Determining the Financial Well-Being and Influencing Factors in Cancer Patients

Research Brief

Final

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Executive Summary

Upon a clinical diagnosis, cancer patients are not only burdened by the disease itself, but also the cost of cancer care. Such costs can include both reductions in income (as a result of taking time off from work) and/or increases in expenses (e.g., out-of-pocket (OOP) medical expenses), potentially with significant implications for their overall financial conditions (de Souza, 2017). Current research finds that 36 percent of cancer patients deplete their savings, 24 percent borrow against their retirement, and are 2.65 times more likely to go bankrupt than people without cancer (Ramsey et.al, 2013). Understanding how cancer affects the financial lives of patients is an important part of supporting these individuals.

Our study assesses *financial well-being* and *financial toxicity* in a small sample of cancer patients and survivors of UF Health's Cancer Center (UFHCC) in the 22-catchment area. "Financial toxicity" refers to the mental, physical, and emotional stress that is caused by the costs of cancer treatments (National Institute of Health, 2017). Financial well-being refers to "having a sense of financial security and financial freedom of choice, in the present, and in the future" (CFPB, 2019). We use the following two key measures for our analysis: the CFPB's Financial Well-Being Scale (FWB) and the Comprehensive Score for Financial Toxicity (CoST). In particular, our study looks to see if the relationship between patients' characteristics and these two measures are similar or different.

Key Finding:
While there is overlap in the underlying financial well-being and financial toxicity constructs, there are significant differences in how each measure is related to other factors, such as income, age, race, and education). This finding suggests that, though there may be theoretical similarities between financial well-being and financial toxicity, the two measures we assess appear to capture fundamental differences in how a small sample of cancer patients perceive their financial situation. Further research is needed to better understand factors influencing financial well-being and financial toxicity and how these measures can complement one another in the health care context.

Background

Costs and finances are an integral part of the cancer patient experience. A survey assessing out-of-pocket expenses for insured patients receiving copayment assistance among 254 patients reported that: 75 percent applied for drug copayment assistance; 46 percent reduced spending on food and clothing; 46 percent used savings to defray out-of-pocket expenses; 24 percent avoided filling prescriptions altogether; 20 percent took less than the prescribed amount of medication; and 19 percent took no prescribed amount of medication (Zafar, 2013).

This brief explores the financial conditions of cancer patients using two lenses: *financial toxicity* and *financial well-being*. We use two measures (the Consumer Financial Protection Bureau's Financial Well-Being Scale and the Comprehensive Score for Financial Toxicity) to assess how characteristics of a small group of cancer patients are related to financial toxicity and financial well-being.

About the Study

Our study relies on data from 263 cancer patients and survivors who have been diagnosed or medically cared for at UFHCC. Individual patients were surveyed, but information about caregivers' efforts influencing the financial burden of the household was obtained. Data collection was internally funded.

1.1.2 Financial Toxicity

Financial toxicity refers to the mental, physical and emotional stress that is caused by the costs of cancer treatments (National Institute of Health, 2017). It is observed as the emotional distress from the financial choices having to be made as well as the physical consequences of not adhering to treatment protocol. It is a specific quality of life or well-being measure for oncology patients. More specifically, Zafar and Abernethy (2013) conclude that out-of-pocket expenses and associated financial decisions related to treatment are "akin to physical toxicity, in that costs can diminish quality of life and impede delivery of the highest quality of care." As defined in a study on economic burden in the U.S., indirect costs of cancer are the monetary losses associated with time spent receiving medical care, time lost from work or other usual activities (morbidity costs), and loss of productivity due to premature death (mortality costs) (Yabroff et al., 2011). Both patients and their families face a high degree of distress that can manifest into negative health outcomes.

1.1.3 Financial Well-being

The CFPB defines financial well-being "a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow enjoyment of life" (CFPB, 2016). The construct of financial well-being includes two primary constructs: security and choice, in the present and the future. In theory, high medical costs and the loss of income associated with health conditions like cancer could have significant implications both for an individual's sense of financial security and their ability to make financial choices.

1.1.4. Measures of Financial Toxicity and Financial Well-Being

Our study focuses on two key metrics to measure the above constructs. The first is the (abbreviated) 5-item Consumer Financial Protection Bureau Financial Well-Being Score (FWB).[1] ***The FWB scale ranges from 0-100 with higher scores indicating a higher level of measured well-being.*** The second is the Comprehensive Score for Financial Toxicity (CoST), which has eleven questions. The CoST score ranges from 11-55. ***Importantly, a low CoST score is associated with a high level of financial toxicity (and high scores are associated with low financial toxicity).*** Table 1 has the items for both scales.

[1] We use the IRT method to calculate the FWB score.

