

The interplay of financial toxicity, health care team communication, and psychosocial well-being among rural cancer patients and survivors

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Abstract

Background: Financial toxicity contributes to psychosocial distress among cancer patients and survivors. Yet, contextual factors unique to rural settings affect patient experiences, and a deeper understanding is needed of the interplay between financial toxicity and health care team communication and its association with psychosocial well-being among rural oncology patients.

Purpose: We examined associations between financial toxicity and psychosocial well-being among rural cancer patients, exploring variability in these linkages by health care team communication.

Methods: Using data from 273 rural cancer patients who participated in Cancer Support Community's Cancer Experience Registry, we estimated multivariable regression models predicting depression, anxiety, and social function by financial toxicity, health care team communication, and the interplay between them.

Results: We demonstrate robust associations between financial toxicity and psychosocial outcomes among our sample of rural cancer patients and survivors. As financial toxicity increased, symptoms of depression and anxiety increased. Further, financial toxicity was linked with decreasing social function. Having health care team conversations about treatment costs and distress-related care reduced the negative impact of financial toxicity on depressive symptoms and social function, respectively, in rural cancer patients at greatest risk for financial burden.

Conclusions: Financial toxicity and psychosocial well-being are strongly linked, and these associations were confirmed in a rural sample. A theorized buffer to the detrimental impacts of financial toxicity—health care team communication—played a role in moderating these associations. Our findings suggest that health care providers in rural oncology settings may benefit from tools and resources to bolster communication with patients about costs, financial distress, and coordination of care.

KEYWORDS

cancer survivorship, financial toxicity, health care team communication, psychosocial well-being, rural cancer patients

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INTRODUCTION

Overwhelmingly, individuals in rural communities experience poorer cancer outcomes—including incidence, mortality, and survival—as compared to those in more urban areas.^{1,2} Though underlying mechanisms for these documented disparities are not fully understood, concentrated poverty, area deprivation, and health care scarcity in rural communities may contribute to gaps in outcomes.^{3–6} Contextual factors unique to rural communities critically shape patient experiences, and research is needed to elucidate how the experiences of cancer patients and survivors in rural areas translate to overall well-being.

One such experience is the financial cost of a cancer diagnosis and treatment. The combination of objective financial burden (out-of-pocket costs, lost productivity, debt) with subjective financial distress experienced by cancer patients and survivors has been termed “financial toxicity” and has implications for patients’ ability to cope with cancer, both clinically and psychosocially.⁷ Indeed, the negative financial effects encountered by patients and their families can have devastating consequences, as families may need to alter lifestyles and diminish savings to accommodate the cost of cancer therapies. Research to date has shown a consistent association between financial toxicity and poorer health-related quality of life,^{8–12} as well as treatment nonadherence and forgoing medical care,¹³ increased symptom burden,⁸ and mortality.¹⁴ The financial impact of cancer extends beyond active treatment into survivorship in the form of costs associated with follow-up care, maintenance therapy, and mental health treatment.¹⁵ Importantly, rural contexts may influence patients’ experiences of financial toxicity. For example, rural survivors may be more likely to forego care due to financial constraints than urban survivors.^{16,17} Similarly, poorer psychosocial well-being is pronounced for cancer patients in rural locales, particularly those facing severe financial toxicity.¹⁸

Health care team communication has been theorized to mitigate downstream psychosocial implications of financial toxicity among cancer patients and survivors. Carrera et al. suggest a 3-pronged model for the role of clinicians: (1) discussing the cost and value of cancer treatments with patients; (2) discussing the availability of and access to resources; and (3) assessing the financial toxicity as part of supportive care.⁷ First, it has been suggested that provider discussion of care-related costs can improve patient knowledgeability and ease distress about finances,^{19,20} though there is little evidence to date on the association between cost communication and patient outcomes. Second, provider attention to the emotional impact of cancer and cancer-related costs can support individuals facing financial obstacles.²¹ Third, coordination of care across providers can not only reduce financial burden but also improve quality of life.^{22,23} Integrating supportive care, more specifically, is associated with more positive patient experiences, often at lower costs.^{24,25} Taken together, the relationship between financial toxicity and psychosocial well-being may vary by health care team communication as captured by discussing costs, being asked about emotional concerns, and having psychosocial care coordinated. The role of health care team communication in moderating the relationship between financial burden and

psychosocial well-being may be particularly salient in rural settings given that access to oncology providers is more limited. Reduced care access contributes to disparities in outcomes, as rural cancer centers often have fewer resources, personnel, specialists, and treatment options available.^{5,26–28} Thus, considering the unique challenges facing care providers and patients in rural settings, and as a contributor to the contextual rural patient experience, patient-provider communication may be a mechanism to improve outcomes and well-being of patients.^{29,30}

Given both the documented linkages between financial toxicity and psychosocial outcomes and the need to better understand the rural cancer patient experience, the current study examined the relationship between financial toxicity, health care team communication, and psychosocial well-being among rural cancer patients and survivors. Our first aim was to document associations between financial toxicity and psychosocial well-being among rural adults with cancer. We hypothesized that financial toxicity would be negatively associated with psychosocial well-being. Our second aim was to investigate whether conversations with health care teams about financial concerns, emotional concerns, and care coordination would moderate the associations between financial toxicity and psychosocial well-being. We hypothesized that when rural cancer patients engage with their health care teams in discussions about the cost of care, emotional concerns, and care coordination, the negative impacts of financial toxicity on psychosocial well-being are mitigated.

