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Goal Disturbance in Early-Stage Breast Cancer Survivors

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Abstract

Purpose: Cancer-related goal disturbance can influence long-term outcomes in cancer patients and survivors; however, few studies have examined the factors that contribute to goal disturbance in early survivorship.

Design: The current study examined the relationships between demographic variables, cancer- and treatment-related factors, and behavioral and psychological symptoms (i.e., fatigue, pain, cognitive complaints, depressive symptoms, and anxiety) and goal disturbance in breast cancer survivors 1 year after treatment completion.

Methods: Women diagnosed with early-stage breast cancer (n = 171) completed assessments following treatment (i.e., surgery, radiation, chemotherapy) and again 6 months and 1 year later. We focused on the 1-year post-treatment assessment when participants were asked if they had experienced a cancer-related goal disturbance.

Findings: Approximately 27% of women reported a cancer-related goal disturbance. Analyses indicated that both receipt of chemotherapy and behavioral and psychological symptoms—analyzed as a composite score and individually—were associated with a higher probability of reporting a goal disturbance.

Conclusions: Chemotherapy and behavioral and psychological symptoms were unique correlates of goal disturbance, suggesting that the impact of chemotherapy extends beyond its influence on persistent symptoms.

Implications: Elucidating factors that inhibit the pursuit of meaningful activities in early survivorship is critically important to understanding the long-term psychosocial impacts of cancer diagnosis and treatment.

Keywords

behavioral symptoms; breast cancer; early survivorship; goal disturbance

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Cancer diagnosis and treatment represent a sudden, significant life-course disruption and may threaten important life goals.[1] Studies suggest that receiving a cancer diagnosis can impact both goal characteristics (e.g., goal content, type, or perceived attainability) and goals processes (e.g., disturbance or loss of important goals). Cancer patients, for example, report fewer materialistic goals following a diagnosis[2], fewer long-term goals[3], and more health-related goals.[4] Further, patients also report feeling less likely to attain important life goals.[4,5] When a goal becomes unattainable individuals may experience significant distress.[6] Indeed, cancer patients who find it difficult to disengage from disrupted goals (e.g., having a second child) and to re-engage with new life goals (e.g., adopting a second child) evidence worse physical and emotional health[6,7], and patients who perceive their goals to be less attainable report greater symptoms of depression and anxiety.[8]

Though this growing literature suggests that cancer can influence a variety of goal characteristics and processes relevant for well-being, few studies have examined these relationships in the months and years after the completion of treatment in adult-onset cancer survivors.[9] With advances in diagnosis and treatment, survival times for many cancers are increasing. For women diagnosed with early-stage breast cancer, for example, 5-year survival rates are now above 90%.[10] As prognoses continue to improve, it is imperative to identify individuals who may be at risk for adverse long-term outcomes; examining goal processes and, in particular goal disturbance, may prove to be valuable. Though several studies have examined goal disturbance—also termed goal interference, goal disruption, and illness-related hindrance—in cancer patients,[9] a clear definition of the term is lacking. Here, we define cancer-related goal disturbance as halting or reducing one's efforts toward an important life goal as a result of cancer diagnosis and treatment. These disturbances are common in the immediate aftermath of diagnosis and early treatment, both of which pose an acute threat to meaningful life goals (e.g., having to take time off work for cancer treatments and associated side effects[11]). When compared to healthy controls, for instance, cancer patients are more likely to report that their health negatively impacts the attainment of meaningful life goals.[12] However, little is known about whether cancer-related goal disturbances persist into early survivorship, when individuals no longer face the acute demands of treatment and begin to resume previous meaningful activities, such as returning to work.[11,13] In addition, there has been minimal examination of factors that may influence persistent goal disturbance, though illuminating these is critically important for understanding adjustment during early survivorship.

