.0%) health insurance ($P < .05$).

Among those 18 to 64 years of age, 8.3% reported only material hardship, 11.8% reported only psychological hardship, and 20.1% reported both material and psychological hardship (Fig 2). Among those age ≥ 65 years, 6.6% reported only material

Fig 2. Material and psychological financial hardship associated with cancer.

hardship; 7.6% reported only psychological hardship; and 7.1% reported both material and psychological hardship. Material and psychological hardship findings were similar in sensitivity analyses stratified by gender (Appendix Tables A3-A6) and restricted to the younger age group of those age 40 to 64 years.

DISCUSSION

In this study, we examined the prevalence of both material and psychological financial hardship associated with cancer, including medical debt, problems paying medical bills, bankruptcy, and worry about paying medical bills, in a nationally representative sample of cancer survivors in the United States. We found that financial hardship was substantial, especially among working-age cancer survivors, with one of four reporting ever having any material financial hardship and one of three reporting psychological financial hardship. The risk of financial hardship will likely increase in the future because of increasing costs of cancer treatment^{3,4,29} and specifically the use of oral therapies,³ which can have substantially higher cost-sharing for patients than infusion therapies. In addition, medical costs are increasingly being shifted to patients through higher health insurance premiums and greater cost sharing.³⁰ Enrollment in high-deductible health plans, with deductible thresholds of up to \$6,450 for individuals and \$12,900 for families in 2015,³¹ has also increased.³⁰ Thus, even with insurance, many cancer survivors will remain at risk for high out-of-pocket medical costs. Ongoing evaluation of financial hardship, both material and psychological, as part of larger efforts to assess patient preferences³² and patient reported outcomes,³³ will be important with more people gaining access to insurance coverage through the Affordable Care Act.

Material and psychological financial hardship also have clinical implications for the quality of patient care. Accumulating evidence suggests that cancer survivors with financial hardship or higher out-of-pocket costs are more likely to delay or forgo general medical care^{19,34} and cancer care³⁵ and have poorer adherence to

cancer treatment^{6,36-38}, compared with those without financial hardship or lower out-of-pocket costs. Cancer survivors with financial hardship are also more likely to report poor quality of life.¹⁸ We observed greater financial hardship among racial/ethnic minorities, the poor, and those with public health insurance or who were uninsured, similar to that observed elsewhere.^{18,20-22} These populations have historically been more likely to be diagnosed at a later stage of disease,^{39,40} be less likely to receive recommended cancer treatment,⁴⁰ and have poorer survival.⁴⁰ With increasing costs of cancer care,^{2,3} our findings suggest that these groups deserve special attention, and if this problem is not addressed, growing material and psychological financial hardship may also be associated with widening disparities in outcomes.

The cost of cancer care is receiving increasing attention.^{4,41,42} The recent Institute of Medicine report, *Delivery of High-Quality Cancer Care*, included cost as a component of cancer care quality,⁴¹ and other organizations have identified affordability as a critical issue for the oncology community.⁴³ The American Society of Clinical Oncology Value in Cancer Care initiative emphasizes the role of oncologists in communicating with patients about cancer care costs.⁴³ Financial hardship has been identified as a potential adverse effect of cancer treatment, and discussion on the topic has been identified as a key component of informed decision making^{44,45} and survivorship care planning.^{46,47} Although both patients and oncologists acknowledge the importance of discussions about the cost of care^{37,48,49} and its consequences, these conversations do not always take place,^{20,48,50} and many physicians report discomfort in communicating about financial issues.⁴⁸ Based on the high prevalence of financial hardship observed in our study, ongoing efforts to improve data availability on material and psychological hardship will be important. Relevant intervention strategies, which may vary for those with material and/or psychological hardship, that encourage detailed patient-physician conversations throughout the cancer care continuum will help to improve patient outcomes. These conversations will be important for all cancer survivors, but especially for those at greatest risk for financial hardship.

