Anxiety and depression among cancer survivors: The role of engagement with sources of emotional support information

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Abstract

This study explores cancer survivors' engagement with information about emotional support from doctors, interpersonal sources, and the media and examines to what extent such engagement affects subsequent self-reported anxiety and depression. Patients with colorectal, breast, or prostate cancer (n=1,128) were surveyed over three years following diagnosis. Using lagged logistic regression, we predicted the odds of experiencing anxiety or depression based on earlier engagement with sources of emotional support, adjusting for prior symptoms and confounders. Among those reporting anxiety or depression (n=476), we also asked whether information engagement affected the severity of those symptoms. Participants obtained information about emotional support from multiple sources, but most often from physicians. Discussions with physicians about emotional support increased the odds of cancer survivors subsequently reporting anxiety or depression by 1.58 times (95% CI: 1.06 to 2.35; *p*=0.025), adjusted for prior symptoms and confounders. Scanning from media sources was also significantly associated with increased odds of reporting emotional symptoms (OR=1.72; 95% CI: 1.03 to 2.87; *p*=0.039). However, among those who reported symptoms, doctor-patient engagement predicted slightly reduced interference of these symptoms with daily activities (B=−0.198; 95% CI: −0.393 to −0.003; *p*=0.047). Important implications for health communication research and practice are discussed.

Introduction

Anxiety and depression occur commonly among cancer patients (Hoffman, McCarthy, Recklitis, & Ng, 2009; Massie, 2004;). Nearly half of cancer survivors meet criteria for anxiety disorders, while 15% to 25% suffer from depression (National Cancer Institute (NCI), 2011). Threats to psychological well-being can manifest at the time of diagnosis and persist throughout survivorship if not properly diagnosed and treated. The presence of cancer-related symptoms, painful treatments, diminished quality of life, disease recurrence or progression, and uncertain mortality all contribute to patients' experience of anxiety and depression (Jacobsen & Jim, 2008). Anxiety and depression in cancer patients are associated with sleep disturbance, loss of appetite (Trask, 2004), heightened expectancy of pain

(Velikova, Selby, Snaith, & Kirby, 1995), poor adherence with recommended therapy (DiMatteo, Lepper, & Croghan, 2000), tumor progression (Lutgendorf & Sood, 2011), and mortality (Giese-Davis et al., 2011).

Fortunately, depression and anxiety are treatable. In addition to individual psychiatric treatment, recent research shows a robust, protective effect of emotional support on health (for review, see Reblin & Uchino, 2008). Emotional support consists of resources and assistance exchanged through principal social relationships (i.e., family and friends) and other interpersonal interactions (i.e., treating doctors, community and online support groups, palliative care). Psychological interventions have documented positive effects of emotional support on cancer survivors' mental and physical health (e.g., Andersen et al., 2008; Björneklett et al., 2011), positioning emotional support as central to comprehensive cancer care.

This paper examines whether cancer survivors' perceived psychological well-being benefits from information engagement related to emotional support from a variety of sources including healthcare providers, family and friends, and mass media. While the effects of targeted therapies have been documented (Newell, Sanson-Fisher & Savolainen, 2002), less is known about the impact of engagement with emotional support information widely available to survivors. In the following sections, we summarize prior literature that informed our study, describe the study methods and results, and discuss the research and practice implications of our findings.

Prevalence and Effects of Health Information Engagement among Cancer Survivors

Cancer survivors frequently acquire health information from many sources, including medical professionals, interpersonal contacts, and increasingly, mass media and the internet (Mills & Davidson, 2002; Rutten, Arora, Bakos, Aziz, & Rowland, 2005). Across different sources, the nature of information about emotional support and the way in which survivors encounter such information are likely to differ. It is critical to understand survivors' patterns of information engagement and the potential impact of these interactions on the psychological sequelae of the cancer experience (Viswanath, 2005).

