

Sensitivity of Psychosocial Distress Screening to Identify Cancer Patients at Risk for Financial Hardship During Care Delivery

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QUESTION ASKED: What is the sensitivity of psychosocial distress screening routinely performed in cancer care delivery for identifying patients at risk for cancer-related financial hardship, and what are adverse care delivery outcomes in patients with severe hardship?

SUMMARY ANSWER: As identified by routine psychosocial distress screening, a positive distress screen had only 48% sensitivity for identifying patients who would experience severe cancer-related financial hardship within the subsequent 6 months. Patients with severe financial hardship demonstrated significantly higher likelihood of subsequently missing cancer care visits and accumulating bad debt (unpaid) charges for their cancer care.

WHAT WE DID: Patients with cancer frequently encounter financial hardship throughout their disease and trajectory. An estimated 50% of patients with cancer experience medical financial hardship. A recent survey of National Cancer Institute–designated cancer centers revealed that most centers acknowledged financial hardship as a frequent problem encountered by patients during their cancer care trajectory. More than 80% in this sample reported using a distress screening–based strategy for identifying patients with financial hardship for assistance. The actual effectiveness of distress screening approaches, however, for identifying patients at risk for financial hardship remains unclear. A screening approach during routine care that systematically, effectively identifies patients with financial hardship is needed, since patients with cancer frequently report that they encounter barriers to discussing financial concerns with their providers. In response to this need, we surveyed patients with cancer and cancer survivors who received cancer care at a large metropolitan cancer center to measure the severity of their cancer-related financial hardship. We linked survey respondents' results to their psychosocial distress screening scores captured within the previous 6 months in their electronic medical records and

within the subsequent 6 months, records of missed oncology care visits, and cancer care billing records identifying accumulated bad debt, to understand the sensitivity of this approach for identifying at-risk patients and elucidate care delivery implications of patient-reported financial hardship.

WHAT WE FOUND: Patients with positive distress screens were 21% more likely to report financial hardship, but a positive distress screen was only 48% sensitive for identifying severe financial hardship. This meant that more than half of patients who ultimately had severe cancer-related financial hardship were missed by the routine approach of distress screening for identifying patients with financial hardship. Unfortunately, those patients with severe cancer-related financial hardship also demonstrated a 28% higher likelihood of missing cancer visits and 32% higher likelihood of incurring bad debt charges within the subsequent 6 months of their care trajectory.

BIAS, CONFOUNDING FACTORS: These results reflect the sensitivity of the distress screening tool used in the single cancer center studied in this analysis, but the sensitivity of other screening tools to identify cancer-related financial hardship still need to be tested. Although there was a relationship found between patient-reported financial hardship and downstream adverse outcomes, whether this is a causal relationship is not yet known. Future prospective studies are needed to validate the current findings in other cancer care delivery settings.

REAL-LIFE IMPLICATIONS: This study's findings suggest a critical opportunity to improve upon the commonly used approach of psychosocial distress–based screening to identify patients at risk for financial hardship in cancer care. Developing more sensitive—but brief and practical—financial hardship screening is needed to help proactively identify and intervene in vulnerable patients with cancer.

ASSOCIATED CONTENT

Appendix

Author affiliations and disclosures are available with the complete article at ascopubs.org/journal/op.

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abstract

PURPOSE Patients with cancer frequently encounter financial hardship, yet systematic strategies to identify at-risk patients are not established in care delivery. We assessed sensitivity of distress-based screening to identify patients with cancer-related financial hardship and associated care delivery outcomes.

METHODS A survey of 225 patients at a large cancer center assessed cancer-related financial hardship (0-10 Likert scale; highest quintile scores ≥ 5 defined severe hardship). Responses were linked to electronic medical records identifying patients' distress screening scores 6 months presurvey (0-10 scale) and outcomes of missed cancer care visits and bad debt charges (unrecovered patient charges) within 6 months postsurvey. A positive screen for distress was defined as score ≥ 4 . We analyzed screening test characteristics for identifying severe financial hardship within 6 months and associations between financial hardship and outcomes using logistic models.