Similar to other studies,^{12,19-21} we found that younger cancer survivors, particularly those of working age, were more likely to report both material and psychological financial hardship. A cancer diagnosis and subsequent treatment may interrupt employment and have a lasting negative impact on earnings, career development, retirement decisions, and sense of self-efficacy.^{51,52} We observed that cancer survivors who made employment changes because of cancer were more likely to report financial hardship. In addition, because employment-based health insurance is the predominant source of insurance among individuals younger than age 65, employment disruption or limitations in the ability to work may reduce access to insurance, and when combined with reduced earnings, may increase the risk of material and psychological financial hardship. The vast majority of individuals ≥ 65 years of age have Medicare coverage, Social Security, and other benefits that may shelter them to a greater extent from financial risks associated with a cancer diagnosis. Thus, the interrelationship between cancer survivorship, employment, health insurance, and financial hardship is complicated and ideally studied with longitudinal cohorts of individuals with and without cancer.

Our findings provide a snapshot of the prevalence of material and psychological financial hardship in cancer survivors in the United States in 2011. We found that recently treated survivors were more likely to have financial hardship than were those who were less recently treated. However, interpretation of this finding is complex. Our sample was heterogeneous with respect to cancer site and time since last treatment and first diagnosis, including the recently diagnosed and treated, as well as longer-term survivors. Thus, individuals with later-stage cancers and those with recurrences will be more common in the more recently treated group, whereas individuals with earlier stage cancers with better prognosis (eg, breast and prostate cancer) will be more common in the less recently treated group. Greater reported financial hardship among the recently treated might also be associated with better recall of financial situation, differences in eligibility for or generosity of health insurance coverage, and/or recent increases in cancer treatment costs. Further exploration of financial hardship will be important in large longitudinal studies with detailed clinical data and ongoing measurement of treatment, employment, and health insurance.

Despite the strengths of measuring both material and psychological aspects of financial hardship in a large nationally representative sample of cancer survivors, our study had several limitations. The response rate to the MEPS Experiences With Cancer survey was 49.4%; however, all analyses used sample weights, which include an adjustment for nonresponse. Cancer survivors were identified by survey responses, and confirmation of diagnosis, information about stage at diagnosis, specific treatment, timing of recurrence, or other clinical characteristics were unavailable. Population-based household surveys generally include

only small numbers of newly diagnosed, rare cancers, or cancers associated with short survival and mainly consist of long-term survivors of common adult cancers, often participating many years after diagnosis.^{53,54} Additionally, because the cancer diagnosis question refers to cancer or malignancy of any kind, our sample may include individuals diagnosed with preinvasive disease. However, inclusion of individuals with preinvasive disease would likely underestimate financial hardship due to cancer.

Another limitation of our study was the relatively small sample size. Although our study is one of the largest national studies of financial hardship in cancer survivors to date, we did not have a sufficiently large sample to assess financial hardship by cancer site and time since last treatment or first diagnosis. In 2012, the LIVESTRONG Foundation included the MEPS Experiences With Cancer survey in their online patient survey of more than 6,000 cancer survivors.⁵⁵ The LIVESTRONG survey was not population based, and all respondents had computer access, which introduces selection biases. Nevertheless, exploration of many issues related to financial hardship may be possible with these data and will be an important area for future research.

In summary, we found that both material and psychological financial hardship is common in adult cancer survivors, especially among the working-age population. Ongoing increases in the cost of cancer treatment highlight the importance of identifying characteristics of cancer survivors more likely to experience financial hardship and efforts to improve provider communication about cancer care affordability, especially with changes in health care access due to ongoing implementation of the Affordable Care Act.

AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

Disclosures provided by the authors are available with this article at www.jco.org

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Financial Hardship Associated With Cancer in the United States: Findings From a Population-Based Sample of Adult Cancer Survivors

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Appendix**Odds Ratios for Main Analyses and Sensitivity Analyses**

Table A1. Factors Associated With Any Material Financial Hardship Associated With Cancer, Its Treatment, or Lasting Effects of Treatment, by Age Group						
	Age 18-64 Years			Age ≥ 65 Years*		
	Adjusted Odds Ratio†	95% CI	Wald F P	Adjusted Odds Ratio†	95% CI	Wald F P
Current age, years			.009			.012
18-54	2.01	(1.20 to 3.38)		—	—	—
55-64	1.00			—	—	—
65-74	—	—	—	2.05	(1.18 to 3.57)	
≥ 75*	—	—	—	1.00		
Sex			.034			.415
Male	0.55	(0.32 to 0.95)		1.27	(0.71 to 2.26)	
Female	1.00			1.00		
Race/ethnicity			.008			.052
Non-Hispanic white only	0.52	(0.32 to 0.84)		0.57	(0.32 to 1.00)	
All other race/ethnicities	1.00			1.00		
Current marital status			.469			.660
Married	0.83	(0.49 to 1.39)		0.88	(0.48 to 1.59)	
Not married‡	1.00			1.00		
Current family income as percent of poverty levels§			.433			.816
Q1: < 185.24	2.37	(0.81 to 6.94)		1.19	(0.50 to 2.83)	
Q2: 185.24–328.31	2.10	(0.76 to 5.83)		0.84	(0.36 to 1.92)	
Q3: 328.32–589.40	1.69	(0.69 to 4.11)		0.97	(0.40 to 2.37)	
Q4: ≥ 589.41	1.00			1.00		
Employment change due to cancer			< .001			
Employed at or after diagnosis and took extended paid or unpaid leave or switched to part time	4.87	(2.86 to 8.28)		—	—	—
Employed, but did not take extended leave or switch to part time	1.00			—	—	—
Not employed at or after diagnosis/missing	0.80	(0.44 to 1.48)		—	—	—
Current health insurance			.106			.629
Age 18-64, any private	0.40	(0.15 to 1.04)		—	—	—
Age 18-64, public only	0.80	(0.33 to 1.95)		—	—	—
Age 18-64, uninsured	1.00			—	—	—
Age ≥ 65, Medicare and private*	—	—	—	.76	(0.42 to 1.37)	
Age ≥ 65, Medicare and other public*	—	—	—	0.70	(0.28 to 1.76)	
Age ≥ 65, Medicare only*	—	—	—	1.00		
Number of MEPS priority conditions (excluding cancer)¶			.749			.131
0-1	1.08	(0.67 to 1.74)		1.67	(0.86 to 3.27)	
2-8	1.00			1.00		
Time since last treatment, years			.014			.490
1	3.67	(1.38 to 9.72)		1.97	(0.66 to 5.90)	
1 to < 5	3.13	(1.13 to 8.65)		1.87	(0.61 to 5.76)	
≥ 5#	1.79	(0.66 to 4.83)		2.25	(0.80 to 6.31)	
Never treated/missing	1.00			1.00		

NOTE. Data from 2011 MEPS Experiences with Cancer Survey. Boldface type indicates statistical significance.

Abbreviations: MEPS, Medical Expenditure Panel Survey; Q, quartile (Q1 is lowest income quartile as a percentage of poverty line and Q4 is highest income quartile).

*Age top-coded ≥ 85 years by the MEPS.

†Odds ratios from a multivariable logistic regression.

‡Not married includes widowed, divorced, separated, or never married.

§Quartiles of family income as a percent of poverty level defined based on distribution in full sample.

||Public insurance included Medicare, Medicaid, State Children's Health Insurance Program, and/or other public hospital/physician coverage. Age less than 65, public only, comprised people younger than 65 years who had one or more types of public coverage and did not have private coverage. Age ≥ 65, Medicare and other public, comprised people age 65 years and older who had both Medicare and one or more other types of public coverage. TRICARE/CHAMPVA was treated as private coverage, as were employer-based, union-based, and other private insurance.

¶MEPS Priority conditions include arthritis, asthma, diabetes, emphysema, heart disease (angina, coronary heart disease, heart attack, other heart condition/disease), high cholesterol, hypertension, and stroke.