Thoroughly understanding the unique challenges faced by rural cancer patients and survivors can support clinicians and care providers—particularly in community settings—to reduce the burden and improve outcomes. Here, we sought not only to document associations between financial toxicity and psychosocial well-being among a sample of rural cancer patients and survivors, but also to explore variation in these relationships thus informing critical points of intervention and protective resources to promote rural patients’ well-being in the face of financial burden.

METHODS

Study population

Cancer Support Community (CSC) is the largest professionally led network of cancer support worldwide providing direct services that reach 190 locations across the United States and Canada plus telephone support through the Cancer Support Helpline and educational resources and virtual programming. CSC’s Cancer Experience Registry (CER) is an online, community-based research initiative designed to investigate the emotional, physical, practical, and financial impacts of cancer. Adults (18+) ever diagnosed with any cancer type are eligible to participate and complete a web-based survey. Participants are recruited through CSC’s national network of community-based cancer support, including CSC and Gilda’s Club partners, hospital and health care partners, advocacy partnerships, and social media. The CER includes patients and survivors from all 50 US states who

provide information on geographic location (i.e., zip codes) and patient-reported outcomes, including financial burden and health-related quality of life. We determined rural-urban commuting area (RUCA) codes for all CER respondents who provided their zip codes. RUCA codes combine population density with commuting patterns to classify geographies from 1 (most urban) to 10 (most rural). Results presented here are based on data available from 273 participants residing in rural US communities with a RUCA code of 4 or higher,³¹ who participated in the CER from May 2017 through August 2021 and completed the Functional Assessment of Chronic Illness Therapy COverprehensive Score for Financial Toxicity (COST) measure.³²

Ethical and Independent Review Services (E&I, Independence, MO) served as the IRB of record (Study #16036). All procedures were in accordance with the ethical standards of the institutional research committee for studies involving human participants and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all CER participants.

Measures

Financial toxicity

Financial toxicity was measured using COST, a valid and reliable patient-reported measure of financial distress comprising 11 items on a 5-point scale (0 = *not at all*; 4 = *very much*).³² Responses were summed (0-44) such that lower scores indicate higher financial toxicity and categorized via the COST grading system: no financial toxicity (score ≥ 26); mild financial toxicity (score 14-25); moderate financial toxicity (score 1-13); severe financial toxicity (score = 0).³³ Prior research suggests the severity of financial toxicity is important for psychosocial outcomes, as individuals facing the highest levels of financial burden may be at particular risk for reduced psychosocial well-being³⁴; consequently, we collapsed categories of financial toxicity to create a dichotomous indicator for those at greatest risk where 0 = mild or no financial toxicity (score ≥ 14) and 1 = moderate or severe financial toxicity (score 0-13). Dichotomizing financial toxicity allowed us to capture the rural cancer patients in our sample facing the highest level of financial burden, whom we hypothesized would be more likely to experience poorer psychosocial outcomes and, likewise, benefit more from comprehensive health care team communication.

Psychosocial well-being

Psychosocial well-being was assessed with the depression, anxiety, and social function subscales of the Patient-Reported Outcomes Measurement Information System 29 Profile V2.0 (PROMIS-29),³⁵ a collection of 7 subscales assessing physical and emotional symptoms (past 7 days) and functioning (no timeframe specified). Each subscale includes 4 items rated on a 5-point scale. Responses are summed to create a raw subscale score, transformed into T-scores (Mean = 50; SD = 10); normative reference groups are the US general population. Higher PROMIS T-scores on depression and anxiety subscales reflect

higher levels of depressive symptoms and anxiety, and higher PROMIS T-scores on the social function subscale reflect better social function.

Health care team communication

Health care team communication was measured using 3 questions (yes/no) developed for the CER: (1) "Did anyone speak to you about the cost of your care?"; (2) "Has a member of your health care team asked you about having distress related to financial concerns (eg, out-of-pocket costs)?" and (3) "Did a member of your health care team offer any help in coordinating your distress-related care?"

Sociodemographic characteristics and clinical history

Participants provided information on age, gender identity, race, Hispanic ethnicity, educational attainment, income, employment status, and insurance type. Participants also self-reported current treatment status, time since diagnosis, cancer out-of-pocket costs, cancer stage, number of recurrences, and whether they received care at an academic or comprehensive cancer center.

Analytical design

Descriptive statistics were calculated for the full sample and by level of financial toxicity (i.e., none to mild vs. moderate to severe). We examined bivariate differences between psychosocial variables, health care team communication, sociodemographic background, and clinical history variables with financial toxicity using t-tests and chi-square tests and reported statistically significant differences. Logistic regression analysis was used for multivariable analysis.