A number of factors may influence cancer-related goal disturbance in survivors. Age at diagnosis, for example, may influence the extent to which one's goals are disrupted by the cancer experience.[12] In particular, breast cancer may lead to more goal disturbance for younger women, who report that cancer has more impact on their lives and are more distressed by a cancer diagnosis[14,15], even years after successful treatment.[16] Indeed, in a sample of women with metastatic breast cancer, younger patients reported greater cancer-related goal disturbance.[17] Disease- and treatment-related factors, such as stage of cancer and type of treatment received, may also influence goal disturbance in survivors. In a study of colorectal cancer patients, stage of cancer was associated with cancer-related goal disturbance both following initial diagnosis and 6 months later; patients with less than an

80% chance of survival reported the most cancer-related goal disturbance.[18] Chemotherapy and other adjuvant treatments may also influence goal pursuits, given the duration of these therapies and their impact on physical functioning.[19] However, there has been minimal examination on whether these therapies influence long-term goal-related processes in cancer survivors.

Behavioral and psychological symptoms that manifest because of cancer and ensuing treatment are another potential contributor to goal disturbance in cancer survivors.[20,21] Fatigue, pain, cognitive complaints, depressive symptoms, and anxiety are among the most commonly reported side effects [22–25] and may persist for months or years after successful treatment.[26,27] These symptoms influence daily functioning [28–30] and may hinder one's ability to engage in meaningful activities. Despite a growing body of research on the prevalence and impact of behavioral and psychological symptoms in early-stage breast cancer survivors, only one study, to date, has examined the relationship of behavioral symptoms with cancer-related goal disturbance in breast cancer survivors.[31] In a sample of 43 early-stage breast cancer patients, cross-sectional analyses at 2-, 4-, and 6-months post-surgery revealed that women who experienced greater physical symptom burden also reported more cancer-related goal disturbance. Pain, lack of energy, sleep disturbances, and cognitive complaints were among the most commonly reported side effects. Of note, most women in this study were undergoing adjuvant treatment at the follow-up assessments, when symptoms are at their peak. Though studies have examined health-related interference in cancer patients[4,31] and young adult survivors of pediatric cancer[32], the relationship between individual symptoms and cancer-related goal disturbance during early survivorship has, to our knowledge, yet to be examined.

In the current study, we sought to characterize the experience of goal disturbance in early-stage breast cancer survivors 1 year after the completion of treatment. Although most women show recovery of treatment-related behavioral and psychological symptoms in the year after treatment completion[22] and return to work and normal activities,[33] some experience more persistent effects of cancer diagnosis and treatment. However, little is known about how these enduring effects may relate to goal disturbance, particularly during the re-entry phase of early survivorship. Based on previous literature, we hypothesized that younger age, higher cancer stage, treatment with chemotherapy, and severity of behavioral and psychological symptoms would be associated with a greater likelihood of reporting a cancer-related goal disturbance 1 year post-treatment. Thus, we examined the prevalence of goal disturbance and evaluated potential correlates, including demographic variables, cancer- and treatment-related factors, and symptom reports (i.e., fatigue, pain, cognitive complaints, depressive symptoms, anxiety).

Method

Participants and Procedure

Data were collected as part of the Mind-Body Study (MBS), a longitudinal cohort study designed to investigate the effects of adjuvant endocrine therapy on cognitive functioning in early-stage breast cancer survivors.[34] Recruitment occurred in the Los Angeles area, and potential participants were identified through the Los Angeles County Surveillance,

Epidemiology, and End Results (SEER) registry. For details on recruitment and screening, see Ganz et al.[34,35] To be eligible for the MBS Study, women had to be 21 to 65 years of age, have received a diagnosis of stage 0, I, II, or IIIA breast cancer, and be within 3 months of treatment completion and not yet on endocrine therapy. Women were excluded if they had a prior cancer diagnosis or had previously received chemotherapy, reported a neurologic or psychotic-spectrum disorder, had a current active autoimmune or affective disorder, or reported daily use of tobacco and/or alcohol.

The Institutional Review Board at the University of California, Los Angeles approved all study procedures, and informed consent was obtained. In-person assessments were conducted at study entry (T1) and again at 6 (T2) and 12 months (T3) later. At each time point, participants provided blood samples, underwent neuropsychological testing, and completed questionnaires. Given the aims of the parent study, behavioral and psychological symptoms were assessed at all three time points; goal disturbance, however, was assessed as a supplemental measure only at T3.