#Years since last treatment top-coded at ≥ 20 by the MEPS

Table A2. Factors Associated With Psychologic Financial Hardship Associated With Cancer, Its Treatment, or Lasting Effects of Treatment, by Age Group

	Age 18-64 Years			Ages ≥ 65 Years*		
	Adjusted Odds Ratio†	95% CI*	Wald F P	Adjusted Odds Ratio†	95% CI*	Wald F P
Current age, years			.120			< .001
18-54	1.47	(0.90 to 2.38)		—	—	—
55-64	1.00			—	—	—
65-74	—	—	—	3.17	(1.70 to 5.89)	
≥75*	—	—	—	1.00		
Sex			.057			.240
Male	0.60	(0.36 to 1.01)		1.39	(0.80 to 2.42)	
Female	1.00			1.00		
Race/ethnicity			.362			.251
Non-Hispanic white only	0.81	(0.52 to 1.27)		0.66	(0.32 to 1.35)	
All other race/ethnicities	1.00			1.00		
Current marital status			.825			.333
Married	1.06	(0.65 to 1.72)		0.75	(0.42 to 1.34)	
Not married‡	1.00			1.00		
Current family income as percent of poverty level§			.019			.597
Q1: < 185.24	1.62	(0.78 to 3.40)		1.60	(0.75 to 3.41)	
Q2: 185.24-328.31	2.23	(1.16 to 4.30)		1.21	(0.50 to 2.91)	
Q3: 328.32-589.40	2.71	(1.40 to 5.25)		1.13	(0.48 to 2.69)	
Q4: ≥ 589.41	1.00			1.00		
Employment change due to cancer			.074			
Employed at or after diagnosis and took extended paid or unpaid leave or switched to part time	1.82	(1.03 to 3.20)		—	—	—
Employed, but did not take extended leave	1.00			—	—	—
Not employed at or after diagnosis/missing	1.15	(0.64 to 2.06)		—	—	—
Current health insurance			.043			.279
Age 18-64, any private	0.41	(0.20 to 0.85)		—	—	—
Age 18-64, public only	0.43	(0.18 to 1.02)		—	—	—
Age 18-64, uninsured	1.00			—	—	—
Age ≥ 65, Medicare and private*	—	—	—	0.79	(0.44 to 1.44)	
Age ≥ 65, Medicare and other public*	—	—	—	0.51	(0.22 to 1.19)	
Age ≥ 65, Medicare only*	—	—	—	1.00		
Number of MEPS priority conditions (excluding cancer)¶			.404			.667
0-1	0.82	(0.51 to 1.32)		1.17	(0.57 to 2.40)	
2-8	1.00			1.00		
Time since last treatment, years			.024			.081
1	4.20	(1.67 to 10.56)		3.86	(1.33 to 11.24)	
1 to < 5	2.32	(0.98 to 5.49)		2.41	(0.84 to 6.91)	
≥ 5#	2.11	(0.94 to 4.72)		2.07	(0.80 to 5.35)	
Never treated/missing	1.00			1.00		

NOTE. Data from 2011 MEPS Experiences with Cancer Survey. Boldface type indicates statistical significance.

Abbreviations: MEPS, Medical Expenditure Panel Survey; Q, quartile (Q1 is lowest income quartile as a percentage of poverty line and Q4 is highest income quartile).

*Age top-coded ≥ 85 years by the MEPS.

†Odds ratios from a multivariable logistic regression.

‡Not married includes widowed, divorced, separated, or never married.

§Quartiles of family income as a percent of poverty level defined based on distribution in full sample.

||Public insurance included Medicare, Medicaid, State Children's Health Insurance Program, and/or other public hospital/physician coverage. Age less than 65, public only, comprised people younger than 65 years who had one or more types of public coverage and did not have private coverage. Age ≥ 65, Medicare and other public, comprised people age 65 and older who had both Medicare and one or more other types of public coverage. TRICARE/CHAMPVA was treated as private coverage, as were employer-based, union-based, and other private insurance.

¶MEPS priority conditions include arthritis, asthma, diabetes, emphysema, heart disease (angina, coronary heart disease, heart attack, other heart condition/disease), high cholesterol, hypertension, and stroke.

#Years since last treatment top-coded at ≥ 20 by the MEPS.