We fit 3 distinct linear regression models to examine the independent effect of financial toxicity on dependent variables measuring psychosocial well-being: (1) depression T-score; (2) anxiety T-score; and (3) social function T-score. A series of multiplicative interaction terms between financial toxicity and each of 3 indicators of health care team communication were included to test for moderation (i.e., a total of 3 interactions tested one at a time per outcome). We hypothesized that the negative impact of financial toxicity on psychosocial outcomes would be buffered in the presence of health care team communication. Sociodemographic background and clinical history variables that are known confounders to financial toxicity and psychosocial well-being^{36,37} and were significantly associated with depression, anxiety, or social function on the bivariate level were included in multivariable regression models as covariates, including gender identity, age, educational attainment, employment status, insurance status, low income, out-of-pocket costs, currently on treatment, time since diagnosis, and cancer classified as advanced. We reported predicted levels of PROMIS T-scores by financial toxicity and health care team communication for statistically significant interactions ($P < .05$) with all other variables held to their sample means. To maintain the full analytic sample in all regression models, missing data on psychosocial well-being, health care

TABLE 1 Sample characteristics.

		Moderate to severe financial toxicity		No to mild financial toxicity		P ^a
		N = 63 (23%)		N = 210 (77%)		
		M/n	SD/%	M/n	SD/%	
Age (n = 261)		54.4	10.3	60.1	11.6	<.001
Race and ethnicity	Non-Hispanic White	61	97%	202	96%	.95
	Other	2	3%	7	3%	
Gender identity	Female	48	76%	143	68%	.24
	Male	15	24%	66	31%	
Educational attainment	High school or less	16	25%	37	18%	.17
	Some college	30	48%	84	40%	
	Bachelor's degree	11	17%	53	25%	
	Graduate or higher	6	10%	35	17%	
Annual household income	< \$40K	31	49%	44	21%	<.001
	≥ \$40K	20	32%	123	59%	
Employment status	Full time	19	30%	72	34%	<.001
	Part time	3	5%	20	10%	
	Retired	12	19%	80	38%	
	Not employed	27	43%	34	16%	
Insurance	Employer provided	23	36%	87	41%	.09
	Government	28	44%	69	33%	
	Multiple	7	11%	34	16%	
	Other	1	2%	15	7%	
	None	3	5%	3	1%	
Monthly out-of-pocket costs exceeding \$250	Yes	33	53%	94	45%	.23
	No	28	44%	113	54%	
Recurrence	Yes	11	17%	29	14%	.49
	No	49	78%	169	80%	
Currently receiving treatment	Yes	40	63.5	121	58%	.48
	No	23	36.5	86	41%	
Advanced cancer	Yes	23	36%	56	27%	.13
	No	40	64%	154	73%	
Time since diagnosis, years		2.9	5.8	3.9	5.8	.27
Received all or part of treatment at academic or comprehensive cancer center	Yes	15	24%	67	32%	.22
	No	48	76%	143	68%	

Note: Percentages may not total 100 in cases of missing data; Fisher's exact tests were performed when cell sizes were less than 5.

^aStatistical significance based on chi-square tests for categorical variables and *t*-tests for continuous variables; where applicable, missing categories were not included in chi-square test calculations.

team communication, and sociodemographic background and clinical history variables were estimated through multiple imputation where the full sample was retained in all regression models. The Stata suite of *mi* commands created 50 imputed datasets and averaged results for final estimates. All analyses were performed in Stata/SE 17.0. Sensitivity analysis was conducted by modeling financial toxicity as a continuous variable (range 0-44).

RESULTS

Participant characteristics

Descriptive statistics for participant characteristics including sociodemographic background and clinical history are shown in Table 1. There were no differences between high and low

TABLE 2 Descriptive statistics for psychosocial well-being and health care team communication.

		Moderate to severe financial toxicity		Mild to no financial toxicity		P ^a
		N = 63 (23%)		N = 210 (77%)		
		M/n	SD/%	M/n	SD/%	
PROMIS Depression T-score		58.9	1.3	49.0	0.6	<.001
PROMIS Depression T-score > 1SD ^b	Yes	29	46%	22	11%	<.001
	No	34	54%	179	85%	
PROMIS Anxiety T-score		62.4	1.4	52.0	0.7	<.001
PROMIS Anxiety T-score > 1SD ^b	Yes	37	59%	45	21%	<.001
	No	26	41%	164	78%	
PROMIS Social Function T-Score		40.1	1.2	50.8	0.8	<.001
PROMIS Social Function T-score > 1SD ^c	Yes	30	48%	29	14%	<.001
	No	32	51%	179	85%	
Health care team spoke about costs of care	Yes	13	21%	63	30%	.14
	No	48	76%	139	66%	
Health care team spoke about distress related to emotional concerns	Yes	42	67%	112	53%	.08
	No	19	30%	87	42%	
Health care team offered to coordinate distress-related care	Yes	25	40%	102	49%	.16
	No	38	60%	103	49%	

Note: Percentages may not total 100 in cases of missing data.

^aStatistical significance based on chi-square tests for categorical variables and *t*-tests for continuous variables.

^bT-score greater than 60.

^cT-score less than 40.

financial toxicity groups except for age, income, and employment status.

Mean COST score was 24.1 (*SD* = 12.2); 1% of respondents were classified as reporting severe financial toxicity (score 0), 22% moderate (score 1-13), 31% mild (score 14-25), and 46% no financial toxicity (score ≥ 26). Among participants, a COST score of 0-13 (moderate to severe) approximately identified the upper-level quartile (23%) of financial toxicity scores among the sample.

