Published in final edited form as:

Oral Oncol. 2020 February ; 101: 104521. doi:10.1016/j.oraloncology.2019.104521.

Patient-Reported Financial Toxicity and Adverse Medical Consequences in Head and Neck Cancer

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Abstract

Objectives—Financial toxicity (FT) is a significant barrier to high-quality cancer care, and patients with head and neck cancer (HNCA) are particularly vulnerable given their need for intensive support, daily radiotherapy (RT), and management of long-term physical, functional, and psychosocial morbidities following treatment. We aim to identify predictors of FT and adverse consequences in HNCA following RT.

Materials and Methods—We performed a prospective survey study of patients with HNCA seen in follow-up at an academic comprehensive cancer center (CCC) or Veterans Affairs hospital between 05/2016 – 06/2018. Surveys included validated patient-reported functional outcomes and the COST measure, a validated instrument for measuring FT.

Results—The response rate was 86% (n=63). Younger age and lower median household income by county were associated with lower COST scores (i.e., worse FT) on multivariable analysis (p=.045 and p=.016, respectively). Patients with worse FT were more likely to skip clinic visits (RR (95% CI) 2.13 (1.23 – 3.67), p=.007), be noncompliant with recommended supplements or

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medications (1.24 (1.03 – 1.48), $p = .02$), and require supportive infusions (1.10 (1.02 – 1.20), $p = .02$). At the CCC, patients with worse FT were more likely to require feeding tubes (1.62 (1.14 – 2.31), $p = .007$). Overall, 36% reported that costs were higher than expected, 48% were worried about paying for treatment, and 33% reported at least a moderate financial burden from treatment.

Conclusion—HNCA patients experience substantial FT from their diagnosis and/or therapy, with potential implications for medical compliance, QOL, and survivorship care.

Keywords

Head and neck neoplasms; quality of life; health expenditures; health care costs

Introduction

Financial toxicity (FT) is an increasingly recognized consequence of cancer diagnosis and treatment. The term is used to describe both the out-of-pocket expenses and opportunity costs experienced by patients during the course of their illness and recovery, and is expected to rise with increasing health insurance premiums, deductibles, copayments, and coinsurance.[1] Novel therapeutics and treatment techniques are likely to increase FT as well, given their rising costs and potential to prolong survival (and, consequently, the long term surveillance and/or management of treatment-related toxicities).[2] In fact, the National Cancer Institute (NCI) estimates that the cost of cancer care will increase 32% between 2010 and 2020 solely as a result of increasing survival.[3] If cancer incidence trends and medical costs continue to increase as predicted, the projected inflation will be even greater.[4]

FT is also a barrier to high-quality cancer care, impacting compliance,[5, 6] quality of life (QOL),[7] and mortality in patients with non-metastatic disease.[8] FT does not impact all groups equally; prior research has shown that patients from racial and ethnic minority backgrounds and those who receive more aggressive therapy are at increased risk.[9, 10] Patients with head and neck cancer (HNCA) seem particularly vulnerable given the rising costs of their multi-modality therapy, [11, 12] need for supportive measures, and long-term physical, functional, and psychosocial morbidities following treatment.[13–19] In addition, patients with HNCA are disproportionately poorer, less educated, and more often identify as underrepresented minorities compared to other patients with cancer.[11].

Previous FT studies in HNCA have focused on patient-reported cost-coping strategies,[20] caregiver distress,[21] or financial analyses of claims data,[12] treatment costs,[22] and direct medical expenditures.[11, 23, 24] To date, there has been no prospective evaluation of patient-reported FT using a validated measure such as the Comprehensive Score for financial Toxicity (COST),[25] nor has FT been linked to objective adverse health outcomes.

We sought to assess the magnitude of FT, identify demographic predictors, and assess associated adverse medical consequences amongst a population of HNCA patients treated with radiotherapy (RT). We hypothesize that there is a cohort of patients who are at increased risk for FT, for example underrepresented minorities, elderly patients, or patients from lower income counties, and that these patients experience incremental adverse events related to their financial distress. Herein, we report the results of a prospective survey-based

study conducted at a tertiary academic NCI-designated comprehensive cancer center (CCC) and its affiliated Veterans Affairs (VA) hospital.