Financial Hardship Associated With Cancer in the United States

Table A3. Sensitivity Analyses: Factors Associated With Any Material Financial Hardship Associated With Cancer, Its Treatment, or Lasting Effects of Treatment, Age 18 to 64 Years, by Gender

	Male (n = 166)			Female (n = 399)		
	Adjusted Probability*	95% CI	Wald F P	Adjusted Probability*	95% CI	Wald F P
Current age, years			.834			.011
18-54	20.5	(12.5 to 31.8)		39.7	(31.8 to 48.0)	—
55-64	19.3	(12.7 to 28.4)		24.9	(18.8 to 32.3)	—
Race/ethnicity			.293			.018
Non-Hispanic white only	18.6	(12.2 to 27.3)		30.0	(24.5 to 36.2)	
All other race/ethnicities	26.1	(14.7 to 42.1)		42.4	(33.1 to 52.2)	
Current marital status			.797			.456
Married	19.1	(12.8 to 27.7)		31.1	(25.0 to 37.8)	
Not married‡	20.8	(11.5 to 34.6)		34.8	(27.1 to 43.5)	
Current family income as percent of poverty level§			.711			.845
Q1: < 185.24	39.0	(21.2 to 60.2)		34.1	(25.6 to 43.7)	
Q2: 185.24-328.31	21.1	(11.5 to 35.6)		36.5	(26.0 to 48.5)	
Q3: 328.32-589.40	16.7	(8.3 to 30.7)		32.1	(23.6 to 41.9)	
Q4: ≥ 589.41	7.4	(2.4 to 20.8)		27.3	(14.6 to 45.1)	
Employment change due to cancer			.006			< .001
Employed at or after diagnosis and took extended paid or unpaid leave or switched to part time	34.9	(22.7 to 49.5)		56.1	(46.2 to 65.5)	
Employed, but did not take extended leave	11.3	(5.8 to 21.0)		25.4	(18.7 to 33.6)	
Not employed at or after diagnosis/missing	15.2	(7.1 to 29.5)		17.0	(11.3 to 24.8)	
Current health insurance			.282			.344
Age 18-64, any private	15.8	(9.4 to 25.4)		29.7	(24.0 to 36.1)	
Age 18-64, public only	29.7	(15.0 to 50.1)		39.0	(26.0 to 53.8)	
Age 18-64, uninsured	30.3	(13.0 to 55.9)		42.7	(26.2 to 61.2)	
Number of MEPS priority conditions (excluding cancer)¶			.253			.887
0-1	23.3	(15.5 to 33.4)		32.3	(25.2 to 40.4)	
2-8	16.9	(10.3 to 26.5)		33.1	(26.5 to 40.4)	
Time since last treatment, years			.083			.127
1	24.6	(13.7 to 40.3)		40.3	(30.4 to 51.1)	
1 to < 5	24.7	(16.2 to 35.9)		37.1	(28.3 to 46.8)	
≥ 5#/never treated/missing	12.1	(6.3 to 22.0)		28.4	(21.8 to 36.2)	

NOTE. Data from 2011 MEPS Experiences with Cancer Survey. Boldface type indicates statistical significance.

Abbreviations: MEPS, Medical Expenditure Panel Survey; Q, quartile (Q1 is lowest income quartile as a percentage of poverty line and Q4 is highest income quartile).

*Predicted marginals from a multivariable logistic regression.

‡Not married includes widowed, divorced, separated, or never married.

§Quartiles of family income as a percent of poverty level defined based on distribution in full sample.

||Public insurance included Medicare, Medicaid, State Children's Health Insurance Program, and/or other public hospital/physician coverage. Age less than 65, public only, comprised people younger than age 65 who had one or more types of public coverage and did not have private coverage. Age ≥ 65, Medicare and other public, comprised people age 65 and older who had both Medicare and one or more other types of public coverage. TRICARE/CHAMPVA was treated as private coverage, as were employer-based, union-based, and other private insurance.