Associations between financial toxicity and psychosocial well-being

Mean (*SD*) symptom burden T-scores for anxiety and depression were 54.4 (11.3) and 51.5 (10.3), respectively for the overall sample. Mean (*SD*) social functional impairment score was 48.4 (11.3). PROMIS T-scores were significantly higher for anxiety and depression and significantly lower for social function among respondents reporting moderate to severe financial toxicity, as compared with participants reporting mild or no financial toxicity (all *P*s <.001) (Table 2). After adjusting for sociodemographic and clinical characteristics in regression analysis, the associations remained statistically significant such that respondents who reported moderate to severe financial toxicity experienced significantly higher levels of depressive symptoms (*b* = 7.9; *P* <.001; 95% CI: 5.1, 10.7), higher levels of anxiety symptoms

(*b* = 8.0; *P* <.001; 95% CI: 4.9, 11.0), and lower levels of social function (*b* = -7.5; *P* <.001; 95% CI: -10.5, -4.6) than those with mild to no financial toxicity.

Health care team communication as a moderator of financial toxicity and psychosocial well-being

Fewer than one-third (28%) of participants reported their health care team spoke to them about the costs of treatment (see Table 2), 56% said their health care team asked about emotional concerns, and 46% reported their health care team offered to coordinate psychosocial care. Frequencies of health care team communication did not differ significantly by level of financial toxicity reported. A significant interaction between financial toxicity and health care provider discussing treatment costs on depression T-scores (*P* = .02) showed that, among rural patients with moderate to severe toxicity, health care provider speaking about treatment costs was associated with a 6.6 point lower depression T-score (6.6 unadjusted; Figure 1). Thus, PROMIS depression T-scores were highest among patients who experienced both financial toxicity and whose health care team did not discuss treatment costs (*M* = 58.0). Additionally, a significant interaction between financial toxicity and whether the health care team offered to coordinate distress-related care (*P* = .04) demonstrated that, among rural patients with moderate to severe financial toxicity, health care team offering to coordinate distress-related care was

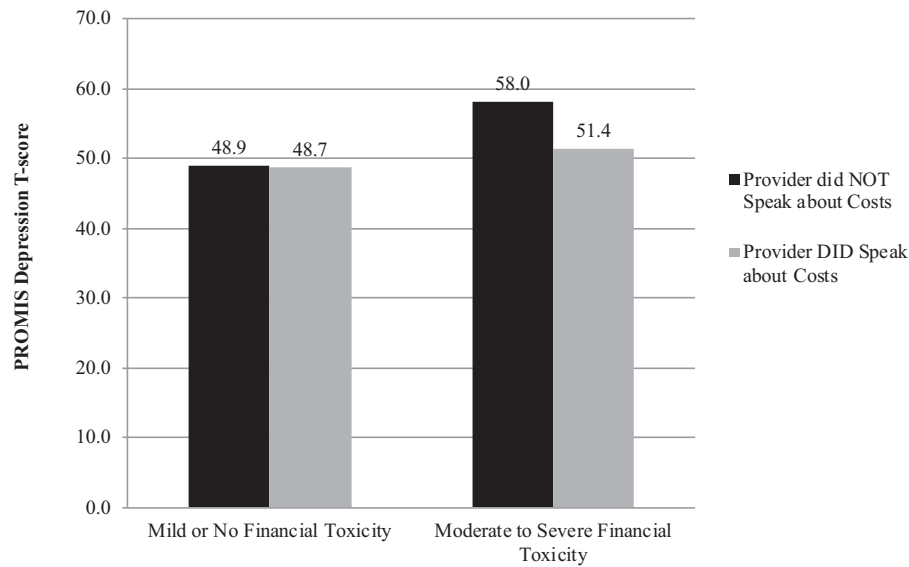


FIGURE 1 Moderation of the association between financial toxicity and depressive symptoms by whether or not provider spoke about costs of care.

Note: $n = 273$; predicted PROMIS T-scores resulting from regression models with sociodemographic background and clinical history variables adjusted for and held at sample means; higher T-scores indicate more depressive symptoms.

