



Original Research

Employment Concerns and Associated Impairments of Women Living With Advanced Breast Cancer



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KEYWORDS

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Abstract Objective: To describe the clinical and personal factors associated with work status, distress regarding work status, and the desire to resume employment and receive help to address work challenges reported by women living with advanced breast cancer.

Design: Descriptive statistics and univariate and multivariate logistic regression were used to explore factors related to employment challenges in this secondary analysis of an existing dataset.

Setting: Participants were recruited from an outpatient oncology clinic specializing in breast cancer at a free-standing comprehensive cancer center.

Participants: English-speaking women older than 18 years living with metastatic breast cancer with intact mental status and Karnofsky Performance Scale scores between 40 and 90 (N=163).

Intervention: Not applicable.

Main Outcome Measures: Dependent variables included (1) continued employment if working at the time of cancer diagnosis; (2) interest in resuming employment if working at the time of

List of abbreviations: 6MWT, 6-minute walk test; BPI, Brief Pain Inventory; EMR, electronic medical record; KPS, Karnofsky Performance Scale; MOS, Medical Outcomes Study; OR, odds ratio; PF-10, Physical Function-10.

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cancer diagnosis and now no longer working; (3) distress regarding vocational limitations; and (4) interest in receiving help to resume work.

Results: Seventy percent of the sample was working before their cancer diagnosis ($n=114$), yet only 21% ($n=35$) was working when surveyed. Lower functional status and higher symptom burden were strongly and consistently associated with lack of work retention, distress related to vocational role limitations, and desire for help in addressing limitations (all P values $<.01$).

Conclusions: With more people living longer with metastatic cancer, there is a need to assess and support survivors' desire and capacity to maintain employment. Participants' reduced employment was strongly associated with potentially actionable clinical targets (ie, higher symptom burden and lower functional status) that fall within cancer rehabilitation's mission.

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The number of women living with advanced breast cancer is increasing due to improvements in cancer treatment, leading to longer median and 5-year survival rates.¹ Advanced cancer survivors often have a high symptom burden from cancer progression or ongoing therapies, which can adversely affect employment.² In a recent study of 668 survivors living with advanced cancer, over half of the sample reported instability in work status after a diagnosis of advanced cancer.³ Improved survival rates for individuals with advanced disease underscore the importance of addressing employment needs and work ability among this growing population.

Employment may be important to many cancer survivors living with advanced disease for both financial and social reasons.³ The risks for financial hardship to cancer survivors are increasing as the costs of cancer treatments continue to increase.⁴ The term *financial toxicity* has been used to describe the harmful personal financial burden faced by cancer survivors receiving treatment.⁵ For example, having a cancer diagnosis has been associated with a 2.65 greater likelihood of declaring personal bankruptcy.⁶ High out of pocket expenditures during cancer treatment may contribute to severe financial distress among cancer survivors, which can affect compliance with treatment⁵ and overall survival.⁶ Beyond financial necessity, employment is an important dimension of quality of life for many cancer survivors.⁷ Individuals living with advanced cancer may continue to work for a variety of nonfinancial reasons including maintaining social relations and seeking a sense of normalcy.³

There is a call for research regarding scalable and sustainable ways to improve work outcomes for all cancer survivors.⁸ However, the current state of knowledge provides little guidance about the nature of interventions that would be required to improve work outcomes in cancer survivors. Little is currently known about the determinants of prolonged work absence or the determinants of occupational reintegration in cancer survivors. These knowledge gaps will necessarily impede efforts to develop evidence-informed approaches to improving work outcomes in cancer survivors. Further, the employment needs and challenges of advanced cancer survivors are likely to differ from those of people whose disease is likely to be cured. As such, there is a specific need for descriptive research on the employment challenges and needs of adults living with

advanced cancer that could guide intervention development for this population.³

A secondary analysis of an existing dataset⁹ allowed us to explore employment and productivity issues reported by 163 women with Stage IV breast cancer. These analyses examined associations of demographic, clinical, and cancer-related characteristics with patients' (1) continued employment if working at the time of cancer diagnosis; (2) interest in resuming employment if working at the time of cancer diagnosis and no longer working; (3) distress regarding vocational limitations; and (4) interest in receiving help to reenter the work force.