Research has categorized information acquisition into two types of source engagement at different ends of a continuum. At one end, *information seeking* is characterized by an active and motivated pursuit of specific information (Lambert & Loiselle, 2007), as occurs when an individual uses a specific health website to find discussion boards or support programs to cope with cancer-related depression. *Information scanning*, on the other hand, is a less purposive, more incidental behavior that occurs during an individual's routine encounters with informative sources; for instance, during a regular visit to the oncologist or while reading the daily newspaper (Hornik & Niederdeppe, 2008; Niederdeppe et al., 2007). In short, the critical difference between seeking and scanning is an individual's level of activeness in looking for information, and presumably his or her pre-existing motivation to obtain specific information.

Recent studies report that both health information seeking and scanning behaviors are common within the general population (Niederdeppe et al., 2007; Kelly et al., 2010). Among

cancer survivors, information seeking is prevalent (Hesse, Arora, Burke Beckjord, & Finney Rutten, 2008; Nagler et al., 2010) and useful for helping fulfill unmet informational needs (Lee & Hawkins, 2010), preparing for shared decision-making (Levine, 2000), and coping with the stress associated with survivorship (van der Molen, 1999). Some research suggests that cancer patients may require not just more information related to their medical condition, but also more information about emotional support in order to best deal with their diagnosis (Miller, 1995).

As for scanning, patients diagnosed with certain cancer types as well as older cancer patients tend to acquire information about their disease in more passive ways (Mills & Sullivan, 1999; van der Molen, 1999) and sometimes attempt to avoid it altogether (Miller, 1995). We submit that if information scanning is omitted from analytic models examining the consequences of information exposure, sizable effects on perceived mental health may be overlooked.

Among healthy individuals in the general population, information engagement about various health topics are positively associated with cognitive and behavioral outcomes, including knowledge, exercise, fruit and vegetable consumption and cancer screening behaviors (Hornik, Parvanta, Mello, Freres, & Schwartz, in press; Johnson, 1997; Kelly et al., 2010; Shim, Kelly, & Hornik, 2006). A recent review suggested that cancer patients with fulfilled information needs and fewer barriers to general information experience less anxiety and depression (Husson, Mols, & van de Poll-Franse, 2011). In contrast, a previous study by our team found a positive lagged relationship between general physician engagement and higher scores on an index of nine patient-reported cancer-related problems that included anxiety and depression (Tan, Bourgoin, Gray, Armstrong, & Hornik, 2010).

While Tan and colleagues focused on the effect of physician engagement on a global measure of well-being, little is known about how information specifically pertaining to *emotional support* is acquired (through seeking or scanning) by cancer survivors from *various sources* and whether these unique acquisition behaviors might differentially affect psychological well-being. Such engagement may decrease the rate and severity of depression or anxiety among survivors if engagement serves as a coping mechanism and/or helpful resource. However, it also is plausible that more exposure to information about emotional support might increase reported anxiety and depression by making the issue more salient, especially among survivors who already exhibit psychological symptoms or perceive themselves as having certain risk factors (e.g., a weak support network). To address the above research gaps, we examine data from a population-based longitudinal survey of breast, prostate and colon cancer patients and propose the following research questions:

RQ 1: What is the prevalence of information engagement behaviors with various sources of emotional support (i.e., healthcare professionals, interpersonal sources other than doctors, and media)?

RQ 2: Does information engagement behavior with these various sources affect survivors' perceived psychological well-being and functioning over time?

Methods

Sample and Data Collection

This analysis involved a subset of a longitudinal study consisting of three rounds of annual surveys between 2006 and 2009 among a cohort of patients diagnosed with breast, prostate or colorectal cancers in Pennsylvania. We randomly selected study participants from the Pennsylvania Cancer Registry (PCR) list of patients who were diagnosed between January 2005 and December 2005 with one of the above three cancers. Details of the study population and data collection procedure are described elsewhere (Nagler et al., 2010).

In this analysis, we focused on the data obtained from rounds 2 and 3 of the survey. In these rounds, participants were asked about their engagement with emotional support information from various sources and their self-reported experience of anxiety or depression. Additionally, in the round 3 survey, participants were asked the extent to which their psychological symptoms currently interfered with their daily activities.