¶MEPS priority conditions include: arthritis, asthma, diabetes, emphysema, heart disease (angina, coronary heart disease, heart attack, other heart condition/disease), high cholesterol, hypertension, and stroke.

#Years since last treatment top-coded at ≥ 20 by the MEPS.

Table A4. Sensitivity Analyses: Factors Associated With Any Material Financial Hardship Associated With Cancer, Its Treatment, or Lasting Effects of Treatment, Age ≥ 65 Years, by Gender

	Male (n = 298)			Female (n = 334)		
	Adjusted Probability*	95% CI	Wald F P	Adjusted Probability*	95% CI	Wald F P
Current age, years			.016			.120
65-74	20.1	(13.5 to 28.7)	—	16.4	(10.8 to 24.2)	
≥ 75 †	8.9	(5.0 to 15.4)	—	10.1	(0.59 to 16.7)	
Race/ethnicity			.085			.387
Non-Hispanic white only	13.3	(8.9 to 19.3)		12.7	(8.5 to 18.7)	
All other race/ethnicities	23.2	(14.0 to 36.0)		17.5	(9.5 to 30.1)	
Current marital status			.983			.617
Married	14.2	(9.5 to 20.7)		11.9	(6.4 to 21.1)	
Not married‡	14.1	(7.7 to 24.4)		14.4	(9.4 to 21.3)	
Current family income as percent of poverty line§			.592			.644
Q1: < 185.24	17.6	(10.0 to 29.1)		14.6	(7.3 to 27.1)	
Q2: 185.24-328.31	11.7	(6.1 to 21.1)		11.6	(5.8 to 21.9)	
Q3: 328.32-589.40	10.0	(3.8 to 23.6)		17.5	(9.5 to 30.1)	
Q4: ≥ 589.41	17.8	(9.7 to 30.2)		8.6	(2.7 to 24.7)	
Current health insurance			.218			.641
Age ≥ 65 , Medicare and private†	13.9	(9.1 to 20.6)		12.0	(7.5 to 18.7)	
Age ≥ 65 , Medicare and other public†	5.0	(1.2 to 18.3)		18.1	(7.7 to 36.9)	
Age ≥ 65 , Medicare only†	17.2	(10.1 to 27.8)		14.6	(8.3 to 24.2)	
Number of MEPS priority conditions (excluding cancer)¶			.156			.175
0-1	22.0	(11.4 to 38.2)		19.8	(10.6 to 34.0)	
2-8	12.7	(8.6 to 18.5)		11.6	(7.5 to 17.6)	
Time since last treatment, years			.418			.443
1	10.3	(4.8 to 20.9)		18.9	(10.3 to 32.3)	
1 to < 5	12.9	(6.6 to 23.7)		13.5	(6.0 to 27.6)	
≥ 5 #/never treated/missing	17.1	(11.1 to 25.3)		11.5	(6.8 to 18.8)	

NOTE. Data from 2011 MEPS Experiences with Cancer Survey. Boldface type indicates statistical significance.

Abbreviations: MEPS, Medical Expenditure Panel Survey; Q, quartile (Q1 is lowest income quartile as a percentage of poverty line and Q4 is highest income quartile).

*Predicted marginals from a multivariable logistic regression.

†Age top-coded ≥ 85 years by the MEPS.

‡Not married includes widowed, divorced, separated, or never married.

§Quartiles of family income as a percent of poverty level defined based on distribution in full sample.

||Public insurance included Medicare, Medicaid, State Children's Health Insurance Program, and/or other public hospital/physician coverage. Age <65, public only, comprised people younger than 65 who had one or more types of public coverage and did not have private coverage. Age ≥ 65 , Medicare and other public, comprised people age 65 and older who had both Medicare and one or more other types of public coverage. TRICARE/CHAMPVA was treated as private coverage, as were employer-based, union-based, and other private insurance.

¶MEPS priority conditions include: arthritis, asthma, diabetes, emphysema, heart disease (angina, coronary heart disease, heart attack, other heart condition/disease), high cholesterol, hypertension, and stroke.

#Years since last treatment top-coded at ≥ 20 by the MEPS.