Measures

Demographic and medical data.—Demographic variables, including age, income, ethnicity, education, and marital status, were collected at T1 via self-report. Treatment- and cancer-related variables, including type of treatment, date of treatment completion, and stage of cancer, were assessed via medical record review. Participants also reported current endocrine therapy status (*yes* or *no* and what type) at both T2 and T3.

Behavioral and psychological symptoms.—Behavioral and psychological side effects were assessed using reliable and valid questionnaires administered at T1, T2, and T3.

Fatigue.: Fatigue was assessed with the 30-item Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF).[36] Participants rated their level of agreement with each item on a 5-point Likert-type scale (0 = *not at all* to 4 = *extremely*) based upon symptoms experienced in the past 7 days. The general fatigue subscale was used to minimize overlap with other symptom measures; this 6-item subscale includes items assessing fatigue, tiredness, and feeling “sluggish,” with higher scores indicating more fatigue.

Pain.: Pain was assessed using the 2-item bodily pain subscale of the RAND 36-item Short Form Health Survey (SF-36).[37] Participants rated pain magnitude and level of pain interference on a 7-point Likert-type scale (0 = *none* to 6 = *very severe*) and a 6-point Likert-type scale (0 = *not at all* to 5 = *extremely*), respectively. Responses were recoded on a scale from 0 to 100 and averaged, following standard SF-36 scoring guidelines, with higher scores indicating lower pain or pain interference.[38]

Cognitive complaints.: Subjective experience of memory disturbance was measured with the 18-item Squire Subjective Memory Questionnaire (SSMQ).[39] The SSMQ is comprised of a series of open-ended statements (e.g., “My ability to recall things when I really try is…”). Participants indicated their level of (dys)function on a 9-point Likert-type scale (−4 = *worse than ever before* to +4 = *better than ever before*). Higher scores indicate fewer disturbances. Though cognitive complaints were assessed through both self-report and

neuropsychological tests, only self-report data was used in the current study, as subjective memory complaints may be a more sensitive means to detect disturbance not yet observable via objective assessment.[34]

Depressive symptoms.: Depressive symptoms were measured using the 21-item Beck Depression Inventory-II (BDI-II).[40] Participants were asked to indicate the severity of each symptom within the past 2 weeks on a 4-point Likert-type scale (0 = *not present* to 3 = *severe*). The BDI-II is comprised of 3 empirically derived subscales—affective, somatic, and cognitive.[41] To limit conceptual overlap with other symptom measures, the somatic subscale, which measures physical symptoms such as loss of energy, fatigue, and cognitive disturbance, was excluded from analyses. The 4-item affective and 9-item cognitive subscales were combined to create a total score of depressive symptoms. The affective subscale measures symptoms of anhedonia, such as loss of pleasure and loss of interest. The cognitive subscale measures maladaptive negative thoughts, such as pessimism and self-criticalness. Higher scores indicate greater depressive symptoms.

Trait anxiety.: Anxiety symptoms were measured using the 20-item trait anxiety subscale of the State-Trait Anxiety Inventory (STAI-T).[42] Participants rated the frequency in which they "generally feel" emotions related to security, contentment, and confidence using a 4-point Likert-type scale (1 = *almost never* and 4 = *almost always*). Example items include, "I feel nervous and restless" and "I worry too much over something that doesn't matter." Higher scores on the STAI-T represent greater anxiety. Though state anxiety was also measured, we used trait anxiety in the main analyses as it is a more stable measure of "anxiety proneness," whereas state anxiety is more transient and situation specific.[43,44] Of note, state and trait anxiety were highly correlated at each assessment (rs > .80, ps <.001).

Goal disturbance.—At T3, participants answered *yes* or *no* to the following question: "Women with cancer often find that they need to change some of their goals because of the cancer and its treatment. Have you had to stop pursuing or reduce your efforts toward any important life goal as a result of your cancer diagnosis and treatment?" If *yes*, participants were prompted to describe the goal and rate the importance of the goal on a 7-point Likert-type scale: "Rate how important the goal was to you at its most important" (1 = *not at all important* to 7 = *extremely important*). Two independent raters coded the disrupted goals into five categories: vocational (i.e., goals related to occupational or educational pursuits), interpersonal, financial, recreational (i.e., those pertaining to hobbies or personal passions), or other (see Table 1 for examples). Agreement between the two raters was 93%; a third rater acted as a tiebreaker.