Table 1: FWB and the Comprehensive Score for Financial Toxicity

Item	FWB Abbreviated Items	CoST Item
1	Because of my money situation I feel like I will never have the things I want in life	I feel financially stressed
2	I am just getting by financially	I am satisfied with my current financial situation
3	I am concerned that the money I have or will save won't last	I worry about the financial problems I will have in the future as result of my illness of treatment
4	I have money left over at the end of the month.	I am frustrated that I cannot work or contribute as much as I usually do
5	My finances control my life	My cancer or treatment has reduced my satisfaction with my present financial situation
6		I feel in control of my financial situation
7		I am able to meet my monthly expenses
9		I know that I have enough money in savings, retirement, or assets to cover the cost of my treatment
9		I am concerned about keeping my job and income including working at home
10		I feel I have no choice about the amount of money I spend on care
11		My out-of-pocket medical expenses are more than I thought they would be

At first glance, the two scales look quite similar, as both are asking individuals' self-assessment of their financial condition. Some items are, in fact, very similar, such as questions about ability to meet monthly expenses (FWB item 4 and CoST item 7) and feelings of control over finances (FWB item 5 and CoST item 6). There are important distinctions, however. For example, two out of the five items (items 1 and 3) in the 5-item FWB scale are "future oriented," i.e., they are trying to capture how the individual feels about the future financial situation, whereas only one out of the ten CoST items (item 3) seems to explicitly ask about the future. Meanwhile, several of the CoST items (items 3, 5, 9, 10, and 11) ask specifically about disease-related implications on finances, whereas the FWB scale has no such questions.

1.1.4. Other Characteristics

Our analysis also uses data on other characteristics of patients and survivors in the sample, including race, ethnicity, age, income, and education. Table 2 contains a brief description for all variables used in the analysis.

Table 2: Analysis Variables

Category	Variable	Description
Financial Scores	FWB Score	CFPB's financial well-being score, from 0-100 (a higher score corresponds to higher financial well-being)
Financial Scores	CoST	Comprehensive Score for Toxicity, from 11-55 (higher score is a better, i.e., less toxic, score)
Demographics	Age	Patients age at the time of treatment (measured continuously)
Demographics	Race	Dummy Indicator for White (versus nonwhite)
Demographics	Ethnicity	Dummy Indicator for Hispanic (versus non-Hispanic)
Demographics	Income	Series of categorical income variables (Under 15,000; 15,000 - under 35,000; 35,000 - under 75,000; 75,000 – under 100,000; $100,000 and over)
Demographics	Educational Attainment	Dummy indicator between those who had a college degree (or higher) versus those without a college degree
Disease Related Factors	Cancer Type	Indicator Variables for: breast cancer, prostate cancer, colorectal cancer, lung cancer, gynecological cancers and leukemia (*reference category is patients with multiple cancers*)
Disease Related Factors	Time since last treatment	Time since last treatment for this cancer diagnosis. Coded in years
Disease Related Factors	Unpaid Leave	Indicator variable if patient had unpaid leave during their cancer treatment
Disease Related Factors	Caregiver	Indicator variable if the patient has a friend or family member to assist them with some of their needs
Other	Public Insurance	Indicator that one has any of several public plans, e.g. Medicare, Medicaid, Tricare compared to private insurance

To assess the similarities and differences between the two constructs (i.e., financial well-being and financial toxicity), we look at the relationship between each of our key measures (FWB and CoST) and other characteristics using regression analysis.

- *How is financial well-being of a small sample of cancer patients related to other factors?*

  (1) Linear regression model: $\boldsymbol{FWB_i = X_i'\beta + u_i}$

  Where i is the index of cancer patients in our dataset, FWB_i is the financial well-being score for individual i, $\boldsymbol{X}_i$ is a regressor vector including: age, race, ethnicity, income, educational attainment, cancer type, time since last treatment, unpaid leave, caregiver, $\boldsymbol{\beta}$ is the parameter vector and u_i is the error term.

- *How is financial toxicity in a small sample cancer patients related to other factors?*
  To understand the relationship between financial toxicity and the characteristics of cancer patients, we estimate the same linear regression model as above, except we use CoST as the dependent variable.

  (2) Linear regression model: $\boldsymbol{CoST_i = X_i'\beta + u_i}$

- *Are the relationships between financial well-being and financial toxicity and other factors similar or different?*
  Finally, we compare the relationships between individual characteristics and the two key measures using an F-test to examine whether the coefficients of each independent variable from the two regressions (FWB and CoST) are statistically different.

Findings

When interpreting results, it is important to remember that high CoST scores correspond to low levels of financial toxicity. That is, even though CoST is a measure of toxicity, higher levels of CoST actually reflect a more positive state (and, therefore, for both FWB and CoST higher scores indicate a more favorable condition.) Table 2, below, shows the results from the two regressions.