Methods & Materials

Participants and Survey Design

We conducted a prospective survey study of consecutive HNCA patients seen in follow-up within 12 months of completing definitive, postoperative, or palliative RT at either a tertiary academic NCI-designated CCC (University of Michigan, Ann Arbor, MI) or its affiliated VA hospital in Ann Arbor, MI (05/2016 – 06/2018). This study was approved by both the University of Michigan and Ann Arbor VA Institutional Review Boards. Surveys were derived from previous FT studies evaluating employment, insurance, financial stressors, privations (i.e., cost-coping strategies), and familial financial burdens.[5, 6, 26] Surveys also included the 11-item COST measure (Supplemental Figure 1), a validated patient-reported outcome instrument that quantitatively assesses financial distress in cancer patients specifically.[25] COST scores (ranging from 0–44, with lower scores indicating worse FT), have been previously shown to correlate with health-related QOL as measured by the Functional Assessment of Cancer Therapy-General (FACT-G) and European Organization for Research and Treatment of Cancer Core Questionnaire (EORTC QLQ-C30).[27, 28]

Variables

Patient characteristics, tumor- and treatment-related details were abstracted from medical records. Adverse medical events including weight loss >10% of baseline, need for supportive intravenous (IV) infusions (e.g., hydration, antiemetics, or analgesics), feeding tube placement, missed doses of systemic therapy, RT treatment breaks, emergency department (ED) visits, and hospital admissions during or within 6 weeks of completing RT were also recorded. A publicly available mapping website was used to calculate “distance to RT facility” from the patients’ home city to the location of treatment.[29] Median household income (MHI) was obtained on county-level basis according to 2016 U.S. Census data.[30]

The primary outcome was to explore associations between FT, as assessed by the validated COST score, with possible demographic predictors and adverse medical consequences.

Statistical Analyses

Surveys or COST measures that were >50% incomplete were excluded from analysis. COST measures were scored according to published methodology to deal with item nonresponse. [31] Baseline demographics are presented as n(%) or mean(standard deviation). Bivariate analysis evaluating predictors of FT was performed using linear regression for categorical and Pearson Correlation for continuous variables. Multivariable linear regression analysis for COST score was performed using backward selection beginning from the list of predictors whose significance on bivariate analysis was $p \leq .20$, using a selection criteria of $p=0.10$ for elimination. The final parsimonious model from this selection procedure was reported. A sensitivity analysis was also performed using multivariable logistic regression analysis and a COST score cut-off of 26 (which has been previously used to represent a “grade 1 or higher” impact on health-related QOL using receiver operating curve analyses).

[28] Poisson regression analysis was also performed to explore associations between COST scores and risk of burdens, privations, and/or adverse health-related consequences. We stipulated significance at $\alpha = .05$.

Given that the VA provides transportation benefits, medications, and nutritional supplements free-of-charge to eligible veterans,[32, 33] and offers an in-hospital post-acute skilled nursing facility for high risk RT patients, an *a priori* sensitivity analysis was performed to evaluate the burdens and medical consequences of FT amongst the VA vs. CCC cohorts separately. Only survey items with $n > 10$ responses were included in this analysis.

Results

Demographics

63/73 screened participants completed the survey (response rate 86%). After excluding surveys that were $>50\%$ incomplete, there were 63 qualitative surveys and 58 COST measures included in analysis. Median time from the end of RT to survey completion was four months (range: 0.5–12).

Table 1 summarizes baseline demographics and clinical characteristics. Most respondents were white (92%), male (89%), and treated with definitive RT (70%) for locally-advanced HNCA (70%). 57% and 43% of respondents underwent RT at the CCC vs. VA hospital, respectively.

Predictors of Financial Toxicity

The median (range) COST score was 26.5 (0–44). On bivariate analysis, younger age and lower MHI were predictive of worse FT (Table 1). On multivariable analysis, age < 65 ($p = .045$) and MHI $< \$50,000/\text{year}$ ($p = .016$) were associated with worse FT (Table 2).

In the dichotomous sensitivity analysis, disability or unemployment (vs. retirement) predicted COST scores < 26 (i.e., a “grade 1 or higher” impact on health-related QOL)[28] (OR (95% CI) 13.1 (1.85–92.9), $p = .03$). There was a strong association between age and employment category (chi-square, $p = .02$) and MHI and employment status (chi-square, $p = .0003$).