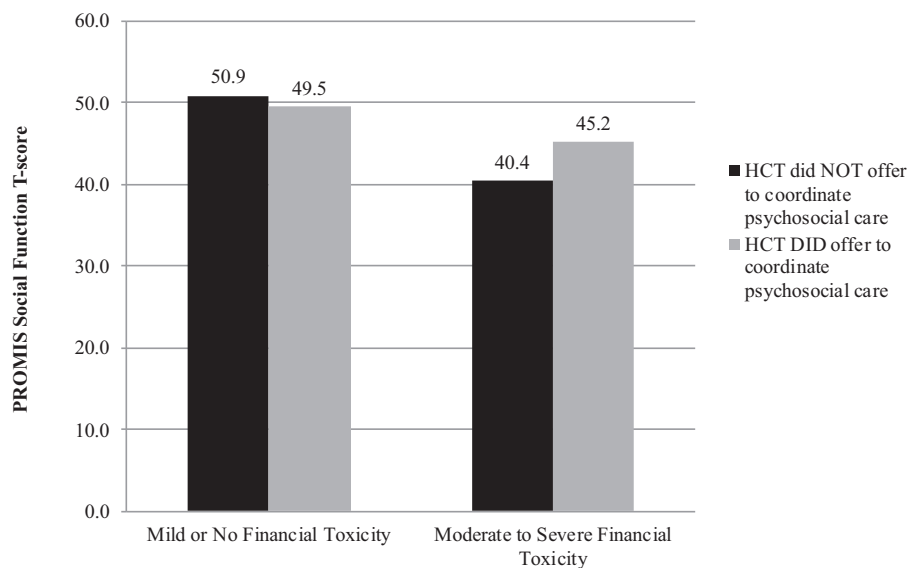


FIGURE 2 Moderation of the association between financial toxicity and social function by whether or not health care team offered to coordinate psychosocial care.

Note: $n = 273$; predicted PROMIS T-scores resulting from regression models with sociodemographic background and clinical history variables adjusted for and held at sample means; higher T-scores indicate better social function.

associated with a 4.8 point increase in social function T-score (3.7 unadjusted; Figure 2). No other interaction terms were statistically significant.

In sensitivity analyses modeling financial toxicity continuously, we observed significant, linear associations such that increasing financial toxicity was associated with higher depressive and anxiety symp-

oms and lower social function. Health care team communication significantly moderated associations between financial toxicity and psychosocial well-being only when we considered financial toxicity dichotomously, highlighting the importance of health care team communication for the most at-risk group. Moreover, moderation was only observed for the interplay between financial toxicity and the specific

components of health care team communication presented in Figures 1 and 2.

DISCUSSION

This study demonstrates that rural cancer patients and survivors experience financial and psychosocial impacts, and that some of the significant associations between financial burden and psychosocial well-being are moderated by health care provider communication about treatment costs and distress-related care. More than half (54%) of rural patients in this analysis reported at least mild financial toxicity, and 1 in 4 experienced moderate to severe levels. Further, almost 1 in 3 experienced psychosocial distress as defined by elevated symptoms of depression or anxiety or impaired social functioning. Rural cancer patients and survivors with the highest levels of financial toxicity experienced higher levels of depressive and anxiety symptoms and lower social function, consistent with a growing body of literature.^{7,38–40} To our knowledge, this is the first study to demonstrate a moderation effect for health care provider communication about treatment costs and distress-related care on the association between financial toxicity and psychosocial well-being in rural cancer patients, thus highlighting an important opportunity for intervention.

Effective, transparent, and comprehensive communication between providers and patients is critical for the management of financial toxicity.^{7,19–21} Oncologists interface with patients throughout their care continuum, providing opportunities to discuss the costs of therapies, concerns about the financial burden, and the accessibility of supportive care. These strategies are theorized to tackle financial toxicity head-on and mitigate the psychosocial risks of financial toxicity.⁷ Here, among patients experiencing moderate to severe financial toxicity, those whose health care team talked to them about costs of cancer treatment, on average, had PROMIS depression T-scores more than 6 points lower than patients whose health care team did not talk to them about treatment costs, even after adjusting for sociodemographic and clinical factors. Based on prior PROMIS validation studies in cancer, a group score difference of 3 points is likely to be clinically meaningful.^{41,42} Similarly, rural patients experiencing financial toxicity whose health care team offered to coordinate their distress-related care had higher social function scores (more than a 4-point difference) than those whose health care team did not. Yet, few patients indicated their health care team spoke to them about treatment costs (29%) or offered to coordinate psychosocial care (47%).

We did not observe a significant interaction between financial toxicity and health care team communication about emotional distress on any of the 3 psychosocial outcomes, nor did we observe an effect of any of the 3 moderators on anxiety. More research is needed to understand what other processes may be at play in mitigating—or exacerbating—psychosocial difficulties for rural cancer patients experiencing financial toxicity, including factors in health service delivery. For example, one study suggested that the out-of-pocket costs associated with the use of supportive care services contribute to financial burden among rural cancer patients.⁴³ In contrast, qualitative studies suggest that support

groups—including those administered virtually—can reduce psychosocial distress among rural cancer patients and may be available at no cost.^{44,45} Partnership models between rural care settings and organizations offering supportive care at low or no cost to patients, such as community-based advocacy organizations, remain an important area of study.

Practice and policy implications

The results of this study underscore the critical need for health care providers to understand and communicate with patients about the financial implications of cancer. The unique challenges in receiving oncology care in rural settings—including, but not limited to, travel burden and scarcity of providers—contribute to financial toxicity and poorer outcomes for patients.^{46,47} Yet, in addition to the challenges faced by patients, the unequal distribution of resources and patchworked care system in rural communities place a burden on health care teams.