Table 2. Multivariate Regression Estimates and F-test of Coefficient Equity

Variable	Category	Regression 1 DV = FWB Coeff.	Regression 1 DV = FWB Standard Deviation	Regression 2 DV = CoST Coeff.	Regression 2 DV = CoST Standard Deviation	F-test of Coeff. Equity
Race	White (reference non-White)	2.1702	(2.1114)	1.2697*	(0.7234)	0.1850
Hispanic Origin	Hispanic (reference non-Hispanic)	2.9210	(3.8979)	0.2633	(1.3354)	0.4728
Age	Age	0.1248	(0.0834)	-0.0571**	(0.0286)	4.8414**
Education	College degree	3.5613**	(1.6831)	0.6528	(0.5766)	3.0369*
Income level (reference less than $15,000)	$15,000-$34,999	-4.3627*	(2.4599)	0.9549	(0.8428)	4.7523**
Income level (reference less than $15,000)	$35,000-$74,999	-0.8145	(2.2589)	1.0860	(0.7739)	0.7199
Income level (reference less than $15,000)	$75,000 – $99,999	1.2762	(2.9502)	1.4786	(1.0107)	0.0048
Income level (reference less than $15,000)	$100,000 and over	7.0565***	(2.6397)	1.3082	(0.9044)	4.8225**
Public insurance	Public insurance	0.6572	(1.7252)	0.3204	(0.5911)	0.0388
Unpaid time off from work	Unpaid time off from work	-4.3266**	(1.9895)	-2.1779***	(0.6816)	1.1862
Presence of a caregiver	Presence of a caregiver	-1.1759	(1.7258)	-0.1697	(0.5913)	0.3458
Time since last treatment: (reference currently receiving treatment)	Less Than 1 year	-0.1107	(2.7326)	1.3381	(0.9362)	0.2859
Time since last treatment: (reference currently receiving treatment)	1 to 3 years	0.9998	(2.1955)	1.0378	(0.7522)	0.0003
Time since last treatment: (reference currently receiving treatment)	3 to 5 years	1.3331	(2.1486)	1.7935**	(0.7361)	0.0467
Time since last treatment: (reference currently receiving treatment)	5 or more years	1.6090	(2.2161)	1.4978**	(0.7592)	0.0026
	Constant	36.9254***	(6.2809)	37.3100***	(2.1519)	0.0038
	Observation	N=263		N=263		

Breusch-Pagan test of independence: chi2(1)=9.035, p=0.0026
Note: 1 * p<0.1; ** p<0.05, *** p<.01

Regression 1 (which measures the relationship between FWB and other characteristics) suggests that, among our small sample of cancer patients, financial well-being:

- Is positively related to having a college degree;
- Has a significant but non-linear relationship with income, where
    - People with incomes of $15,000 – less than $35,000 having lower FWB than those with incomes less than $15,000 and
    - People with incomes of $100,000 or higher having higher FWB than those with incomes less than $15,000;
- Is negatively related to having unpaid time off from work; and
- Is positively related to breast, colorectal, and lung cancers.

Regression 2 (which measures the relationship between CoST and other characteristics) suggests that CoST:

- Is positively associated with being white (i.e., whites have *lower* financial *toxicity* relative to nonwhites);
- Is negatively associated with age (i.e., financial *toxicity* increases with age);
- Is positively associated with time since last treatment (i.e., financial *toxicity* is lower for those more removed from treatment compared to those still in treatment); and
- Is negatively associated with unpaid time off from work (i.e., financial *toxicity* is higher for people who took time off from work).

The F-test comparing the coefficients shows that many of the relationships between individuals' characteristics, financial well-being, and financial toxicity are statistically different. Table 3 summarizes these differences.

Table 3. Summary of relationships between patient and survivor characteristics, FWB, and CoST for select characteristics (i.e., those where coefficients are statistically different)

Variable	**FWB**	**CoST**
Age	Not significant	Negative
Whites (vs. nonwhites)	Not significant	Positive
College Degree	Positive	Not Significant
Income ($15,000-$34,999 vs less than $15,000)	Negative	Not Significant
Income (over $100,000 vs less than $15,000)	Positive	Not Significant

Importantly, the results are only based on a very small sample of cancer patients. In addition, it is important to note *that there are no causal implications from these results*. However, these

findings do suggest that FWB and CoST are fundamentally capturing different aspects of individuals' assessments of their own financial situations.

Conclusion and Implications

Helping cancer patients requires not just addressing their medical condition but also helping them manage treatment costs. Patients may need assistance in managing the financial burdens (e.g. healthcare costs, household expenses, and debt) associated with cancer as well as any loss of income associated with the disease. This might include community-based education or some form of pro-bono financial counselors or financial management training for oncological social workers (e.g. financial social work programs) or simply connecting patients and caregivers to appropriate resources. Finally, the need for evidence-based pilot interventions, such as financial counseling or specified health education programs that work in collaboration with local community sources.

This study looks at two measures of financial conditions for a small sample of cancer patients and survivors: the CFPB's abbreviated measure of financial well-being and the Comprehensive Score of Financial Toxicity. At first glance, the constructs of financial well-being and financial toxicity seem highly similar (in that they both are self-assessments of one's financial condition. However, a closer inspection of the items shows that the CoST scale is more disease-specific and less "future oriented" than the FWB scale.

Results from regression analyses—which show that many individuals' characteristics are related to FWB differently than to financial toxicity—further suggest that the two measures may actually be capturing different aspects of individuals' perceptions of their own financial condition. These differences should be further explored with an eye toward how the two measures can be used to help patients navigate the financial burdens of cancer treatment.

References

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