Analytic Strategy

Bivariate analyses were conducted to determine which demographic, cancer- and treatment-related, and symptom factors were associated with goal disturbance (yes/no) using point-biserial correlations and χ^2 tests. Significant correlates were then examined with simultaneous logistic regression analyses. Because goal disturbance was assessed only at T3, the primary analyses examined behavioral and psychological symptoms at the concurrent assessment.

Behavioral and psychological symptoms were modestly intercorrelated (see Table 2); to reduce multicollinearity in a simultaneous analysis, symptom measures were standardized and summed prior to the main analyses. The symptom composite consisted of five measures: the MFSI-SF general fatigue subscale, pain subscale of the SF-36, total score on the SSMQ, summed affective and cognitive subscales of the BDI-II, and total score on the STAI-T. The SF-36 pain subscale and the SSMQ were reverse coded, so that higher composite scores indicated greater symptom severity and/or interference. Separate logistic regression analyses were also conducted for each behavioral and psychological symptom.

Following the primary analyses, exploratory analyses were conducted to examine the relationships of mean levels of behavioral and psychological symptoms across the 1-year assessment period with goal disturbance at T3. For each symptom (i.e., fatigue, pain, cognitive complaints, depressive symptoms, and anxiety), ratings from T1, T2, and T3 were averaged to create an overall index of disturbance across the year following treatment completion. Goal disturbance was then regressed on the average total score of each behavioral symptom in five logistic regression analyses.

Results

Participant Characteristics

One hundred and ninety women completed the initial assessment at T1, 175 completed questionnaires at both T2 and T3 (92% retention), and 171 completed the goal disturbance measure at T3. Demographic and treatment-related variables are reported in Table 3. At study enrollment (T1), women were, on average, 51.9 years of age and 1.2 months post-treatment completion. Most were White, married, college educated, and employed.

Goal Disturbance

Of the 171 women who completed the goal disturbance measure, 27% ($n = 46$) reported a goal disturbance. Disrupted goals were rated as highly meaningful ($M = 6.09$, $SD = 0.97$) and represented various domains. Forty-one women provided descriptions of disrupted goals, four of whom spontaneously reported more than one goal; in total, 47 disrupted goals were reported, each coded separately. Of the goals reported, 53% were vocational, 24% were interpersonal, 6% were financial, 13% were recreational, and 4% were other (see Table 1 for examples).

Predictors and Correlates of Cancer-Related Goal Disturbance

Table 3 provides an overview of bivariate associations. No demographic variable, including age, was significantly associated with goal disturbance. Of the cancer- and treatment-related variables, only chemotherapy was significantly associated with goal disturbance; $\chi^2(1) = 10.96$, $p = .001$. Among women who reported a goal disturbance, 72% had received chemotherapy; among women who did not report a goal disturbance, only 43% had received chemotherapy. As predicted, goal disturbance was associated with higher levels of fatigue ($r_{pb} = .28$, $p < .001$), pain ($r_{pb} = -.21$, $p = .005$), cognitive complaints ($r_{pb} = -.25$, $p = .001$), depressive symptoms ($r_{pb} = .23$, $p = .003$), and anxiety ($r_{pb} = .25$, $p = .001$). These

symptoms were interrelated (ps < .001; see Table 2), and the computed composite score was significantly associated with goal disturbance (r_{pb} = .31, p < .001).

Logistic Regressions Predicting Goal Disturbance

Next, a series of simultaneous logistic regressions was conducted (see Table 4). The first model included chemotherapy and a composite of behavioral and psychological symptoms, the variables correlated with goal disturbance in bivariate analyses. The overall model was significant. Both chemotherapy and the symptom composite were significant predictors of reporting a goal disturbance. For women who received chemotherapy (n = 99), the likelihood of reporting a goal disturbance was 3.07 times greater than for women who did not receive chemotherapy, over and above behavioral and psychological symptoms (95% CI [1.42, 6.65]). For each 1-unit increase in symptoms, the expected odds of reporting a goal disturbance were 1.20 times greater, adjusting for chemotherapy (95% CI [1.07, 1.26]).