Methods

Ethics declaration

The study was approved by the Institutional Review Board of Memorial Sloan-Kettering Cancer Center and all participants provided written informed consent.

Participants

A consecutive sample of patients receiving outpatient treatment was enrolled from a breast cancer clinic imbedded in a free-standing, urban National Cancer Institute-designated Comprehensive Cancer Center. Recruitment and data collection occurred in July and August of 1999. Potential participants, 18 years of age or older, were approached prior to oncology care team appointments (for either follow-up care, or chemotherapy, or intravenous bisphosphonate treatments). Patients were eligible if they had (1) pathology- or imaging-confirmed metastatic breast cancer; (2) a Karnofsky Performance Scale (KPS)¹⁰ score between 40 and 90; and (3) an intact cognition as assessed by the Mini-Mental State Examination. They were also required to be fluent in English. Disease status was determined by electronic medical record (EMR) review, communication with treating oncologists, and imaging studies.

Data collection

Data were collected from the EMR, clinician-administered physical evaluation, and patient self-report.

Electronic medical record

Cancer treatment histories, diagnostic and imaging test results, consultation reports, and KPS scores were obtained through review of the EMR and supplemented with patient interviews.

Clinician-administered evaluation

A standard musculoskeletal and neurologic examination was performed which included range of motion, limb volumes, and evaluation of cranial nerves, sensory modalities, muscle strength, deep tendon reflexes, gait, and coordination, and the 6-minute walk test (6MWT).¹¹ Shortness of breath experienced during the 6MWT was rated on an adjectival asymmetric rating scale.

Physical impairments, including lymphedema of arm or leg, aerobic deconditioning, moderate-severe chemotherapy-induced peripheral neuropathy, myelopathy, and focal limb weakness, were identified based on the physical examination and 6MWT. Generalized strength deficits in the absence of a confirmed neurologic or myopathic source were attributed to deconditioning. Similarly, exertional intolerance or dyspnea in the absence of cardiac or pulmonary dysfunction was attributed to aerobic deconditioning.

The FIM is a clinician-rated assessment tool that has been shown to be sensitive to changes in functional status during inpatient cancer rehabilitation.^{12,13} The scale includes 18 items and produces scores ranging from 18 to 126 with each item having 7 ordinal response options that increase from 1 (total dependence) to 7 (total independence). The FIM mobility subscale is composed of 5 items that assess transfers, walking, and stair climbing. The FIM cognitive subscale is composed of items that assess comprehension, expression, social interaction, problem solving, and memory.

Patient-reported outcomes

A member of the research team reviewed participants' questionnaires for missing values. If a research assistant detected absent responses, they requested that the participant provide the data.

Older Americans Resource Study. The Older Americans Resource Study social or financial resources, activities of daily living, and instrumental activities of daily living subscales contain 15, 7, and 7 items, respectively. Reports indicate that both subscales are responsive and valid among cancer populations.¹⁴⁻¹⁶ Higher scores indicate greater independence and social/financial reserves.

Physical Function-10. The Physical Function-10 (PF-10) was used to assess limitations of mobility. The PF-10 is a subsection of the Medical Outcomes Study 36-Item Short-Form Health Survey from the Medical Outcomes Study (MOS version 1) and has excellent psychometric performance parameters when administered to patients with cancer.¹⁷ Higher scores indicate greater physical function, scores range from 0 to 100 with 0 being severe disability, and 100 representing no limitations, high fitness ability.

Brief Pain Inventory. The Brief Pain Inventory (BPI) is composed of 11-point numeric rating scale scores for average, least, and worst pain, as well as 7 pain interferences items, also assessed with numeric rating scales. The BPI is widely used to assess cancer populations and is considered to be valid, reliable, and responsive.¹⁸ Higher scores reflect worse pain.

Mental Health Inventory-17. The Mental Health Inventory-17 is a validated assessment tool that includes items from the MOS.¹⁷ Scores range from 0 to 100. Higher scores indicate better mental health.

Role limitations due to physical health. The role limitations due to physical health is a quality-of-life domain examined by the MOS Core¹⁷ measure that consists of 7 items scored Yes/No relating to limitations in work and other regular activities during the past 4 weeks. Answers of yes indicate limitations.