RESULTS Although patients with positive distress screens were more likely to report financial hardship (odds ratio [OR], 1.21; 1.08-1.37; $P < .001$), a positive distress screen was only 48% sensitive and 70% specific for identifying severe financial hardship. Patients with worse financial hardship scores were more likely to miss oncology care visits within 6 months (for every additional point in financial hardship score from 0 to 10, OR, 1.28; 1.12-1.47; $P < .001$). Of patients with severe hardship, 72% missed oncology visits versus 35% without severe hardship ($P = .006$). Patients with worse hardship were more likely to incur any bad debt charges within 6 months (OR, 1.32; 1.13-1.54; $P < .001$).

CONCLUSION Systematic financial hardship screening is needed to help mitigate adverse care delivery outcomes. Existing distress-based screening lacks sensitivity.

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BACKGROUND

Patients with cancer frequently encounter financial hardship throughout their disease trajectory, including costly medical bills and depleted savings, along with lost income and unemployment.^{1,2} Such cancer-related financial hardship is associated with worse quality of life and psychologic stress.^{3,4} It is estimated that approximately 50% of patients with cancer experience medical financial hardship.⁵ Despite increasingly wide recognition of this high prevalence and adverse impact of financial hardship on patients,^{1,6,7} a systematic strategy for early proactive identification of at-risk patients is not yet established in care delivery. Such a strategy is needed to enhance timely referral to financial hardship interventions for high-risk patients during care delivery in oncology practices and health care systems.

Findings from a recent survey of National Cancer Institute–designated cancer centers revealed that most centers acknowledged financial hardship as a problem frequently encountered by patients during their cancer care trajectory. More than 80% of centers in this sample reported using a distress screening–based strategy for identifying patients with financial hardship and providing assistance.⁸ In another survey of 17 National Comprehensive Cancer Center member institutions, 50% used distress-based screening to identify patients with financial hardship, whereas only 19% implemented a dedicated financial hardship measure.⁹ The actual effectiveness of screening approaches, however, for identifying patients at risk for financial hardship is unclear.

An effective screening approach to systematically identify patients and prompt intervention is needed,

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since patients with cancer report frequent barriers to or discomfort with initiating financial discussions with their oncology care teams.^{4,8,10} Yet it remains unknown whether commonly used psychosocial distress–based screening strategies are adequate. Although evidence supports that widely adopted general psychosocial distress screening in cancer care delivery effectively identifies patients needing psychosocial interventions,¹¹ whether distress screening can also systematically identify patients with cancer with financial hardship is not known.

Identifying gaps in screening for financial hardship among patients with cancer and ascertaining associated adverse care delivery outcomes are presently needed steps to help direct emerging financial hardship intervention strategies.^{10,12} Therefore, to inform these knowledge gaps in financial hardship screening and outcomes, we conducted an analysis of care delivery variables related to financial hardship reported in a survey of patients with cancer and cancer survivors who received care at a large metropolitan cancer center. The specific objectives of this study were (1) to assess the sensitivity of distress-based screening to identify patients with cancer-related financial hardship and (2) to identify the impact of patients' financial hardship on cancer care delivery outcomes, namely, missed oncology visits and accumulation of bad debt charges (the unpaid or unrecovered patient responsible portion of bills for cancer care).

METHODS

Data Sources and Patient Sample

This study was approved by the Institutional Review Board at The M.D. Anderson Cancer Center. We surveyed adult patients (age ≥ 18 years) with a confirmed diagnosis of cancer presenting for care at a large metropolitan comprehensive cancer center (including study sites at the main hub and a community-based regional oncology clinic) between March 2019 and September 2019. Individuals eligible for the survey study were age ≥ 18 years with a pathologically confirmed diagnosis of cancer, undergoing ambulatory cancer care in 14 voluntarily participating medical, surgical, or radiation oncology clinics in this cross-sectional study of patients with a spectrum of disease sites.^{13,14} Of 364 patients identified through convenience sampling from the participating clinics, on the basis of research team and patient availability for in-person approach, 232 agreed to enroll (63.7%). Excluded from this analysis were patients who declined review of their medical record for study abstraction ($n = 2$); did not answer $> 50\%$ survey questions ($n = 1$); or had no additional clinical follow-up after the survey date to assess care delivery outcomes ($n = 4$), for a final sample of 225 patients.