To elucidate the relationship of each behavioral and psychological symptom—fatigue, pain, cognitive complaints, depressive symptoms, and anxiety—with goal disturbance, symptoms were analyzed separately in a series of logistic regression analyses. Chemotherapy was included in each model. All five models were significant (ps < .001; see Table 4); independently, each symptom was associated with an increased likelihood of experiencing a goal disturbance.

Exploratory Analysis

To examine the relationship of behavioral and psychological symptoms over the course of the first year post-treatment with goal disturbance, exploratory analyses were conducted using average scores over T1, T2, and T3 of fatigue, pain, cognitive complaints, depressive symptoms, and anxiety. In a series of logistic regression analyses, goal disturbance was regressed upon mean ratings of each behavioral and psychological symptom. Chemotherapy was included in each model. All five models were significant (ps < .01). Higher average ratings of fatigue (M = 8.60, SD = 5.06, OR = 1.12, p = .003, 95% CI [1.04, 1.21]), pain (M = 76.76, SD = 16.11, OR = 0.97, p = .004, 95% CI [0.95, 0.99]), cognitive complaints (M = −12.25, SD = 13.95, OR = 0.97, p = .04, 95% CI [0.95, 1.00]), depressive symptoms (summed cognitive and affective subscales; M = 1.79, SD = 1.82, OR = 1.24, p = .03, 95% CI [1.02, 1.50]), and anxiety (M = 35.88, SD = 9.31, OR = 1.05, p = .009, 95% CI [1.01, 1.10]) across the year following treatment were associated with a greater likelihood of experiencing a goal disturbance 1 year after treatment completion. Chemotherapy remained significant in each model (ps ≤ .01).

Conclusions

We sought to characterize the experience of goal disturbance and identify key correlates of disturbance in a cohort of early-stage breast cancer survivors. Despite the stress and distress that frequently accompanies cancer diagnosis and treatment, at 1-year post-treatment, only a quarter of survivors indicated a cancer-related goal disturbance. This proportion is low when compared to a sample of women with metastatic disease, in which 78% reported a goal disturbance.[17] Disrupted goals were rated as highly meaningful and spanned various life

domains. Of the goals stated, approximately half were vocational, suggesting that women in early survivorship experience significant disruptions in work- or education-related pursuits.

Though several demographic, cancer- and treatment-related, and symptom factors were assessed, only two correlates of cancer-related goal disturbance emerged—chemotherapy and behavioral and psychological symptoms. Both the receipt of chemotherapy and more severe symptoms were associated with greater likelihood of reporting a goal disturbance. When examined separately, fatigue, pain, cognitive complaints, depressive symptoms, and anxiety each were associated with higher likelihood of reporting a goal disturbance, at both T3 and averaged across the three time points.

These results highlight several important processes. First, findings suggest that the impact of chemotherapy extends beyond its influence on behavioral and psychological symptoms; chemotherapy emerged as a unique predictor of goal disturbance in analyses controlling for common chemotherapy-related symptoms (e.g., fatigue, cognitive disturbance[19]). There are several possible explanations. Chemotherapy can have an immediate effect on goal processes during treatment—influencing one's ability to work, pursue hobbies, and maintain social connections—and these acute disturbances may lead to longer-term impacts in survivorship. Time and resources lost due to receipt of chemotherapy may, for example, delay the pursuit of long-term goals, such as saving for retirement or getting promoted at work. Moreover, treatment with chemotherapy can influence major organ systems, potentially resulting in threats to fertility- and health-related goals. Receipt of certain types of chemotherapy, for example, can negatively affect ovarian function[45] and may be particularly consequential for women of childbearing age. Indeed, the majority of women in this sample who reported a fertility-related goal disturbance (e.g., "having a second child") had received chemotherapy.