Additionally, cancer care teams have varying levels of preparedness for, comfort with, and training on discussions around the financial burden of cancer care for patients and families. Rural care providers need systemic support to more fully address unmet needs in their communities.⁴⁸ Past research suggests that, though the overwhelming majority of providers consider discussions of costs with patients to be their responsibility, few clinicians are comfortable having those conversations.⁴⁹ Barriers to effective communication around cost include providers' concerns about negative patient perceptions of such conversations, lack of provider awareness of out-of-pocket treatment costs given variations in patient insurance coverage, and provider perception of limited real-world options to reducing out-of-pocket costs.⁵⁰

Several interventions are being studied to examine their impact in effectively addressing financial toxicity at the patient, provider, health system, community, and policy levels.⁵¹ At the provider level, there is growing evidence that providers want training and support in initiating cost conversations.⁵⁰ Additionally, implementing tools and systems to equip providers with knowledge of costs and unmet financial needs can also empower their effective communication. In particular, implementing routine screening for financial toxicity and financial distress as standard of care may help providers identify patients at greatest risk.⁵² Prior to implementing screening, appropriate workflows must be established including referral pathways for patients with financial vulnerabilities.⁵¹

Ideally, rural practices would include financial navigators to support patients and providers in addressing out-of-pocket costs, optimize health insurance, and maximize financial assistance.⁵³ Recent research has supported the feasibility, acceptability, and preliminary effectiveness oncology financial navigation, including demonstrable out-of-pocket savings to participants.⁵⁴ At the same time, expanded staffing may be challenging in rural settings. Leveraging partnerships with non-profit and community-based organizations may offer solutions to improving patient awareness of care costs and access to

financial assistance programs.⁵¹ Additionally, our findings support the need to minimize the financial burden of cancer care, particularly for patients and survivors in rural settings, through effective policy solutions. The rising costs of cancer care are widely recognized as unsustainable and detrimental to patients.^{55,56} Solutions not only require advocacy, research, and intervention at the patient, provider, and health system levels, but must also include policies to reduce the cost of care and increase access and affordability.⁷

Study limitations

Our analytical sample was limited to individuals who self-selected into the Cancer Experience Registry. The online platform for the survey required internet access, thereby restricting the sample to more advantaged individuals. Participants were largely non-Hispanic White (96%) and insured (98%) thus limiting our ability to adequately address differences in financial toxicity by race/ethnicity and health insurance status. These collective factors significantly limit the generalizability of our findings. Similarly, data were self-reported, and, in some cases, incomplete. Though multiple imputation allowed for the retention of the full sample for analyses, bias may be present. Additionally, the data are cross-sectional. While we hypothesized the direction of the relationship such that financial toxicity is a predictive factor in psychosocial well-being, the cost of mental health treatment may certainly contribute to the financial burden. Furthermore, we did not capture the timing of health care team communication. Patients were being asked to recall conversations that may have taken place years prior. Longitudinal data with a prospective study design would provide a more powerful conceptualization of the associations and interactions we explored. Finally, rural communities are far from monolithic. Thus, our sample is not representative of all rural cancer patients and survivors, and we do not capture the nuances unique to individual care settings.

CONCLUSIONS

We highlighted strong associations between financial toxicity and psychosocial health among a rural sample and provided evidence that health care team communication may help to mitigate psychosocial risks for cancer patients and survivors experiencing financial toxicity. Our findings point to a need for better awareness among clinicians about the financial implications of cancer and advocate for supportive care, including financial counselors, that help patients navigate the financial and emotional strain of cancer and its treatment.

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CONFLICT OF INTEREST STATEMENT

The authors report the following conflict of interest. Institutional research support was granted to the Cancer Support Community and not individual study authors:

Dr. Miller: Institutional research funding from: Astellas Pharma, BeiGene, Bristol-Myers Squibb, Genentech (a member of the Roche Group), Geron, Gilead Sciences, GlaxoSmithKline, Janssen Pharmaceuticals, Merck, Novartis, Pfizer, Taiho Oncology, and Takeda Pharmaceutical Company.

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REFERENCES

1. Yao N, Alcalá HE, Anderson R, Balkrishnan R. Cancer disparities in rural Appalachia: incidence, early detection, and survivorship. *J Rural Health*. 2017;33(4):375-381.
2. Afshar N, English DR, Milne RL. Rural-urban residence and cancer survival in high-income countries: a systematic review. *Cancer*. 2019;125(13):2172-2184.
3. Lengerich EJ, Tucker TC, Powell RK, et al. Cancer incidence in Kentucky, Pennsylvania, and West Virginia: disparities in Appalachia. *J Rural Health*. 2005;21(1):39-47.
4. Meilleur A, Subramanian SV, Plascak JJ, Fisher JL, Paskett ED, Lamont EB. Rural residence and cancer outcomes in the United States: issues and challenges. *Cancer Epidemiol Biomarkers Prev*. 2013;22(10):1657-1667.
5. Unger JM, Moseley A, Symington B, Chavez-MacGregor M, Ramsey SD, Hershman DL. Geographic distribution and survival outcomes for rural patients with cancer treated in clinical trials. *JAMA Netw Open*. 2018;1(4):e181235.
6. Haggerty JL, Roberge D, Lévesque JF, Gauthier J, Loignon C. An exploration of rural-urban differences in healthcare-seeking trajectories: implications for measures of accessibility. *Health Place*. 2014;28:92-98.
7. Carrera PM, Kantarjian HM, Blinder VS. The financial burden and distress of patients with cancer: understanding and stepping-up action on the financial toxicity of cancer treatment. *CA Cancer J Clin*. 2018;68(2):153-165.
8. Lathan CS, Cronin A, Tucker-Seeley R, Zafar SY, Ayanian JZ, Schrag D. Association of financial strain with symptom burden and quality of life for patients with lung or colorectal cancer. *J Clin Oncol*. 2016;34(15):1732-1740.
9. Zafar SY, McNeil RB, Thomas CM, Lathan CS, Ayanian JZ, Provenzale D. Population-based assessment of cancer survivors' financial burden and quality of life: a prospective cohort study. *J Oncol Pract*. 2015;11(2):145-150.
10. Delgado-Guay M, Ferrer J, Rieber AG, et al. Financial distress and its associations with physical and emotional symptoms and quality of life among advanced cancer patients. *Oncologist*. 2015;20(9):1092-1098.
11. Fenn KM, Evans SB, McCorkle R, et al. Impact of financial burden of cancer on survivors' quality of life. *J Oncol Pract*. 2014;10(5):332-338.
12. Kale HP, Carroll NV. Self-reported financial burden of cancer care and its effect on physical and mental health-related quality of life among US cancer survivors. *Cancer*. 2016;122(8):283-289.
13. Altice CK, Banegas MP, Tucker-Seeley RD, Yabroff KR. Financial hardships experienced by cancer survivors: a systematic review. *J Natl Cancer Inst*. 2016;109(2).