Preexisting impairments. Participants were queried as to whether impairments were present prior to their diagnosis with Stage IV breast cancer.

Distress and interest in rehabilitation. Participants were queried regarding their distress related to vocational role performance (Likert scale) and their interest in receiving help to address these limitations (binary). The items that assessed distress and interest in rehabilitation services were developed for this study. Efforts to assess their psychometric performance included review by clinical content experts to establish face validity and cognitive interviews conducted with a purposive sample of 15 patients: 5 with brain metastases, 5 with no known neural involvement by their cancer, and 5 with self-endorsed *cognitive slowing related to chemotherapy*. This approach was also applied to the queries related to participants' employment status and exercise status, detailed below.

Employment status. Participants were asked "Are you currently working at a paying job?" and "Were you working at a paying job when diagnosed with cancer that had spread beyond your breast and armpit?" Participants were also asked whether they experienced a number of challenges during productive activities (yes/no; see [table 1](#) for questions).

Exercise status. To assess participants' exercise activity at the time of evaluation, they were asked, "Do you currently exercise regularly?"

Analysis

Descriptive statistics were calculated for participants' demographic and clinical characteristics. Proportions and means were used to describe categorical and continuous data, respectively. Univariate logistic regression models were constructed to estimate associations between participant characteristics and (1) being currently employed if working prior to diagnosis ($n=114$); (2) wanting to resume work if working prior to diagnosis but currently not working ($n=80$); (3) being distressed regarding vocational limitations irrespective of employment status ($N=163$); (4) interest in receiving help from health care professionals to address vocational limitations ($n=161$ due to missing data). Multivariate logistic regression models were constructed using the results of the univariate models. Variables were sequentially added starting with those that had the lowest Wald test P values in the univariate models. The retention threshold was $P \leq .10$. To assess the robustness of the multivariate model, automated forward and backward stepwise regression were performed. Akaike information criteria were compared across the 3 models, and the original *manually* constructed model,

Table 1 Proportion of participants endorsing challenges during productive activities (N=163)

As a result of your health, have you...	Number responding yes n (%)
Accomplished less than you would like?	122 (75)
Taken frequent rests when doing work or other activities?	116 (71)
Cut down the amount of time you spent on work or other activities?	115 (71)
Been limited in the kind of work or other activities?	111 (68)
Had difficulty performing the work or other activities (eg, it took extra effort)?	101 (62)
Not done work or other activities as carefully as usual?	81 (50)
Required special assistance (the assistance of others or special devices) to perform these activities	72 (44)

the most parsimonious, was retained. Covariates fell into 5 subgroups: demographics (age, living situation), cancer characteristics (presence of lung, brain, bone, or liver metastases; duration living with metastatic disease), treatment characteristics (total past or present chemotherapy regimens; total past or present courses of radiation treatment), impairments (aerobic deconditioning, lymphedema of arm or leg, aerobic deconditioning, moderate-severe chemotherapy-induced peripheral neuropathy, myelopathy, focal limb weakness), and patient- and clinician-rated outcomes (current exercise behaviors; distress regarding vocational, mobility, and activities of daily living limitations; Older Americans Resource Study; BPI; Mental Health Inventory-17; PF-10; and FIM). Because all questionnaires were reviewed by research assistants and participants were requested to provide any absent responses, there were virtually no missing data and imputation was not required. All analyses were performed using STATA v14.0.^a

Results

Participants

About 212 women were screened for eligibility. Thirty-one were ineligible due to insufficient English fluency and 18 declined to enroll. The 49 patients who were ineligible or declined to enroll were more likely to be of Asian descent (73% of excluded women vs 2.5% of enrolled women), but otherwise did not differ from the 163 women who enrolled in the study.