Financial Hardship Outcome Measure

To characterize patient-reported financial hardship, patients completed a survey with 15 items addressing the severity of cancer-related financial burden in the past

30 days, including (1) direct material burdens such as amount of spending on medical bills, lost savings, and accumulation of debt; (2) psychologic burdens, such as stress from cancer-related financial hardships; and (3) exhaustion of coping resources such as income and work benefits and aid from formal (organizations) and informal (family and friends) sources.^{13,14} These items were derived from the Economic Strain and Resilience in Cancer survey study^{13,14} and address the established theoretical domains of material, psychologic, and coping financial hardship identified in previous studies comprising cancer-related financial burden.^{2,5} Each item was scored on a 0 to 10 Likert scale (a score of 10 indicated most severe financial burden). The overall financial hardship score was then calculated as the arithmetic average of items (re-weighted for missing items), with an overall score range from 0 to 10. This approach was previously demonstrated to be valid and reliable with concurrent validity with other indicators of cancer-related financial toxicity, such as the COST tool.^{3,14} In statistical analyses, the continuous score for financial hardship from 0 to 10 was tested as well as a categorical variable was defined by a threshold for any hardship as score > 1 and severe hardship scored as score ≥ 5 (defined a priori by the highest quintile of scores in this sample).

Psychosocial Distress Screening and Care Delivery Workflow

To assess distress, patients' psychosocial distress screening assessments as a part of their routine oncology care were abstracted from the medical chart. Patient-reported psychosocial distress was captured in the medical chart during routine oncology care visits before and after the survey date, using an adapted version of the National Comprehensive Cancer Center Distress Thermometer and Problem List for Patients.¹⁵ Distress screening assessments followed the standard institutional workflow that asks patients whether they have experienced distress in the past 7 days from physical, mental, social, or spiritual factors using nurse-based assessment in routine clinical encounters. Screening results standardly facilitate automated reminders for repeat screening and/or social worker intervention. Standard distress screening is repeated if no screening was performed within the past 30 days and/or if there was a major care transition (eg, initiation of new treatment, postsurgical, or transfer to emergency care), coordinated with routine clinical encounters. The distress screen provides an overall psychosocial distress score, reported by patients on a 0-10 Likert scale (score of 10 indicates most severe distress). A positive distress screen score in this study was defined at the threshold distress score ≥ 4 , the usual care threshold that triggers distress intervention in the institution's practice, including intervention for financial issues if needed. In statistical analyses, if a patient reported any score within the analytic time frame (6 months), which met the threshold distress score of ≥ 4 , the patient was categorized as having had a positive distress screen.

Care Delivery Outcomes

Outcomes were abstracted from the medical chart. Missed oncology visits were defined as oncology appointments that were scheduled but where the patient failed to appear. The percentage of missed appointments was calculated as the number of appointments missed within 6 months after the survey date divided by the total number of scheduled appointments from 6 months before to 6 months after the survey date. The date range encompassing the denominator count of appointments was selected to account for the potential misclassification of patients who had only a single scheduled appointment in the 6-month follow-up after the survey date and missed, who would be classified as having a high (100%) frequency of missed visits within the postsurvey period. A sensitivity analysis was also performed using this more restrictive definition, by calculating the percentage of missed appointments using solely the denominator count of appointments in the 6 months after the survey date. Per inclusion criteria, patients must have had at least a single scheduled appointment during the follow-up period for inclusion in analysis. In statistical analyses, the dichotomous outcome was classified as having the highest quintile of missed visit frequency ($\geq 3\%$ when the denominator of appointments was from 6 months before to 6 months after survey and in the sensitivity analysis, $\geq 8\%$ when the denominator of appointments was 6 months after survey).

Clinical encounters that resulted in bad debt within 6 months of the survey date were identified from billing records. Baseline bad debt was identified for the 6 months before the survey date. Cumulative hospital or technical charges during the follow-up period were obtained from billing records. Bad debt charges represented the charge amount for which there was an unpaid patient-responsible portion after standard collection efforts and thus remained unrecovered typically after 120 days. In statistical analyses, patients' outcomes were coded dichotomously for the outcome of postsurvey accumulation of new bad debt as having any versus no bad debt encounters within a 6-month follow-up period.