Second, the findings highlight the importance of behavioral and psychological symptoms in early survivorship. Behavioral and psychological symptoms negatively influence both everyday activities and work engagement[28] and, through their influence on normal functioning, may impair one's ability or desire to engage with meaningful life goals. Indeed, cancer survivors experiencing fatigue report decreased motivation, impairments in physical, emotional, and social functioning, and lowered ability to maintain employment.[28] Similarly, pain hinders goal pursuits, especially in younger patients and survivors[29], and persistent cognitive disturbances can catalyze a loss of independence and frustration with job performance.[30] Rates of depression are elevated in cancer patients[24], and even subclinical levels of depressive symptoms are associated with poor outcomes, including lower quality of life in breast cancer survivors.[46] Depressive symptoms, particularly anhedonia, may interfere with interest in pursuing meaningful life goals. Further, anxiety has been shown to alter the types of goal that individuals report (e.g., avoidance versus approach)[47] and is a known correlate to perceptions of goal attainability in breast cancer patients.[8]

Younger women were not more likely to report a goal disturbance, contrary to hypotheses. This finding was unanticipated, given evidence that younger patients typically report more distress[14,15] and, in women with metastatic disease, younger age is associated with more goal disturbance.[17] However, younger women also report more positive impacts of cancer, such as post-traumatic growth[48], and may be more able to adapt following cancer diagnosis

and treatment. Longitudinal studies in varied age cohorts are needed to further understand the influence of age on goal processes.

Study Limitations

Several limitations are worthy of note. Participants were primarily White and middle-class, which likely limited our ability to identify socioeconomic factors related to goal processes. The prevalence and predictors of goal disturbance among more diverse populations are an important topic for future research. Additionally, because goal disturbance was assessed at one time point—1 year after the completion of treatment—it is unclear *when* the stated goal disturbances occurred during the cancer trajectory. This is particularly important in understanding which facets of diagnosis, treatment, or survivorship may precipitate specific goal disturbances. It is also likely that the relationship between goal disturbance and behavioral symptoms is bidirectional or even cyclical; for example, depression may interfere with interpersonal goals (e.g., finding a partner, having a second child), which may in turn perpetuate depressive symptoms. Further, it is unclear whether the disrupted goals reported were replaced with a new goal or altered in some way. Continued commitment to unattainable goals may be deleterious to overall well-being, and re-engagement with new goals following a goal disturbance is associated with lower psychological distress.[49] Thus, future longitudinal qualitative studies are warranted.

Clinical Implications

Our findings suggest that, for some women, the experience of cancer-related goal disturbance persists into early survivorship. Understanding how and for whom goal disturbance occurs in early-stage breast cancer survivors has broad implications, as goal disturbance is critically important to long-term psychosocial adjustment. Further understanding the precursors of cancer-related goal disturbance may also provide targets for interventions. Indeed, several existing interventions address goal-related process and may be useful for survivors who are particularly at risk, though this has yet to be tested. Meaning-making interventions, for example, emphasize the development and management of important life goals as a means of coping with one's cancer experience[50] and goal-specific interventions have been used in individuals with chronic illness to facilitate navigation of disrupted goals.[51] As goal processes are associated with both physical and mental well-being in longitudinal studies of breast cancer patients[7,52], further development and evaluation of interventions, such as these, would contribute to the goal of enhanced well-being for the millions of survivors living beyond breast cancer.

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Table 1:

Examples of Disrupted Goals Reported at T3 by Category

Goal Category	Examples
Vocational	“expanding my business” “running my own design business”
Interpersonal	“having a second child” “more time with family”
Financial	“paying off my mortgage in 2 years”
Recreational	“long distance/fast bike riding” “competing in a ballroom dance competition”
Other	“moving to a foreign country” “stay in Hawaii”

Table 2:

Bivariate Correlations Between Symptoms at 1-Year Post-Treatment (T3)

	1	2	3	4	5	6
1. Fatigue	1					
2. Pain	−.48***	1				
3. Cognitive Complaints	−.46***	.30***	1			
4. Depressive Symptoms Total	.63***	−.51***	−49***	1		
5. Depressive Symptoms Without Somatic Subscale	.51***	−.44***	−.43***	.92***	1	
6. Trait Anxiety	.58***	−.43***	−.44***	.77***	.77***	1