In round 1 of the study, 2,013 participants completed the survey (American Association for Public Opinion Research response rate 4 was 64%). Most participants (1,758) agreed to be re-contacted for further surveys, and 1,293 (74%) completed the round 2 survey, while 1,128 (64%) completed the round 3 survey. The analytic sample was comprised of those respondents who participated in the round 3 survey. Non-response in the third round was due to refusal to be re-contacted after round 1 (n=255) or round 2 (n=85), death during the study period (n=66), and no response after repeated mailing of the survey (n=479). Therefore, the overall raw response rate at round 3 (including both non-response at round 1 and attrition) was 37%.[1] The study was approved by the University of Pennsylvania's institutional review board.

Survey Measures

Primary outcome – Self-reported anxiety or depression—Participants were asked if they had experienced anxiety or depression (among other symptoms) in the past 12 months (binary responses – i.e., yes or no) in all three rounds of the study. While this analysis is focused on experience of such symptoms at round 3 (covering the period between two and three years after diagnosis), self-reported experience of symptoms in earlier rounds predicted subsequent symptoms at round 3. Therefore, the present analysis included self-reported anxiety or depression at either round 1 or 2 as a covariate.

Secondary outcome – Current interference with daily activities—Participants who responded that they experienced anxiety or depression in round 3 were further asked to rate how much their symptoms currently interfered with their daily activities (5-point Likert-type scale from 'Not at all' to 'Very much').

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[1]We used available demographic and disease status information at baseline as independent variables for a regression model predicting whether participants completed the round 3 survey. Analysis showed that participants who were older (vs. younger), black (vs. white), diagnosed with stages III-IV cancer (vs. stages 0-II), female colon cancer patients (vs. prostate cancer patients), or had a high school and below education (vs. some college and above) were less likely to complete the survey at round 3. However, this set of 12 predictors accounted for a small amount of the variation in the likelihood of participation (Nagelkerke pseudo r-square = .114). All of these variables were included in the final regression models subsequently presented and thus their influence was taken into account.

Predictors – Engagement with information related to emotional support—Five survey items assessed participants' level of engagement with emotional support information in round 2 from a variety of information sources (interpersonal, media, and physicians). First, participants were asked if they had actively looked for information about emotional support for dealing with their cancer from lay interpersonal sources (defined as friends, family, and co-workers) in the past 12 months. In answering this question, participants specifically were instructed not to include information seeking from their doctors. The second item asked participants if they actively looked for emotional support information from media sources (defined as television, radio, newspapers, magazines, books, brochures, pamphlets, and the internet). Third, participants were asked to recall if they came across information about emotional support from lay interpersonal sources when they were not looking for it in the past 12 months. Next, participants were asked to recall if they had come across emotional support information from media sources. Finally, one item asked participants whether their doctors had talked to them about emotional support since their cancer diagnosis. This item did not distinguish whether participants actively sought this information from their physician or if their physician initiated the discussion because prior pre-testing indicated that cancer patients found it difficult to differentiate information that they actively sought from physicians from scanned information. The above five items were coded as binary variables (yes/no) and demonstrated reasonable inter-item correlations (rho ranging from 0.32 to 0.84, all ps<0.001). Furthermore, as evidence for the specific validity of the measures, these inter-item correlations for emotional support engagement items tended to be stronger when compared to their correlation with engagement measures about other unrelated topics (e.g., information about fruit and vegetable intake; rho ranging from 0.14 to 0.66). This provided additional evidence that participants were able to distinguish between engagement with information about emotional support and engagement with information about other unrelated topics.

Control variables—Based on our literature review, we included variables that might influence either the experience of psychological symptoms or information engagement about emotional support among cancer survivors. The covariates included sociodemographic variables - age at cancer diagnosis in years, gender,[2] education level, ethnicity, and marital status (Kaiser, Hartoonian, & Owen, 2010); cancer-related variables – cancer type, stage of disease at diagnosis, type of treatment received, health status, and progression to more severe disease (Arora, Finney Rutten, Gustafson, Moser, & Hawkins, 2007; Kolva, Rosenfeld, Pessin, Breitbart, & Brescia, 2011); and psychological variables – prior self-reported experience of anxiety or depression and the Lerman Cancer Worry Scale (Lerman et al., 1991).