Employment and Insurance

When diagnosed with HNCA, 29/63 (46%) respondents were gainfully employed (Table 1). The majority (69%) of these patients stopped working during RT (Table 3). Patients who continued working used a combination of sick leave, unpaid time off, or arranged to work fewer hours. These patients were more likely to come from counties with greater MHI ($\$50,000/\text{year}$, 89% vs. 40%, OR (95% CI) 12.0 (1.25–115.4), $p = .01$) and have human papillomavirus (HPV)-associated HNCA (67% vs. 33%, 4.67 (0.86–25.13), $p = .06$) compared to those who stopped working. COST score was not associated with missing work, stopping work, or continuing to work during RT.

At the time of survey, 43% of respondents had VA healthcare coverage (with or without supplemental insurance), 44% had private insurance (with or without Medicare Part A/B),

and 13% had Medicaid (Table 1). Very few patients experienced prolonged gaps in their insurance coverage (12%) or delays in treatment due to their insurance (5%) (Table 3).

Burdens and Adverse Medical Consequences

Patients with lower COST scores reported greater privations, such as decreasing spending on food and clothing (54%), using savings (43%), and borrowing money (13%) in order to pay for treatment (Table 3). In addition, they were more likely to make medical sacrifices such as not taking all prescribed/recommended nutritional supplements, supportive medications, and pain medications (RR (95% CI) 1.24 (1.03–1.48), $p = .02$); skipping clinic visits (2.13 (1.23–3.67), $p = .007$); and refusing recommended tests (1.58 (0.98–2.56), $p = .06$). Finally, lower COST scores were associated with an increased requirement for supportive infusions (1.10 (1.02–1.20), $p = .02$) and, amongst patients treated at the CCC, feeding tube placement (1.62 (1.14–2.31), $p = .007$).

Overall, 36% of patients felt that treatment costs were higher than expected and 48% were at least a little worried about paying for treatment. One-third of patients reported a moderate, significant, or catastrophic financial burden on their families. As expected, patients with lower COST scores were more likely to report worry and financial burden ($p < .0001$).

Discussion

Our data demonstrates that a subset of patients with HNCA experience substantial FT, and that those with greater FT are more likely to exhibit medical noncompliance and experience adverse medical consequences. In addition, patients with greater FT report more worry, familial burdens, and utilization of cost-coping strategies. In this study, FT did not appear to impact patients' ability to work during RT, nor was it associated with RT breaks or missed doses of systemic therapy.

We have identified two primary risk factors for FT in this study cohort: age < 65 and residence in a county with MHI $< \$50,000/\text{year}$. In a sensitivity analysis, unemployment or disability were also associated with increased FT. This is not surprising as age, income, and employment status were highly collinear in this population. Furthermore, these risk factors are consistent with FT studies for numerous primary malignancies including colorectal, lung, and breast cancer.[5, 6, 10, 34, 35]

HNCA has discrete populations that stratify loosely based upon HPV-status by age, socioeconomic status, health behaviors, and prognosis.[36–39] Based on results from this study, we hypothesize that both populations are at risk for FT, albeit for different reasons. Younger HPV-positive patients may experience FT due to its intersection with their peak earning years whereas HPV-negative patients may experience FT as a result of limited resources and socioeconomic factors. Indeed, Massa et al. identified features of this latter population (e.g., unemployment, lower health status, public insurance, lower education) to be predictive for greater relative out-of-pocket expenses.[11]

Identifying those at greatest risk for FT is only the first step in mitigating the problem. Clinicians must engage patients in shared decision making that considers the direct and

indirect costs of recommended therapy,[40] as even the most efficacious treatments could become ineffective or detrimental if patients skip clinic visits, refuse tests, or stop taking prescribed medications (as ~1/3 reported doing in this study). In fact, data have shown that cost-based discussions between physicians and patients can reduce out-of-pocket expenses and improve medical compliance,[41–43] but unfortunately unmet needs for physician engagement persist.[44] Barriers to effective intervention may relate to limited appreciation of the extent to which patients face FT, or a lack of knowledge regarding resources or approaches to mitigate FT. Practical changes that HNCA oncologists might consider include preferentially prescribing generic or non-compounded medications, recommending cheaper nutritional supplements, and coordinating/timing visits to limit co-pays and deductibles. Those who express concerns or need more support could be referred to social work for assistance with discounted local housing, transportation, or enrollment onto Medicaid, the Marketplace, and copayment assistance programs.

Such resources are often readily-available and covered by the VA healthcare system, which might explain why RT facility was not predictive for COST scores in our study. Furthermore, it was only at the CCC that greater FT was associated with an increased risk of feeding tube placement, suggesting that the resources available within the VA may offset some FT. Indeed, in a similar study of HNCA patients with treated within Norway, which has universal health insurance, coverage for lost wages, and free travel, parking, and accommodations during RT, there were substantially less financial difficulties reported.[45] This model reinforces the types of interventions that may be employed by hospitals, insurers, research entities, or foundations to mitigate the FT of cancer care.