Statistical Analysis

Univariate associations between continuous financial hardship scores and categorical patient variables were evaluated using Kruskal-Wallis test or Wilcoxon Rank Sum test, and Spearman's correlation coefficient for continuous variables (with median scores and interquartile range [IQR] presented). The unadjusted association between financial hardship survey scores and presurvey distress screen scores was tested using the Wilcoxon Rank Sum test. The sensitivity of any positive distress screen (score ≥ 4 in the 6 months before the survey date) for identifying severe financial hardship (score ≥ 5) was calculated on the basis of the number of patients who had severe financial hardship who had a positive distress screen divided by the total

number who had severe financial hardship. Specificity was calculated as the number of patients without severe financial hardship (score < 5) who had a negative distress screen divided by the total number without severe financial hardship. Log-log plots for these dichotomized outcomes of high frequency of missed oncology visits and incurring any bad debt were generated, with financial hardship scores in these plots binned by quintile to represent the unadjusted associations across the spectrum of scores. Logistic modeling identified associations between financial hardship and the dichotomous outcomes of excess missed oncology visits and incurring bad debt for clinical encounters within 6 months of patient-reported financial hardship, unadjusted and adjusted for covariates. Covariates included age (at survey), sex, race, ethnicity, cancer histology and stage, medical insurance abstracted from the medical record, patient educational attainment, household income, and other sources of medical insurance self-reported in the survey and tested in multivariate models. A parsimonious final model was selected to reduce collinearity and include a priori clinically relevant covariates. Analyses were conducted using SAS Enterprise Guide version 7.11 (Cary, NC). Statistical tests were two-sided with the P value $< .05$ considered statistically significant.

RESULTS

Patient Characteristics and Financial Hardship

Among 225 patients, the median age was 63 years (IQR 53-70), 44.4% were men, 81.8% were White, and 8.4% reported an annual household income \leq \$20,000 US dollars (USD). The most frequent cancer diagnosis types were 36.4% of patients with breast and 12.4% with prostate cancer. A total of 54.5% of patients had regional or distant disease at the time of survey (Table 1). The median time from cancer diagnosis to financial hardship assessment was 0.62 years (IQR, 0.28-1.10). A total of 72% ($n = 163$) of patients reported any financial hardship (score ≥ 1) and 22% ($n = 50$) severe financial hardship (score ≥ 5). Adverse socioeconomic factors (ie, lower household income and lower educational attainment) and advanced cancer were associated with more severe hardship (Table 2).

Sensitivity of Distress Screening in Care Delivery to Identify Downstream Financial Hardship

All patients (100%) underwent at least 1 psychosocial distress screen during routine cancer care delivery encounters within the 6 months before the financial hardship survey, and 34% had a positive screen for distress. Patients who had an initial positive screen for psychosocial distress were more likely to later report worse financial hardship (odds ratio [OR], 1.21; 95% CI, 1.08 to 1.37; $P = .001$). Still, the sensitivity of a positive distress screen before financial hardship was only 48% for identifying the patients who would later report experiencing the most severe

TABLE 1. Patient Characteristics

Median age (IQR) (years)	63 (53-70)
Sex, No. (%)	
Female	125 (55.6)
Male	100 (44.4)
Race or ethnicity, No. (%)	
White Non-Hispanic	152 (67.6)
Any Hispanic or Latino	32 (14.2)
Black Non-Hispanic	19 (8.4)
Asian, Native Hawaiian, and Pacific Islander	5 (2.2)
Others	17 (7.6)
Education, No. (%)	
Less than high school	5 (2.2)
High school or GED	43 (19.1)
Some college, associate's degree, or trade certification	89 (39.6)
College degree (BS and BA)	53 (23.6)
Graduate degree (MS and MA)	23 (10.2)
Advanced degree (PhD, MD, and JD)	11 (4.9)
No response	1 (0.4)
Household income, USD, No. (%)	
\$0-\$19,999	19 (8.4)
\$20,000-\$49,999	41 (18.2)
\$50,000-\$74,999	38 (16.9)
\$75,000 or more	124 (55.1)
No response	3 (1.3)
Insurance, No. (%)	
Employer provided	107 (47.6)
Medicaid	6 (2.7)
Medicare	91 (40.4)
Purchased	15 (6.7)
Others	6 (2.7)
Cancer histology, No. (%)	
Breast	82 (36.4)
CNS	4 (1.8)
GI	24 (10.7)
Gynecologic	7 (3.1)
Head and neck	26 (11.6)
Leukemia/lymphoma/myeloma	15 (6.7)
Lung	24 (10.7)
Prostate	28 (12.4)
Others	15 (6.7)
Cancer stage at diagnosis, ^a No. (%)	
Local	97 (45.5)
Regional	66 (31.0)
Distant	50 (23.5)

Abbreviations: GED, general equivalency diploma; IQR, interquartile range; USD, US dollars.