Analytic Procedure

Analyses were conducted using the M*plus* statistical package version 6 (Muthén & Muthén, 1998–2010). Due to the presence of missing values in the predictor variables, we performed

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[2]Because of the presence of gender-specific cancer types, we combined gender and cancer type into a single covariate such that four categories were adjusted for in the analysis (female colorectal, male colorectal, breast, and prostate cancers). This did not influence the substantive findings in the analysis.

full information maximum likelihood (FIML) estimation. The FIML technique is preferable to ad hoc methods for dealing with missing data (e.g., listwise deletion, pairwise deletion, mean imputation) and is shown to reduce bias and sampling variability in multiple regression models (Enders, 2001; Newman, 2003).

For the primary outcome to assess the effects of engagement with emotional support information on anxiety or depression, we fit a logistic regression model including the five sources of engagement as predictors, adjusting for round 2 symptoms and other potential confounders. This allows for the assessment of the effect of exposure to each information source above and beyond the impact of other information sources anxiety and depression. For predicting the secondary outcome (level of interference of these symptoms on daily activities), we selected participants who reported having anxiety or depression at round 3 (n=476) and fit a linear regression model including the five sources of engagement and confounders. We further tested for the presence of interactions between engagement with different sources about emotional support and prior experience of anxiety or depression by including the product terms of these measures. Non-significant interaction terms were omitted from the final models.

Associations between information engagement about emotional support and anxiety or depression symptoms, if present, may not necessarily reflect a direct causal influence of emotion-relevant information engagement on symptoms. One rival explanation could be reports of emotional content engagement were merely surrogates for general information-seeking. Thus, we conducted a sensitivity analysis to test whether engagement with non-related health topics might predict patients' self-reported anxiety or depression by substituting the emotional support information engagement items with items measuring seeking, scanning, and physician discussions related to fruit and vegetable intake as independent variables.

Another alternative explanation for associations between information engagement and psychological symptoms could be reverse causation. Specifically, cancer survivors who experienced anxiety or depression symptoms might be more likely to report that they engaged with emotional support information from various sources. To assess the possibility of this explanation, we conducted additional sensitivity analyses to test whether experiencing anxiety or depression at round 2 led to subsequent information engagement at round 3, controlling for engagement in round 2.

Results

Approximately 42% of participants reported experiencing anxiety or depression in the preceding 12 months in round 3 compared to 39% in round 1 and 30% in round 2 (a total of 44% experienced these symptoms in either round 1 or 2). Among those participants who reported having anxiety or depression in round 3, the average level of interference was 1.79 (on a 5-point scale between 0 to 4; SD=1.0), corresponding to participants stating on average that anxiety or depression currently interferes with their daily activities 'a little bit' to 'somewhat'. Over half of the sample was female (52%), mean age was 68 years, most of the sample was white (87%), and almost half (49%) completed some college or higher

education. There was approximately equal representation of patients diagnosed with breast, prostate and colon cancer reflecting the sampling plan (36%, 34%, and 30%, respectively).

The most common type of exposure to emotional support information came from discussions with their physicians (23.8%), followed by coming across dieting information from lay interpersonal sources when they were not actively looking for it (16.1%). Seeking from interpersonal sources (15.5%) and scanning from media sources (13.2%) occurred less frequently. Seeking from media sources occurred least frequently (9.5%). The prevalence of seeking and scanning from interpersonal and media sources were significantly lower than physician discussions about emotional support using McNemar's test of the paired proportions (all $ps<0.001$).[3] Additionally, seeking from family and friends was not significantly different from scanning from family and friends ($p=0.733$), but scanning from media sources was more common than seeking from media sources ($p=0.002$).

Engagement with each of the sources was positively and significantly associated with experience of emotional symptoms cross-sectionally at round 2 (rho ranging from 0.29 to 0.44, all $ps<0.001$) and at round 3 (rho ranging from 0.25 to 0.35, all $ps<0.001$). This does not provide strong evidence for the effects of information engagement on symptoms, since participants may have engaged with these information sources subsequent to having symptoms of anxiety or depression. To better assess whether engaging with information sources may influence subsequent emotional symptoms, we predicted round 3 reported symptoms with round 2 engagement, adjusting for prior emotional symptoms.