Certain limitations of this study must be considered. Given its limited sample size, the study was underpowered to detect all predictive factors or adverse outcomes related to FT. For instance, it has been suggested that clinical trial enrollment increases the financial burden on cancer patients.[46] A larger and more ambitious multicenter study is necessary and planned. Second, the COST measure was developed from an insured population of patients (private, employer-purchased, and/or Medicare),[25] yet we have used it to assess FT in a more diverse cohort with private, VA healthcare, and Medicaid (13%) coverage. If anything, this might underestimate FT, and therefore future validation studies are necessary to ensure that the unique financial hardships experienced by patients with limited insurance are adequately captured by the COST measure. Moreover, all patients in this study had insurance, which is largely a prerequisite to treatment at these institutions,[47] and may have fallen within the upper end of the income distribution within their given zip-code; it is therefore possible that these data do not sufficiently capture the most vulnerable patients treated by the safety net. Finally, it is possible that some patients – particularly those with worse FT – may have received supportive infusions, sought emergency care, or been admitted at facilities closer to home upon completion of RT. These adverse consequences would not have been captured by review of CCC and VA medical records, and may therefore be underestimated in this study.

As the healthcare system, reimbursement models, and medical interventions continue to evolve, it will become increasingly important for clinicians to recognize and address FT to ensure that patients receive the highest quality cancer-care without undue financial burden.

Patients with HNCA report substantial FT, which is associated with their QOL, privations, compliance, and medical outcomes. Additional investigation is necessary to understand which factors are most burdensome to HNCA patients, and how these could best be mitigated.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgement

This work was supported by the National Institutes of Health [R01 CA184153].

This work was approved by the University of Michigan IRB (IRBMED 2002-0691) and Ann Arbor VA IRB (VA IRB 2017-1010).

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Highlights

- Patients with head and neck cancer experience substantial financial toxicity
- Younger age is predictive of worse financial toxicity
- Lower median household income by county is predictive of worse financial toxicity
- Financial toxicity is associated with increased feeding tube rates and infusions
- 1/3 of patients endorse moderate, significant, or catastrophic financial burdens

Table 1.**Bivariate Analysis of Predictors of Financial Toxicity**

Variable	Distribution ^a	COST Score Mean (SD)	P ^b
Age (years)	64.1 (43.1 – 85.4)		0.30 (0.02)
Sex			
Male	56 (89%)	26.1 (11.2)	0.29
Female	7 (11%)	20.8 (15.6)	
Race/Ethnicity			
White	58 (92%)	25.5 (12.2)	0.83
Non-White/Refused	5 (8%)	26.6 (4.2)	
Marital Status			
Married/Domestic Partnership	36 (57%)	26.3 (13.1)	0.57
Non-Married	27 (43%)	24.6 (9.8)	
Baseline Employment			
Employed	29 (46%)	23.7 (11.8)	0.08
Retired	22 (35%)	30.2 (10.3)	
Disability/Unemployed	12 (19%)	21.9 (12.0)	
Primary Insurance Type			
VA (+/-supplemental)	27 (43%)	24.3 (9.5)	0.72
Private (+/-Medicare Part A/B)	28 (44%)	26.8 (11.5)	
Medicaid	8 (13%)	24.4 (11.5)	
Radiation Facility			
Comprehensive Cancer Center	36 (57%)	26.3 (12.9)	0.54
Veterans Affairs Hospital	27 (43%)	24.3 (9.5)	
Distance to Radiation Facility (miles)			
Median	58.4 (0 – 510.0)		0.11
<50	26 (41%)	29.1 (9.8)	
50 –99.9	21 (33%)	24.7 (13.0)	
100	16 (25%)	21.3 (11.5)	
Household Income (\$k/year) ^c			
Median	50.8 (37.6 – 79.4)		0.01
<50	28 (44%)	21.3 (12.7)	
50	35 (56%)	29.0 (9.7)	
Primary Site			
Larynx (including Hypopharynx)	19 (30%)	24.7 (13.0)	0.67
Oropharynx	22 (35%)	24.6 (12.7)	
Nasopharynx	4 (6%)	26.0 (9.4)	
Oral cavity	6 (10%)	33.0 (11.5)	
Other (including Unknown Primary)	12 (19%)	25.0 (8.9)	
Human Papillomavirus Status ^d			
Positive	21 (33%)	24.6 (12.8)	0.65