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Table A5. Sensitivity Analyses: Factors Associated With Any Psychologic Financial Hardship Associated With Cancer, Its Treatment, or Lasting Effects of Treatment, Age 18 to 64 Years, by Gender

	Male (n = 166)			Female (n = 399)		
	Adjusted Probability*	95% CI*	Wald F P	Adjusted Probability*	95% CI*	Wald F P
Current age, years			.812			.091
18-54	24.8	(14.5 to 39.1)		40.5	(33.8 to 47.6)	—
55-64†	23.0	(14.3 to 34.7)		31.3	(24.3 to 39.4)	—
Race/ethnicity			.876			.419
Non-Hispanic white only	24.0	(16.0 to 34.3)		35.0	(24.5 to 36.2)	
All other race/ethnicities	22.6	(10.8 to 41.3)		39.6	(31.1 to 48.7)	
Current marital status			.661			.721
Married	22.6	(14.7 to 33.0)		36.9	(30.5 to 43.8)	
Not married‡	26.0	(14.4 to 42.3)		34.9	(27.0 to 43.7)	
Current family income as percent of poverty line§			.327			.065
Q1: < 185.24	25.2	(13.6 to 42.0)		32.8	(24.1 to 42.7)	
Q2: 185.24-328.31	34.5	(18.2 to 55.6)		39.1	(28.1 to 51.3)	
Q3: 328.32-589.40	26.6	(14.9 to 42.9)		45.0	(35.0 to 55.5)	
Q4: ≥ 589.41	15.0	(6.1 to 32.4)		24.5	(14.5 to 38.2)	
Employment change due to cancer			.273			.001
Employed at or after diagnosis and took extended paid or unpaid leave or switched to part time	19.2	(9.7 to 34.6)		49.3	(39.7 to 58.9)	
Employed, but did not take extended leave	19.9	(10.9 to 33.4)		31.4	(23.1 to 41.1)	
Not employed at or after diagnosis/missing	36.9	(18.8 to 59.7)		27.6	(20.2 to 36.4)	
Current health insurance¶			.437			.131
Age 18-64, any private	23.3	(15.0 to 34.3)		33.9	(27.9 to 40.3)	
Age 18-64, Public only	20.5	(7.9 to 43.7)		34.6	(20.7 to 51.8)	
Age 18-64, Uninsured	36.6	(16.8 to 62.4)		53.2	(35.6 to 70.1)	
Number of MEPS priority conditions (excluding cancer)			.416			.165
0-1	26.8	(18.0 to 37.8)		31.6	(24.5 to 39.6)	
2-8	21.3	(12.5 to 34.0)		40.1	(32.3 to 48.4)	
Time since last treatment, years			.111			.292
1	38.8	(20.5 to 60.9)		44.0	(31.3 to 57.5)	
1 to < 5	16.5	(9.1 to 28.1)		38.6	(29.0 to 49.1)	
≥ 5#/never treated/missing	18.0	(9.4 to 31.8)		32.2	(25.4 to 39.9)	

NOTE. Data from 2011 MEPS Experiences with Cancer Survey. Boldface type indicates statistical significance.

Abbreviations: MEPS, Medical Expenditure Panel Survey; Q, quartile (Q1 is lowest income quartile as a percentage of poverty line and Q4 is highest income quartile).

*Predicted marginals from a multivariable logistic regression.

†Not married includes widowed, divorced, separated, or never married.

§Quartiles of family income as a percent of poverty level defined based on distribution in full sample.

¶Public insurance included Medicare, Medicaid, State Children's Health Insurance Program, and/or other public hospital/physician coverage. Age less than 65, public only, comprised people younger than age 65 who had one or more types of public coverage and did not have private coverage. Age ≥ 65, Medicare and other public, comprised people age 65 and older who had both Medicare and one or more other types of public coverage. TRICARE/CHAMPVA was treated as private coverage, as were employer-based, union-based, and other private insurance.

||MEPS priority conditions include: arthritis, asthma, diabetes, emphysema, heart disease (angina, coronary heart disease, heart attack, other heart condition/disease), high cholesterol, hypertension, and stroke.