Participant characteristics are presented in [table 2](#) (N=163). Most of the sample was white (70%) or black

Table 2 Participant characteristics (N=163 women)

Characteristic	Mean ± SD	n (%)
Age	56.2±1.2	
Race/ethnicity		
White		115 (70)
Black		31 (19)
Asian		4 (8)
Hispanic		13 (3)
Living situation		
Alone		32 (20)
With spouse		85 (52)
With other family		46 (28)
Stage IV at diagnosis		43 (26)
Duration stage IV (mo)	30.3±27.4	
Number of metastatic sites		
1-2		79 (49)
>2		84 (51)
Metastatic sites		
Bone		131 (80)
Liver		88 (54)
Lung		88 (54)
Brain		18 (11)
Current regimen		
Hormonal therapy		24 (15)
Chemotherapy		98 (60)
Other		30 (18)
None		11 (7)
Number of different chemotherapy regimens	3.2±2.1	
Radiation for metastases		
None		87 (53)
1		42 (26)
≥ 2		34 (21)
PF-10 score (0-100)	47.0±31.7	
FIM total	115.3±12.5	
FIM mobility	30.2±5.8	
FIM cognition	34.9±1.0	
Preexisting physical impairments		10 (6)
Number of physical impairments	3.2±2.0	

NOTE. Physical impairments include lymphedema of arm or leg, aerobic deconditioning, moderate-severe chemotherapy-induced peripheral neuropathy, myelopathy, and focal limb weakness.

(19%). Slightly more than half (52%) lived with a spouse. The women in the sample had been living with advanced disease for 2.5 years, on average, and approximately one-quarter (26%) of the sample had advanced disease on diagnosis. Only 10 women (6%) had physical impairments that existed before their cancer diagnosis.

The mean number of physical impairments when surveyed was 3.2 (SD=2). The cohort ranged widely in physical function as reflected in the PF-10 scores spanning 0, consistent with severe disability, to 100, consistent with high fitness levels and no appreciable limitations. Mean and median PF-10 scores were 47 and 45, respectively. The top quartile had scores of 100, whereas the bottom quartile had scores of 20 or less.

Table 3 Univariate logistic regression analysis summary of factors associated with employment status and attitude

Variables	What Is Associated With Being Currently Employed?			What Is Associated With Wanting to Resume Working?			What Is Associated With Distress Over Vocational Limitations?			What Is Associated With Interested in Receiving Help to Deal With Vocational Limitations?		
	Coefficient	95% confidence interval	P	Coefficient	95% confidence interval	P	Coefficient	95% confidence interval	P	Coefficient	95% confidence interval	P
Demographics												
Age	0.96	0.92-1.00	.06	0.92	0.88-0.97	.003*	0.95	0.92-0.98	.001*	0.96	0.93-0.99	.01*
Live alone	2.04	0.77-5.43	.15	0.39	0.11-1.35	.14	0.43	0.16-1.11	.08	0.40	0.14-1.12	.08
Cancer characteristics												
Duration living with metastatic disease	1.00	0.99-0.99	.02*	1.00	1.00-0.99	.48	1.00	1.00-1.00	.29	1.00	1.00-1.007	.36
Metastatic sites												
Lung	0.53	0.24-1.20	.13	1.90	0.72-4.98	.19	1.40	0.72-2.73	.33	1.76	0.88-3.56	.11
Liver	0.42	0.19-0.95	.04*	1.49	0.57-3.91	.42	0.89	0.46-1.71	.72	1.08	0.55-2.13	.83
Bone	1.26	0.45-3.53	.66	1.26	0.41-3.91	.69	1.25	0.53-2.93	.61	1.30	0.54-3.15	.56
Brain	0.12	0.02-0.95	.05*	1.47	0.42-5.09	.55	1.84	0.68-4.97	.23	1.82	0.65-5.11	.26
Treatment characteristics												
Number of chemotherapy regimens	0.58	0.44-0.78	<.001*	0.98	0.78-1.24	.87	1.10	0.94-1.29	.24	1.18	1.00-1.39	.06
Number of radiation therapy courses	0.44	0.26-0.75	.002*	0.86	0.60-1.22	.39	1.50	1.12-2.00	.006*	1.38	1.02-1.85	.04*
Impairments												
Neuropathy	0.30	0.11-0.87	.03*	1.02	0.38-2.72	.98	1.50	0.74-3.05	.027	1.44	0.69-3.01	.33
Aerobic deconditioning	0.32	0.12-0.86	.03*	3.86	1.27-11.74	.02*	2.31	1.165-4.61	.02*	2.81	1.38-5.72	.004*
Lymphedema	0.34	0.14-0.80	.01*	0.45	0.17-1.22	.12	1.55	0.80-3.01	.20	0.93	0.47-1.83	.82
Myelopathy	1.00		Omitted	1.43	0.35-5.83	.061	2.72	0.87-8.55	.09	4.47	1.38-14.49	.01*
Radiculopathy	1.18	0.10-13.49	.89	0.44	0.03-7.41	.57	6.73	0.68-66.38	.10	7.70	0.78-76.07	.08
Patient-rated outcomes												
BPI total	0.73	0.60-0.89	.002*	1.05	0.90-1.23	.55	1.24	1.10-1.40	<.001*	1.26	1.12-1.43	<.001*
MHI-17	1.03	1.00-1.06	.02*	1.00	0.97-1.03	.99	0.97	0.95-0.99	.001*	0.97	0.95-0.99	.001*
PF-10	1.03	1.02-1.05	<.001*	1.00	0.98-1.01	.70	0.97	0.96-0.99	<.001*	0.97	0.95-0.98	<.001*
OARS ADL and IADL	2.53	1.61-3.95	<.001*	0.98	0.90-1.08	.72	0.87	0.82-0.93	<.001*	0.86	0.80-0.92	<.001*