^aFor American Joint Committee on Cancer stage tumors only.

financial hardship (score ≥ 5) within the next 6 months. The specificity was 70%. As a secondary definition, even when all distress screen scores from 6 months before to 6 months after patients' financial hardship survey were included, and any positive distress screen over the entire time frame was included, screening was 68% sensitive for identifying financial hardship.

Impact of Financial Hardship on Care Delivery Outcomes

Patients who reported higher severity of financial hardship had higher likelihood of missed oncology visits (unadjusted OR, 1.28; 1.12 to 1.47; $P < .001$) and even after adjusting for sex, race, and cancer type (OR, 1.26; 1.09 to 1.46; $P = .002$) (Table 3). A total of 72% of patients with severe hardship subsequently missed oncology visits versus 35% of patients without severe hardship ($P = .006$). In the sensitivity analysis that defined missed oncology visits on the basis of the denominator of appointments 6 months after the survey, the results were similar (adjusted OR, 1.18; 1.02 to 1.36; $P = .03$).

In the 6 months before the survey, 20.4% of patients had incurred any bad debt. Patients with severe financial hardship at the time of survey also had higher likelihood of incurring subsequent cancer care-related bad debt in the 6 months after the survey (unadjusted OR, 1.32; 1.13 to 1.54; $P < 0.001$), even after adjusting for covariates (adjusted OR, 1.26; 1.07 to 1.49; $P = .006$) (Table 3). The mean cumulative bad debt charges per patient in the cohort during the 6-month follow-up was \$5,989 USD. Among the 32 patients with any bad debt, the median bad debt in this subset was \$9,645 USD (IQR \$2,096-\$69,466 USD). Log-log plots demonstrated that patients within the highest quintile of financial hardship scores had highest risks for missed visits and bad debt (Appendix Fig A1, online only).

DISCUSSION

The high prevalence of financial hardship in patients with cancer is increasingly recognized,^{1,6} along with its impact on patient quality of life and long-term adherence to treatments such as oral anticancer therapies and downstream difficulties in maintaining day-to-day living expenses, meeting basic needs, and accumulating debt and leading to bankruptcy.^{7,16} This study further delineated significant associations of financial hardship in patients with cancer with care delivery outcomes measured as missed patient oncology visits and bad debt related to oncology care. These outcomes not only adversely affect individual patients but also are costly for oncology practices and health care systems.

Across the spectrum of patient-reported financial hardship, worse hardship in this study was associated with increased risk of adverse outcomes. There appeared to be meaningfully highest risk of outcomes for the top quintile of patient-reported financial hardship scores—the most severe levels. Therefore, the results from this analysis help to identify that

TABLE 2. Univariate Analysis: Correlates of Financial Hardship

Patient Characteristic	Median Financial Hardship Score (IQR)	P
Age, years (Spearman coefficient)	−0.37	< .001
Sex		.36
Female	2.5 (0.9-4.7)	
Male	2.1 (0.6-4.5)	
Race or ethnicity		.001
White Non-Hispanic	1.8 (0.5-4.1)	
Any Hispanic or Latino	3.1 (1.9-5.2)	
Black Non-Hispanic	4.6 (3.3-5.5)	
Asian, Native Hawaiian, and Pacific Islander	2.5 (0.6-5.9)	
Others	3.3 (1.3-5.3)	
Education		.03
Less than high school	3.3 (2.1-4.1)	
High school or GED	2.2 (0.5-4.6)	
Some college, associate's degree, or trade certification	3.2 (1.0-5.3)	
College degree (BS and BA)	2.6 (0.6-4.6)	
Graduate degree (MS and MA)	1.8 (1.0-3.1)	
Advanced degree (PhD, MD, and JD)	0.7 (0.1-2.4)	
Household income, USD		.02
\$0-\$19,999	4.7 (1.7-6.1)	
\$20,000-\$49,999	3.7 (1.7-5.0)	
\$50,000-\$74,999	3.0 (0.7-5.4)	
\$75,000 or more	1.8 (0.6-3.8)	
Insurance		< .0001
Employer provided	3.2 (1.3-5.0)	
Medicaid	3.8 (1.3-6.4)	
Medicare	1.6 (0.2-3.3)	
Marketplace purchased	4.4 (1.9-6.3)	
Others	2.9 (0.9-5.3)	
Cancer histology		.37
Breast	2.3 (0.9-4.7)	
CNS	3.5 (1.8-6.0)	
GI	3.0 (0.6-4.9)	
Gynecologic	1.9 (1.3-4.1)	
Head and neck	2.2 (0.6-4.6)	
Leukemia/lymphoma/myeloma	3.7 (0.7-6.3)	
Lung	3.3 (0.8-4.5)	
Prostate	1.6 (0.3-2.3)	
Others	3.9 (1.1-5.4)	
Cancer stage at diagnosis ^a		< .001
Local	1.7 (0.3-3.2)	
Regional	3.2 (1.1-4.7)	
Distant	4.0 (1.7-5.4)	