Variable	Distribution ^a	COST Score Mean (SD)	p ^b
Negative or Unknown	8 (11%)	26.1 (11.2)	
AJCC 7 th Edition Stage			
I	5 (8%)	25.7 (22.4)	
II	4 (6%)	33.7 (5.5)	0.37
III	10 (16%)	20.8 (9.6)	
IV (Non-metastatic)	44 (70%)	26.0 (11.5)	
# Tobacco Pack Years (years)	20 (0 – 110)		0.06 (0.66)
Radiation Intent			
Definitive	44 (70%)	25.1 (11.9)	
Post-operative	18 (29%)	26.2 (11.7)	0.81
Palliative	1 (2%)	32	
Concurrent Systemic Therapy ^e			
Yes	40 (63%)	24.6 (11.4)	0.36
No	23 (37%)	27.6 (12.5)	
Clinical Trial Enrollment			
Yes	9 (14%)	21.0 (12.9)	0.20
No	54 (86%)	26.4 (11.4)	
Radiation			
Total Dose (Gray)	70 (50 – 70)		–0.09 (0.51)
# Fractions	35 (20 – 35)		–0.13 (0.33)
Time from End of Radiation to Survey (months)	4 (0.5 – 12)		0.21 (0.12)

Abbreviations: AJCC=American Joint Committee on Cancer; SD=standard deviation

^aData presented as n (%) or Median (Range).

^bp-values derived from linear regression or rho (p-value) from Pearson Correlation (continuous variables).

^cMedian household income by County (2016 U.S. Census data)

^dReported for patients with oropharynx, nasopharynx, or unknown primaries only (n =29)

^eIncluding chemotherapy, cetuximab, or immunotherapy

Table 2.**Multivariable Analysis of Predictors of Financial Toxicity**

Parameter	β Estimate	Standard Error of β	Wald 95% CI		p^b
Intercept	31.62	2.29	27.14	36.11	<.0001
Age (years)					
<65	-5.65	2.82	-11.16	-0.13	0.045
65	reference	0	0	0	.
Household Income (\$k/year) ^a					
<50	-6.81	2.82	-12.35	-1.28	0.016
50	reference	0	0	0	.
Scale	10.58	0.98	8.82	12.69	

Abbreviations: CI=confidence interval

^aMedian household income by County (2016 U.S. Census data)^bp-values derived from linear regression

Table 3.
Burdens, Privations, and Adverse Health-Related Consequences Associated With Financial Toxicity

Outcome	Item response n	n (%)	COST Score Mean (SD)	Entire Cohort N=58		CCC Cohort n=36	
				RR (95% CI) ^a	P	RR (95% CI) ^a	P
Entire Cohort	63	63	25.6 (11.7)				
<u>Employment During Radiation</u>							
Missed Work (months)	28	21 (75%)	22.1 (12.4)	1.06 (0.98 – 1.14)	0.18	1.07 (0.96 – 1.18)	0.21
3		3					
1 – 3		4					
<1		20 (69%)	25.6 (12.2)	1.06 (0.96 – 1.17)	0.28	1.04 (0.90 – 1.19)	0.61
Stopped Working	29	5					
Quit/Retired		4					
Lost Job		13					
Other/Not Reported		6					
Back to Work at Time of Survey		29	27.1 (11.7)	<i>b</i> ---	<i>b</i> ---	<i>b</i> ---	<i>b</i> ---
Continued Working		6					
Used Sick Leave		2					
Used Unpaid Time Off		5					
Arranged to Work Fewer Hours		4					
“Had Trouble Doing Job Well”							
<u>Insurance</u>							
Uninsured for Period >3 months	60	7 (12%)	20.1 (13.0)	1.21 (0.92 – 1.58)	0.17	<i>b</i> ---	<i>b</i> ---
Delays in Treatment due to Insurance	58	3 (5%)	19.7 (19.1)	1.02 (0.96 – 1.09)	0.51	<i>b</i> ---	<i>b</i> ---
“Kept Job Mainly to Keep Insurance”	41	5 (12%)	27.2 (10.1)	1.00 (0.99 – 1.02)	0.68	<i>b</i> ---	<i>b</i> ---
<u>Privations</u>							
Decreased Spending on Food/Clothing	61	33 (54%)	19.6 (10.9)	1.23 (1.13 – 1.34)	<0.0001	1.27 (1.14 – 1.42)	<0.0001
Used Savings		26 (43%)	20.5 (11.7)	1.19 (1.07 – 1.34)	0.002	1.16 (1.03 – 1.32)	0.019
Borrowed Money		8 (13%)	18.8 (8.6)	1.27 (1.03 – 1.56)	0.02	---	---
Any of the Above		40 (63%)	21.7 (11.3)	1.15 (1.07 – 1.23)	0.0001	1.15 (1.06 – 1.26)	0.001
<u>Patient-Reported Noncompliance</u>	61						