We first assessed the effect of exposure to each information source individually. Scanning from media sources was a significant predictor of greater odds of reporting symptoms at round 3 (OR=1.77; 95% CI: 1.11 to 2.82; $p=0.017$). In addition, discussion with physicians about emotional support predicted greater odds of reporting subsequent symptoms at round 3 (OR=1.60; 95% CI: 1.09 to 2.33; $p=0.015$). The other sources were non-significant.

Next, when all engagement sources were included in the model, scanning from media sources (OR=1.72; 95% CI: 1.03 to 2.87; $p=0.039$) and discussion with doctors (OR=1.58; 95% CI: 1.06 to 2.35; $p=0.025$) remained significant predictors of subsequent reports of emotional symptoms at round 3 (see Table 1). There were no significant interactions between engagement with different sources about emotional support and prior anxiety or depression.

Possible explanations for the positive associations of media scanning and doctor discussions and reported anxiety or depression are presented below. However, this effect led us to look further to try and understand the observed associations. Table 2 shows the multiple linear regression model predicting self-reported interference with daily activities by anxiety or depression in the subset of participants who reported these symptoms at round 3. In contrast to the findings reported above, here we see that discussion with physicians about emotional

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[3]The time period for the item capturing physician discussions was longer than that of the seeking and scanning items (an average of 27 months vs. the past 12 months). Despite the longer time frame, we argue that the observed difference between the proportion of patients seeking, scanning and discussion with physicians is real given that people, in general, have more opportunity for interaction with interpersonal and media sources. This opportunity, in a sense, counterbalances the greater length of time.

support predicted *lower* levels of interference of daily activities by psychological symptoms. Adjusting for other information sources, prior symptoms in earlier rounds, and confounders, talking with physicians about emotional support was associated with a 0.198 unit (along a 5-point scale from 0–4, with a standard deviation of 1.0) decrease in the level of interference of daily activities (95% CI: −0.393 to −0.003; *p*=0.047). Other sources of information engagement were not significantly associated with the level of interference by emotional symptoms.

There was no evidence of multi-collinearity among the independent variables in both sets of analyses. The collinearity statistics were within the recommended levels (tolerance above 0.30 and variance inflation factors below 3.3 for the model in Table 1; tolerance above 0.36 and variance inflation factors below 2.8 for the model in Table 2).

The first sensitivity analysis showed that information seeking, scanning, or physician discussion about fruit and vegetable intake—which were unrelated to psychological well-being—did not predict experience of anxiety or depression, reducing the threat that the observed main findings were due to the effects of general information seeking. Although we found a significant lagged association between engagement with physicians about emotional support and subsequent reports of psychological symptoms, there may have been some concern that this effect went both ways: that symptoms led to physician engagement. The second sensitivity analysis showed no evidence consistent with reverse causation. Self-reported anxiety or depression at round 2 was not associated with later conversations with doctors (see Table 3), increasing our confidence in the interpretation of the results.

Discussion

The results of this study offer new insights on cancer survivors' engagement with emotional support information sources and the concurrent effects of seeking and scanning on psychological well-being. First, the prevalence of physician discussions about emotional support appeared to be significantly higher than seeking and scanning from interpersonal and media sources.[4] Perhaps most importantly, nearly half of the cancer patients surveyed (44.2%) reported anxiety or depression in rounds 1 or 2, though less than one-quarter (23.8%) reported discussing these symptoms with their physicians in round 2. This finding suggests that greater opportunity may exist for engaging patients in active dialogue about emotional support in clinical settings. While the present study focuses specifically on emotional support, future research should examine whether these patterns of information engagement differ for other common forms of social support among cancer survivors (i.e., informational or tangible support; Chantler, Podbilewicz-Schuller, & Mortimer, 2005).

Second, discussion with physicians was associated with increased odds of subsequent reported feelings of anxiety and depression, but was conversely associated with a small reduction in reported symptom severity. One possible explanation is that patients who experienced these psychological symptoms chose physicians known to be more successful at

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[4]The observed difference may be attributable to how physician engagement was measured. This particular survey item did not differentiate between physician discussions that were actively sought versus scanned. Accordingly, comparisons should be interpreted with caution.

offering emotional support and, consequently, experienced less daily interference. It is equally likely that physician discussions led to an increased awareness of psychological symptoms among cancer survivors at a lower threshold or degree of anxiety/depression. Such heightened awareness may have enabled survivors to seek help earlier, thus reducing the likelihood that symptoms interfered with daily activities over time. Nevertheless, increased awareness of these symptoms could also be reasonably interpreted as a negative outcome, especially for patients who did not receive or respond to subsequent psychological care.