14. Yabroff KR, Han X, Song W, et al. Association of medical financial hardship and mortality among cancer survivors in the United States. *J Natl Cancer Inst.* 2022;114(6):863-870.
15. Ekwueme DU, Zhao J, Rim SH, et al. Annual out-of-pocket expenditures and financial hardship among cancer survivors aged 18–64 years - United States, 2011–2016. *MMWR Morb Mortal Wkly Rep.* 2019;68(22):494-499.
16. Palmer NRA, Geiger AM, Lu L, Case LD, Weaver KE. Impact of rural residence on forgoing healthcare after cancer because of cost. *Cancer Epidemiol Biomarkers Prev.* 2013;22(10):1668-1676.
17. McDougall JA, Banegas MP, Wiggins CL, Chiu VK, Rajput A, Kinney AY. Rural disparities in treatment-related financial hardship and adherence to surveillance colonoscopy in diverse colorectal cancer survivors. *Cancer Epidemiol Biomarkers Prev.* 2018;27(11):1275-1282.
18. Levit LA, Byatt L, Lyss AP, et al. Closing the rural cancer care gap: three institutional approaches. *JCO Oncol Pract.* 2020;16(7):422-430.
19. Abrams HR, Durbin S, Huang CX, et al. Financial toxicity in cancer care: origins, impact, and solutions. *Transl Behav Med.* 2021;11(11):2043-2054.
20. Yabroff KR, Bradley C, Shih Y-CT. Understanding financial hardship among cancer survivors in the United States: strategies for prevention and mitigation. *J Clin Oncol.* 2020;38(4):292-301.
21. Chi M. The hidden cost of cancer: helping clients cope with financial toxicity. *Clin Soc Work J.* 2019;47(3):249-257.
22. Gorin SS, Haggstrom D, Han PKJ, Fairfield KM, Krebs P, Clauser SB. Cancer care coordination: a systematic review and meta-analysis of over 30 years of empirical studies. *Ann Behav Med.* 2017;51(4):532-546.
23. Beesley VL, Janda M, Burmeister EA, et al. Association between pancreatic cancer patients' perception of their care coordination and patient-reported and survival outcomes. *Palliat Support Care.* 2018;16(5):534-543.
24. Carlson LE, Bultz BD. Efficacy and medical cost offset of psychosocial interventions in cancer care: making the case for economic analyses. *Psychooncology.* 2004;13(12):837-849. discussion 850–6.
25. Faller H, Schuler M, Richard M, Heckl U, Weis J, Küffner R. Effects of psycho-oncology interventions on emotional distress and quality of life in adult patients with cancer: systematic review and meta-analysis. *J Clin Oncol.* 2013;31(6):782-793.
26. Charlton M, Schlichting J, Chioreso C, Ward M, Vikas P. Challenges of rural cancer care in the United States. *Oncology (Williston Park).* 2015;29(9):633-640.
27. Kirkwood MK, Hanley A, Bruinooge SS, et al. The state of oncology practice in America, 2018: results of the ASCO practice census survey. *J Oncol Pract.* 2018;14(7):e412-e420.
28. Onega T, Alford-Teaster J, Wang F. Population-based geographic access to parent and satellite National Cancer Institute Cancer Center Facilities. *Cancer.* 2017;123(17):3305-3311.
29. Strayhorn SM, Lewis-Thames MW, Carnahan LR, et al. Assessing the relationship between patient-provider communication quality and quality of life among rural cancer survivors. *Support Care Cancer.* 2021;29(4):1913-1921.
30. Lewis-Thames MW, Carnahan LR, James AS, Watson KS, Molina Y. Understanding posttreatment patient-provider communication and follow-up care among self-identified rural cancer survivors in Illinois. *J Rural Health.* 2020;36(4):549-563.
31. Isserman AM. In the national interest: defining rural and urban correctly in research and public policy. *Int Reg Sci Rev.* 2005;28(4):465-499.
32. deSouza JA, Yap BJ, Wroblewski K, et al. Measuring financial toxicity as a clinically relevant patient-reported outcome: the validation of the comprehensive score for financial toxicity (COST). *Cancer.* 2017;123(3):476-484.
33. De Souza JA, Wroblewski K, Prousaloglou E, Nicholson L, Hantel A, Wang Y. Validation of a financial toxicity (FT) grading system. *J Clin Oncol.* 2017;35(15_suppl):6615.
34. Esselen KM, Gompers A, Hacker MR, et al. Evaluating meaningful levels of financial toxicity in gynecologic cancers. *Int J Gynecol Cancer.* 2021;31(6):801.