(continued on next page)

Table 3 (continued)

Variables	What Is Associated With Being Currently Employed?		What Is Associated With Wanting to Resume Working?		What Is Associated With Distress Over Vocational Limitations?		What Is Associated With Interested in Receiving Help to Deal With Vocational Limitations?					
	Coefficient	95% confidence interval	Coefficient	95% confidence interval	Coefficient	95% confidence interval	Coefficient	95% confidence interval				
Clinician-rated outcome												
FIM total	1.16	1.08-1.25	<.001*	0.99	0.95-1.02	.47	0.94	0.92-0.97	<.001*	0.94	0.91-0.96	<.001*

Abbreviations: ADL, activities of daily living; IADL, instrumental activities of daily living; MHI-17, Mental Health Inventory-17; OARS, Older Americans Resource Study.

* $P < .05$.

Employment status and challenges

Seventy percent of the sample was working before their cancer diagnosis ($n = 114$), yet only 21% ($n = 35$) was working when surveyed for the study (of note, 1 of the 35 women who were working at the time of the survey had not been working prior to diagnosis). Table 1 depicts the employment and productivity challenges reported by the full sample. Over two-thirds of the sample reported they were limited in the kinds of work they could do (68%), that they had cut down the amount of work they did (71%), and that they needed to frequently take rests when working (71%). A full three-quarters of the sample reported being less productive than they wanted to be. Despite these challenges, less than half said they needed special assistance regarding productive activities.

Predictors of employment status and preferences

Table 3 presents the output of univariate logistic regression models that estimated associations of patient characteristics, patient-reported outcomes and FIM scores with patients' current work status, desire to resume working, distress related to vocational role limitations, and interest in receiving help in addressing limitations. Both patient-reported outcomes and FIM scores assessments of participants' functional status were strongly and consistently associated with the dependent variables in all univariate models (all P values $< .01$), excepting the analysis of participants' desire to resume work. Objectively identified aerobic deconditioning was strongly associated with a desire to resume work, distress regarding vocational role limitation, and interest in receiving help. Aerobic deconditioning was also strongly associated, in this case inversely, with participants being currently employed.

The output of the multivariate logistic regression models is presented in table 4. Regarding the factors associated with current employment, women who had had more chemotherapy treatments and were older were less likely to be currently employed (odds ratio [OR] 0.62, 0.93, respectively, $P < .05$). Conversely, women who lived alone were more likely to be working (OR 4.2, $P < .05$). The overall model explained 34% of the variance in the sample.

The next model explored the factors associated with wanting to resume work. Only 2 factors were retained in the model. Women who were older were slightly less likely to want to resume working (OR .93, $P < .05$). There was a trend suggesting women who were aerobically deconditioned were more likely to report wanting to resume working (OR 2.89, $P = .07$). The overall model explained 15% of the variance in the sample.

Women were less likely to report distress regarding their vocational limitations when they were older (OR 0.93, $P < .05$), had higher physical function per the FIM score (OR 0.92, $P < .05$), lived alone (OR 0.25, $P < .05$), and had been living with metastatic disease longer (OR 0.99, $P < .05$). The overall model explained 36% of the variance in vocational distress.