In any case, had we only examined the variables in Table 1, we might have inferred that doctor conversations about emotional support have only negative effects on patients' psychological well-being; however, results from Table 2 suggest that increased engagement with emotional support information provided by physicians may actually have some positive consequences on quality of life. These findings have implications for survey design and demonstrate the importance of including additional measures for guiding the interpretation of patient-reported data related to depression or anxiety in the absence of clinical indicators (e.g., prescription drug use).

Though not as common as physician discussions, seeking and scanning were not rare. Of note, scanning emotional support information from media sources occurred more frequently than seeking from media sources. As with physician discussions, scanning from media was a significant positive predictor of self-reported anxiety or depression; however, scanning was not associated with lower severity of these symptoms. One potential explanation is that while talking to physicians and scanning the media for emotional support both may increase the salience of psychological symptoms, the former behavior is essentially an opportunity for active dyadic interaction to help manage these feelings whereas the latter is more passive and unidirectional.

In light of these results, information about emotional support may be most successful at mitigating the debilitating effects of anxiety and depression when disseminated through routine clinical practice. While physicians have a responsibility to convey medical information to their patients, it is also important to consider the effects of increased emotional support on both the mental and physical health of patients. Future research should examine whether communication interventions based on these findings may improve cancer survivors' quality of life.

Several strengths of this study can be attributed to the survey's design. Multiple rounds of data collection allowed for longitudinal analyses and, consequently, the temporal order of the observed associations could be established. Furthermore, our sensitivity analyses suggested that the rival explanation of reverse causation was unlikely. Second, the lagged multiple regression models, which adjusted for prior psychological symptoms, reduced the potential threat of numerous confounders.[5] Finally, the population-based data including patients diagnosed with different cancer types increased the representativeness of our sample in contrast to convenience samples drawn in other studies (e.g., within clinics or hospitals) that tend to focus on patients with a specific cancer type.

One limitation of this study was its reliance on patient reports of emotional symptoms and information engagement, both of which might be subject to recall biases. We assessed anxiety and depression using a dichotomous single-symptom approach rather than more complex continuous instruments (e.g., the 14-item Hospital Anxiety and Depression Scale (Bjelland, Dahl, Haug, & Neckelmann, 2002)). Future studies may consider replicating these findings with the presence of clinically diagnosed mood disorders from respondent medical records. While the survey measures quantified the degree of psychological symptoms experienced (i.e., our second dependent variable), our ability to fully capture the intensity of the independent variable – information engagement – was limited by the use of binary measures.

Also, the nature and content of discussions with physicians were not assessed in this study. Future research may address this missing link by observing and recording doctor-patient interactions and qualitatively describing the nature of conversations about emotional support. Then, cancer survivors and their physicians may be better equipped with effective communication tools to promote positive self-perceptions and coping strategies.

In sum, this study offers novel insight into the prevalence and effects of engagement with emotional support information among cancer survivors across various sources. The results suggest that scanned emotional support may play a larger role in survivors' experience than assumed by prior work in this area, which tends to focus on doctor-patient interactions and/or active information seeking. Future studies should therefore consider including multiple measures of information engagement to avoid omitting important ways cancer survivors encounter and are affected by the broader information environment.

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[5]We conducted an additional sensitivity analysis to ensure that the observed effects could not be attributed to an oversampling of stage IV and metastatic patients. In this study, these two indicators of disease severity were not significant predictors; however, both coefficients tended toward the positive direction, suggesting that this group may have a higher tendency to experience emotional symptoms. So, we filtered out these patients (n=184) and re-ran the same set of analyses on non-stage IV, non-metastatic patients. As expected, the effects of physician discussions and media scanning on anxiety/depression for this subpopulation was slightly reduced in strength, but remained positive and statistically significant (results not shown), which reinforces our original results.