35. Hays RD, Spritzer KL, Schalet BD, Cella D. PROMIS®-29 v2.0 profile physical and mental health summary scores. *Qual Life Res.* 2018;27(7):1885-1891.
36. PDQ® Adult Treatment Editorial Board. *PDQ Financial Toxicity and Cancer Treatment.* Bethesda, MD: National Cancer Institute; 2022.
37. Buzaglo JS, Zaleta AK, McManus S, Golant M, Miller MF. Cancer-SupportSource®: validation of a revised multi-dimensional distress screening program for cancer patients and survivors. *Support Care Cancer.* 2019;28(1):55-64.
38. Zafar SY. Financial toxicity of cancer care: it's time to intervene. *J Natl Cancer Inst.* 2016;108(5).
39. Lentz R, Benson Iii AB, Kircher S. Financial toxicity in cancer care: prevalence, causes, consequences, and reduction strategies. *J Surg Oncol.* 2019;120(1):85-92.
40. Sharp L, Carsin A-E, Timmons A. Associations between cancer-related financial stress and strain and psychological well-being among individuals living with cancer. *Psychooncology.* 2013;22(4):745-755.
41. Swanhelm E, McDonald W, Makris U, Noe C, Gatchel R. Estimates of minimally important differences (MIDs) for two patient-reported outcomes measurement information system (PROMIS) computer-adaptive tests in chronic pain patients. *J Appl Biobehav Res.* 2014;19(4):217-232.
42. Yost KJ, Eton DT, Garcia SF, Cella D. Minimally important differences were estimated for six patient-reported outcomes measurement information system-cancer scales in advanced-stage cancer patients. *J Clin Epidemiol.* 2011;64(5):507-516.
43. Pisu M, Azuero A, Benz R, McNeese P, Meneses K. Out-of-pocket costs and burden among rural breast cancer survivors. *Cancer Med.* 2017;6(3):572-581.
44. Collie K, Kreshka MA, Ferrier S, et al. Videoconferencing for delivery of breast cancer support groups to women living in rural communities: a pilot study. *Psychooncology.* 2007;16(8):778-782.
45. Bettencourt BA, Schlegel RJ, Talley AE, Molix LA. The breast cancer experience of rural women: a literature review. *Psychooncology.* 2007;16(10):875-887.
46. Ambroggi M, Biasini C, Del Giovane C, Fornari F, Cavanna L. Distance as a barrier to cancer diagnosis and treatment: review of the literature. *Oncologist.* 2015;20(12):8.
47. Onega T, Duell EJ, Shi X, Wang D, Demidenko E, Goodman D. Geographic access to cancer care in the U.S. *Cancer.* 2008;112(4):909-918.
48. Dauner KN, Loomer L. A qualitative assessment of barriers and facilitators associated with addressing social determinants of health among members of a health collaborative in the rural Midwest. *BMC Health Serv Res.* 2021;21(1):867-867.
49. Shih YT, Chien CR. A review of cost communication in oncology: patient attitude, provider acceptance, and outcome assessment. *Cancer.* 2017;123(6):928-939.
50. Sloan CE, Gutterman S, Davis JK, et al. How can healthcare organizations improve cost-of-care conversations? A qualitative exploration of clinicians' perspectives. *Patient Educ Couns.* 2022;105(8):2708-2714.
51. Liang MI, Harrison R, Aviki EM, Esselen KM, Nitecki R, Meyer L. Financial toxicity: a practical review for gynecologic oncology teams to understand and address patient-level financial burdens. *Gynecol Oncol.* 2023;170:317-327.
52. Shankaran V, Ramsey S. Addressing the financial burden of cancer treatment: from copay to can't pay. *JAMA Oncol.* 2015;1(3):273-274.
53. Doherty MJ, Thom B, Gany F. Evidence of the feasibility and preliminary efficacy of oncology financial navigation: a scoping review. *Cancer Epidemiol Biomarkers Prev.* 2021;30(10):1778-1784.



54. Edward JS, McLouth LE, Rayens MK, Eisele LP, Davis TS, Hildebrandt G. Coverage and cost-of-care links: addressing financial toxicity among patients with hematologic cancer and their caregivers. *JCO Oncol Pract*. 2023;19(5):301-310.
55. The price of drugs for chronic myeloid leukemia (CML) is a reflection of the unsustainable prices of cancer drugs: from the perspective of a large group of CML experts. *Blood*. 2013;121(22):4439-4442.
56. Tefferi A, Kantarjian H, Rajkumar SV, et al. In support of a patient-driven initiative and petition to lower the high price of cancer drugs. *Mayo Clin Proc*. 2015;90(8):996-1000.

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