NOTE. *P* values ≤ .05 are in bold.

Abbreviations: GED, general equivalency diploma; IQR, interquartile range; USD, US dollars.

^aFor American Joint Committee on Cancer stage tumors only, n = 213.

high-risk patients could potentially experience greatest benefits from patient- and system-level interventions (eg, social work support and financial navigation services). Identifying and intervening on the highest-risk group for adverse and costly outcomes are especially needed when financial navigation resources are constrained.

This analysis also suggested that general psychosocial distress screening to identify patients with financial hardship—a commonly practiced approach in many centers^{11,17,18}—had only low to moderate sensitivity to identify patients with highest risk for financial hardship. Although our study validated that psychosocial distress was strongly associated with higher levels of financial hardship, also reported in previous studies,¹⁹ in this study cohort, as many as half of patients who developed severe financial hardship within a 6-month follow-up period still did not indicate psychologic distress in screening. Even if distress scores through the 6 months after survey were included, more than one quarter of patients with severe hardship would not be identified.

Therefore, the results of this study support the concept, also raised by Khara et al,^{10,12} that a critical gap in oncology care delivery exists, with lacking systematic identification of patients with financial hardship to accurately direct financial navigation interventions. Systematic identification of other cancer patient-reported outcomes in care delivery, for example, physical symptoms and psychologic distress, has resulted in effective interventions that enhance patients' quality of life and survival¹¹ and reduce costly acute care utilization.^{11,20} Evidence supports that financial navigation can similarly improve patient and health care systems level outcomes.^{21,22} Thus, the present study provides initial data suggesting that creating an effective systematic screening approach to optimally identify is a foundational need for advancing financial hardship intervention in oncology care. Such intervention at the patient level and care delivery level may synergize with system and policy level changes, such as newly implemented price transparency policies, to improve cancer-related financial hardship.

Ideal frequency and timing of financial hardship screening and assessment in care delivery also need future study, especially for individuals at high risk for cancer-related financial hardship such as younger (working age) and lower-income patients.^{16,23} In the present study, a clinical factor associated with financial hardship was the presence of distant disease. This finding raises a hypothesis that a critical time for financial intervention assessment or re-assessment may be at development of advanced or distant disease.

This analysis has several limitations. Temporal direction of the association between distress and financial hardship is not available in these data, as longitudinal outcome was not assessed. Also, only systematic distress screening assessments were analyzed, and therefore, other ad hoc triggers for financial navigation (eg, a conversation with the physician requesting financial help for care during a clinical

TABLE 3. Multivariable Logistic Models: Predictors of Missed Oncology Care Visits and Cancer Care–Related Bad Debt

Predictor	Missed Visits			Bad Debt		
	OR	95% CI	P	OR	95% CI	P
Financial Hardship Score ^a	1.26	1.09 to 1.46	.002	1.26	1.07 to 1.49	.0006
Sex			.92			.47
Female	1			1		
Male	1.06	0.38 to 2.95	.92	1.5	0.50 to 4.57	.47
Race			.84			.54
White Non-Hispanic	1			1		
Any Hispanic or Latino	1.36	0.53 to 3.51	.52	1.20	0.39 to 3.70	.75
Black Non-Hispanic	0.72	0.20 to 2.61	.61	2.36	0.73 to 7.66	.15
Asian or others	0.87	0.08 to 9.22	.91	0.84	0.08 to 9.30	.89
Cancer histology			.23			.83
Breast	1			1		
GI	0.97	0.25 to 3.69	.96	0.99	0.19 to 5.04	.99
Head and neck	1.80	0.45 to 7.18	.41	1.22	0.23 to 6.48	.82
Leukemia/lymphoma/myeloma	2.87	0.72 to 11.48	.14	1.33	0.24 to 7.38	.75
Lung	0.54	0.13 to 2.25	.40	1.95	0.49 to 7.73	.34
Prostate	0.37	0.06 to 2.38	.29	0.58	0.08 to 4.20	.59
Others	0.79	0.22 to 2.84	.72	1.86	0.48 to 7.22	.37