#Years since last treatment top-coded at ≥ 20 by the MEPS.

Table A6. Sensitivity Analyses: Factors Associated With Any Psychologic Financial Hardship, Associated With Cancer, Its Treatment, or Lasting Effects of Treatment, Age ≥ 65 Years, by Gender

	Male (n = 298)			Female (n = 334)		
	Adjusted Probability*	95% CI	Wald F P	Adjusted Probability*	95% CI	Wald F P
Current age, years			.001			.013
65-74	25.2	(17.0 to 35.8)	—	18.9	(13.2 to 26.3)	
$\geq 75^\dagger$	8.0	(4.4 to 14.0)	—	8.2	(4.7 to 14.0)	
Race/ethnicity			.690			.108
Non-Hispanic white only	15.6	(10.4 to 22.8)		12.4	(8.8 to 17.2)	
All other race/ethnicities	18.4	(8.8 to 34.7)		21.2	(12.3 to 34.2)	
Current marital status			.973			.262
Married	15.8	(10.6 to 23.1)		10.7	(6.3 to 17.6)	
Not married ‡	16.0	(9.1 to 26.5)		15.7	(10.7 to 22.4)	
Current family income as percent of poverty line §			.073			.097
Q1: < 185.24	26.6	(16.6 to 39.8)		11.5	(6.3 to 19.9)	
Q2: 185.24-328.31	19.5	(10.4 to 33.4)		9.7	(4.5 to 19.4)	
Q3: 328.32-589.40	4.1	(7.0 to 19.5)		24.3	(14.7 to 37.5)	
Q4: ≥ 589.41	16.3	(9.0 to 27.7)		9.1	(3.1 to 23.6)	
Current health insurance $^ $			.270			.344
Age ≥ 65 , Medicare and private †	17.7	(11.2 to 26.7)		10.9	(7.1 to 16.5)	
Age ≥ 65 , Medicare and other public †	5.3	(1.2 to 20.8)		15.2	(6.5 to 31.5)	
Age ≥ 65 , Medicare only †	14.8	(9.1 to 23.2)		17.9	(11.1 to 27.7)	
Number of MEPS priority conditions (excluding cancer) $^ $			.031			.385
0-1	28.0	(15.7 to 44.8)		9.5	(3.8 to 21.7)	
2-8	13.8	(9.2 to 20.3)		14.7	(10.4 to 20.2)	
Time since last treatment, years			.340			.044
1	21.6	(12.1 to 35.5)		21.5	(13.0 to 33.4)	
1 to < 5	10.8	(5.0 to 21.8)		19.6	(10.8 to 32.8)	
$\geq 5^\#$ /Never treated/missing	15.5	(9.8 to 23.8)		9.2	(5.4 to 15.2)	

NOTE. Data from 2011 MEPS Experiences with Cancer Survey. Boldface type indicates statistical significance.

Abbreviations: MEPS, Medical Expenditure Panel Survey; Q, quartile (Q1 is lowest income quartile as a percentage of poverty line and Q4 is highest income quartile).

*Predicted marginals from a multivariable logistic regression.

† Age top-coded ≥ 85 years by the MEPS.

‡ Not married includes widowed, divorced, separated, or never married.

§ Quartiles of family income as a percent of poverty level defined based on distribution in full sample.

$^||$ Public insurance included Medicare, Medicaid, State Children's Health Insurance Program, and/or other public hospital/physician coverage. Age <65, public only, comprised people younger than 65 who had one or more types of public coverage and did not have private coverage. Age ≥ 65 , Medicare and other public, comprised people age 65 and older who had both Medicare and one or more other types of public coverage. TRICARE/CHAMPVA was treated as private coverage, as were employer-based, union-based, and other private insurance.

$^||$ MEPS priority conditions include: arthritis, asthma, diabetes, emphysema, heart disease (angina, coronary heart disease, heart attack, other heart condition/disease), high cholesterol, hypertension, and stroke.

$^\#$ Years since last treatment top-coded at ≥ 20 by the MEPS.