*** Note. $p < .001$

Table 3

Sample Characteristics According to Goal Disruption Response

		Goal Disruption		
Characteristic	**All (*n* = 171)**	**Yes (*n* = 46)**	**No (*n* = 125)**	***p*-value**
Mean Age[a] (*SD*)	51.90 (8.09)	52.05 (8.84)	53.39 (7.75)	.34
Ethnicity[b]				.94
White	78%	76%	79%	
Hispanic	10%	11%	10%	
Black	3%	4.3%	2%	
Asian	5%	4.3%	6%	
Other	4%	4.3%	3%	
Employment[b]				.55
Employed	64%	59%	66%	
Not Employed	36%	41%	34%	
Income[b]				.18
< $1000,000	37%	48%	33%	
>$100,000	61%	50%	66%	
Education[b]				.22
Less than a college degree	19%	22%	22%	
College degree	29%	30%	30%	
More than a college degree	52%	49%	49%	
Married/Partnered[b]				.83
Yes	67%	65%	66%	
No	34%	35%	33%	
Chemotherapy[b]				.001
Yes	51%	72%	43%	
No	49%	28%	57%	
Radiation[b]				.97
Yes	74%	74%	74%	
No	26%	26%	26%	
Endocrine Therapy at T3[b]				.73
Yes	30%	26%	29%	
No	70%	74%	71%	
Cancer Stage[b]				.18
0	15%	13%	15%	
1	46%	35%	50%	
2	30%	37%	28%	
3	9%	7%	15%	
Behavioral Symptoms at T3, mean (*SD*)[a]				

		Goal Disruption		
Characteristic	**All (*n* = 171)**	**Yes (*n* = 46)**	**No (*n* = 125)**	***p*-value**
Fatigue (MFSI-SF general subscale)	8.45 (5.97)	11.20 (6.38)	7.46 (5.52)	< .001
Pain (SF-36 pain subscale)[c]	77.87 (19.19)	70.78 (24.74)	80.04 (16.33)	.005
Cognitive Complaints (SSMQ total)[c]	−14.01 (15.56)	−20.56 (17.60)	−11.66 (14.10)	.001
Depressive Symptoms (BDI-II total)	8.82 (6.98)	11.61 (8.12)	7.82 (6.26)	.002
Trait Anxiety (STAI-T total)	36.69 (10.59)	41.22 (11.78)	35.20 (9.87)	.001

Note. Data collected at T1 unless otherwise noted. For behavioral symptoms at T3, 45 of 170 women reported a goal disruption.

[a] point-biserial correlation

[b] χ^2 test of independence

[c] lower scores indicate more severe symptoms

Table 4:

Logistic Regression Models of Significant Correlates of Goal Disruption at 1-Year Post-Treatment (T3)

	B	*SE*	Wald	df	*p*-value	Exp(*B*)	95% CIs
Symptom Composite: $\chi^2(2) = 24.85$, $p < .001$							
Chemotherapy	1.12	0.39	8.15	1	.004	3.07	[1.42, 6.65]
Overall Symptoms	0.15	0.04	13.21	1	< .001	1.16	[1.07, 1.26]
Fatigue: $\chi^2(2) = 23.41$, $p < .001$							
Chemotherapy	1.24	0.39	9.84	1	.002	3.45	[1.59, 7.46]
Fatigue	0.11	0.03	12.04	1	.001	1.12	[1.05, 1.19]
Pain: $\chi^2(2) = 19.59$, $p < .001$							
Chemotherapy	1.31	0.39	11.07	1	.001	3.70	[1.71, 8.01]
Pain	−0.03	0.01	8.74	1	.003	0.97	[0.96, 0.99]
Cognitive Complaints: $\chi^2(2) = 16.87$, $p < .001$							
Chemotherapy	0.95	0.39	6.00	1	.014	2.59	[1.21, 5.55]
Cognitive Complaints	−0.03	0.01	6.12	1	.013	0.97	[0.95, 0.99]
Depressive Symptoms: $\chi^2(2) = 17.41$, $p < .001$							
Chemotherapy	1.10	0.38	8.25	1	.004	3.00	[1.42, 6.36]
Depressive Symptoms[a]	0.11	0.04	6.68	1	.010	1.12	[1.03, 1.21]
Trait Anxiety: $\chi^2(2) = 19.83$, $p < .001$							
Chemotherapy	1.14	0.39	8.74	1	.003	3.12	[1.54, 7.11]
Trait Anxiety	0.05	0.02	8.79	1	.003	1.05	[1.03, 1.11]

[a]*Note*. excluding the somatic subscale