NOTE. P values ≤ .05 are in bold.

Abbreviation: OR, odds ratio.

^aContinuous score from 0 (least hardship) to 10 (most severe hardship).

visit) were not examined. Finally, sensitivity or specificity of the adapted distress thermometer measure in this analysis may not represent sensitivity or specificity of other patient-reported outcome measures of distress or financial hardship, and such measures will require future study. This study was based on patients and facilities within one metropolitan region. Despite the heterogeneous study sample, the results need to be validated in other care delivery settings, for example, where there are a high percentage of uninsured or underinsured patients. Additionally, associations between patient-reported financial hardship and downstream missed visits and bad debt may not be causal. Prospective studies are needed to quantify the actual impact of financial hardship intervention on modifying these care delivery outcomes.

In conclusion, in this cohort of patients with cancer, the commonly used approach of psychosocial distress–based screening to identify patients at risk for financial hardship was only moderately sensitive for systematically recognizing patients at highest risk for financial hardship and the downstream adverse outcomes. Developing more sensitive—but brief and practical—financial hardship screening is needed to overcome barriers to proactively identifying vulnerable patients in cancer care settings. Implementing a robust financial navigation delivery workflow that is effective widely within cancer care delivery systems, to appropriately intervene once patients are identified, is a further challenge, but needed to improve costly care delivery outcomes that affect patients and health care systems.

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SUPPORT

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST**Sensitivity of Psychosocial Distress Screening to Identify Cancer Patients at Risk for Financial Hardship During Care Delivery**

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Open Payments is a public database containing information reported by companies about payments made to US-licensed physicians ([Open Payments](#)).

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APPENDIX

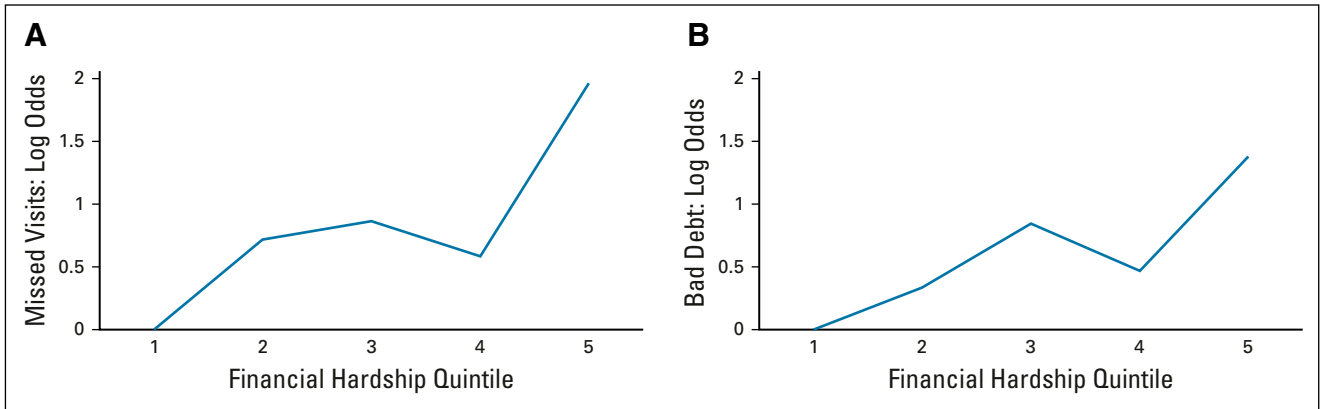


FIG A1. Log-odds plots: (A and B) Quintile of financial hardship score and odds of missed oncology visits within the subsequent 6 months and odds of cancer care-related bad debt within the subsequent 6 months.