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Table 1

Logistic Regression Analysis of Predicting Round 3 Self-Reported Anxiety or Depression (N=1,128)

	OR	95% CI
Information engagement[a]		
Seeking from other people	1.35	0.79 – 2.31
Seeking from media sources	0.64	0.32 – 1.27
Scanning from other people	1.04	0.61 – 1.77
Scanning from media sources	1.72[*]	1.03 – 2.87
Discussion with doctor	1.58[*]	1.06 – 2.35
Self-reported psychological symptoms		
Anxiety/depression at either round 1 or 2	5.80[***]	4.15 – 8.11
Lerman Cancer Worry Scale[a]	1.63[***]	1.33 – 2.00
Cancer-related variables		
Cancer type		
Colon (female)	1.00	
Colon (male)	0.80	0.46 – 1.38
Breast	0.95	0.57 – 1.60
Prostate	1.07	0.60 – 1.92
Type of treatment received		
Surgery	1.18	0.72 – 1.94
Radiation therapy	1.16	0.80 – 1.67
Chemotherapy or hormonal therapy	0.95	0.65 – 1.39
Cancer stage		
Stage 0–II	1.00	
Stage III	1.55	0.94 – 2.57
Stage IV	1.17	0.58 – 2.37
Change in disease status	1.41	0.83 – 2.39
Health status[a]	0.81[*]	0.67 – 0.97
Sociodemographic characteristics		
Age at diagnosis	0.99	0.97 – 1.00
Education level		
High school and below	1.00	
Some college and above	1.02	0.75 – 1.38
Race/ethnicity		
Non-Hispanic White	1.00	
Non-Hispanic African American	1.15	0.70 – 1.89
Hispanic or other	1.16	0.56 – 2.43
Married[a]	0.65[*]	0.46 – 0.93

Note. OR = odds ratio; 95% CI = 95% confidence interval.

[a]Measured at round 2

*
$p < 0.05$;

***
$p < 0.001$

Table 2

Linear Regression Analyses Predicting Round 3 Level of Interference with Daily Activities by Self-Reported Anxiety or Depression (N=476)

	b	**95% CI**
Seeking from other people	−0.026	−0.304 – 0.253
Seeking from media sources	0.337	−0.011 – 0.684
Scanning from other people	−0.099	−0.366 – 0.168
Scanning from media sources	−0.145	−0.405 – 0.114
Discussion with doctor	−0.247[*]	−0.440 – −0.055

Note. b = unstandardized coefficients; 95% CI = 95% confidence interval. This model examined the predictive effects of discussion with doctor about emotional support information at round 2 on self-reported interference of anxiety or depression on daily activities at round 3 among those who reported these symptoms in round 3, controlling for engagement with other information sources about emotional support, demographic characteristics, cancer-related variables and self-reported psychological symptoms.

[*]
$p < 0.05$

Table 3

Sensitivity Analysis Predicting Round 3 Discussion with Doctor (N=1,128)

	OR	95% CI
Discussion with doctor[a]	5.45***	3.67 – 8.11
Anxiety/depression[a]	1.20	0.78 – 1.84
Lerman Cancer Worry Scale[a]	1.02	0.81 – 1.29
Cancer type		
Colon (female)	1.00	
Colon (male)	0.64	0.34 – 1.24
Breast	1.20	0.66 – 2.17
Prostate	0.82	0.42 – 1.60
Type of treatment received		
Surgery	1.20	0.65 – 2.23
Radiation therapy	1.10	0.71 – 1.70
Chemotherapy or hormonal therapy	0.98	0.61 – 1.56
Cancer stage		
Stage 0–II	1.00	
Stage III	2.22*	1.28 – 3.85
Stage IV	1.71	0.84 – 3.52
Change in disease status	1.30	0.75 – 2.26
Health status[a]	1.00	0.80 – 1.23
Age at diagnosis	1.00	0.98 – 1.02
Education level		
High school and below	1.00	
Some college and above	0.87	0.60 – 1.24
Race/ethnicity		
Non-Hispanic White	1.00	
Non-Hispanic African American	1.51	0.84 – 2.72
Hispanic or other	0.65	0.21 – 2.04
Married[a]	1.09	0.72 – 1.64

Note. OR = odds ratio; 95% CI = 95% confidence interval.

[a]Measured at round 2.

*$p < 0.05$;

***$p < 0.001$