Outcome	Item response n	n (%)	COST Score Mean (SD)	Entire Cohort N=58		CCC Cohort n=36	
				RR (95% CI) ^a	P	RR (95% CI) ^a	P
Medication/Supplement Noncompliance ^c		16 (26%)	19.6 (12.1)	1.24 (1.03 – 1.48)	0.02	1.38 (1.04 – 1.84)	0.02
Refused Recommended Tests		2 (3%)	13.0 (11.3)	1.58 (0.98 – 2.56)	0.06	<i>b</i>	<i>b</i>
Skipped Clinic Visit		4 (7%)	7.8 (9.0)	2.13 (1.23 – 3.67)	0.007	<i>b</i>	<i>b</i>
<u>Adverse Medical Consequences</u>							
Radiation Treatment Break	63	5 (8%)	23.0 (18.8)	1.10 (0.68 – 1.78)	0.71	<i>b</i>	<i>b</i>
Missed Doses of Systemic Therapy	23	8 (35%)	22.0 (14.1)	1.12 (0.87 – 1.43)	0.38	<i>b</i>	<i>b</i>
Weight loss >10% of Baseline	63	16 (25%)	25.7 (1.3)	0.99 (0.83 – 1.19)	0.95	0.90 (0.73 – 1.09)	0.28
Feeding Tube Placement	63	13 (21%)	21.5 (11.2)	1.16 (0.97 – 1.38)	0.11	1.62 (1.14 – 2.31)	0.007
Supportive Infusions	63	34 (54%)	22.8 (12.8)	1.10 (1.02 – 1.20)	0.02	1.10 (1.00 – 1.21)	0.05
Emergency Department Visits	63	20 (32%)	23.9 (13.4)	1.06 (0.90 – 1.25)	0.48	1.09 (0.79 – 1.51)	0.61
Hospital Admissions	63	19 (30%)	22.8 (12.1)	1.11 (0.95 – 1.29)	0.19	1.17 (0.90 – 1.52)	0.24
Financial Costs of Treatment ^d	61			1.20 (1.04 – 1.38)	0.01	1.24 (1.08 – 1.42)	0.002
Higher than Expected		22 (36%)	20.4 (12.8)				
As Expected		26 (43%)	26.6 (10.4)				
Lower than Expected		13 (21%)	32.6 (9.1)				
Concern about Paying for Treatment ^e	60			1.29 (1.18 – 1.41)	<.0001	1.29 (1.16 – 1.45)	<.0001
Not Worried		31 (52%)	32.6 (8.5)				
A Little Worried		12 (20%)	26.9 (6.8)				
Somewhat Worried		10 (17%)	16.7 (7.0)				
Worried		4 (7%)	10.5 (12.0)				
Very Worried		3 (5%)	5.3 (6.1)				
Degree of Financial Burden on Family ^f	61			1.48 (1.33 – 1.65)	<.0001	1.50 (1.31 – 1.72)	<.0001
None		23 (38%)	33.0 (8.6)				
Minor		18 (30%)	29.6 (8.1)				
Moderate		10 (16%)	21.2 (6.2)				
Significant		8 (13%)	8.5 (5.6)				
Catastrophic		2 (3%)	6.0 (8.5)				

Abbreviations: CCC=comprehensive cancer center; CI=confidence interval; RR =relative risk; SD=standard deviation

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- ^aRR for a 5-unit lower COST score estimated from Poisson Regression with robust error variances
- ^bRR were only calculated when the total number of responses $n > 10$
- ^cMedication/Supplement noncompliance includes delaying filling, partially filling, or stopping taking recommended medications or nutritional supplements
- ^dFinancial Costs RR is estimated for “higher than expected” compared to all others
- ^eConcern about Paying RR is estimated for “any worry” compared to none
- ^fFinancial Burden RR is estimated for moderate/significant/catastrophic burden compared to none/minor burden.