Women who exercised were much more likely to be interested in receiving help from health care professionals regarding vocational limitations (OR 4.7, $P < .05$). Women

Table 4 Multivariate logistic regression analysis summary of factors associated with employment status and attitude

	What Is Associated With Being Currently Employed?			What Is Associated With Wanting to Resume Working?			What Is Associated With Distress Over Vocational Limitations?			What Is Associated With Interested in Receiving Help to Deal With Vocational Limitations?		
n	114			80			163			161		
Pseudo R ²	0.34			0.15			0.36			0.34		
P	<.00001			.0007			<.00001			<.00001		
Variables	OR	95% confidence interval	P	OR	95% confidence interval	P	OR	95% confidence interval	P	OR	95% confidence interval	P
Age	0.93	0.88-0.99	.02	0.93	0.88-0.98	.009	0.93	0.90-0.97	<.0001	0.93	0.92-0.96	.001
Live alone	4.20	1.18-14.94	.03	-	-	-	0.25	0.08-0.85	.027	0.19	0.05-0.74	.016
Number of chemotherapy regimens	0.62	0.45-0.85	.003	-	-	-	-	-	-	-	-	-
Duration living with metastatic disease	-	-	-	-	-	-	0.99	0.99-0.99	.036	0.99	0.99-0.99	.013
Deconditioning	0.33	0.10-1.09	.07	2.89	0.90-9.29	.07	-	-	-	-	-	-
FIM total	-	-	-	-	-	-	0.92	0.88-0.96	<.0001	-	-	-
PF-10	-	-	-	-	-	-	-	-	-	0.94	0.92-0.96	<.0001
OARS	1.34	1.12-1.62	.002	-	-	-	-	-	-	-	-	-
Exercise	-	-	-	-	-	-	-	-	-	4.7	1.37-16.15	.014
BPI	-	-	-	-	-	-	1.15	0.09	.09	-	-	-

Abbreviation: OARS, Older Americans Resource Study.

who were older (OR 0.93, $P < .05$), living alone (OR 0.19, $P < .05$), living with metastatic disease longer (OR 0.99, $P < .05$), with higher physical functioning (OR 0.94, $P < .05$) were less likely to be interested in receiving help from health care professionals regarding vocational limitations. The model explained 34% of the variance in the sample.

Discussion

These data were collected in 1999, and the prognosis and treatment for metastatic breast cancer have changed considerably in the past 2 decades. Median survival significantly increased between 1990 and 2010,¹⁹ and treatment for metastatic breast cancer often involves combinations of drugs, tailored to tumor characteristics.²⁰ Although treatments have evolved and prognosis has improved, women with metastatic breast cancer still experience considerable demands of treatment that affect their health, finances, and employment potential. For example, a 2019 study of 145 women with metastatic breast cancer reported an average of 17 clinic visits a year, with out-of-pocket costs that were close to \$1200. Progression to metastatic breast cancer is associated with significant productive losses, including a 14% loss of wages.²¹ With women living longer and receiving more treatments than before, it is relevant to explore the data from the current study to add to the scant literature on the employment challenges women living with metastatic breast cancer face.

The purpose of this secondary analysis was to explore the self-reported barriers to work retention and the factors that are associated with employment status, distress, and interest in receiving help regarding employment issues. Most of the women in the sample had stopped working between the time of diagnosis and the time of study participation. The rate of work retention in this study (21%) was lower than what was reported in a more recent study in which 35% of the working-age sample was working full- or part-time.³ However, in the more recent study, the sample included both men and women and was not limited to those living with metastatic breast cancer.

Over two-thirds of the sample indicated that they were less productive and limited in what they could do, needing to rest and reduce their productivity. Despite this, most said that they did not utilize special assistance to complete their productive activities. Cancer survivors have reported fear and discomfort regarding requesting workplace accommodations (eg, supports, retraining, adaptive aids, or technology)²² even though the use of workplace accommodations is associated with job retention.²³ Potentially, this identifies 2 intervention strategies, one patient facing, the other employer facing. Rehabilitation clinicians can problem-solve workplace accommodations as needed. Although working directly with the patient may be most helpful initially, it is critical to simultaneously work with employers to decrease the stigma and barriers to asking for accommodations in the workplace. It is possible that the first response to employment challenges is to slow down and withdraw and that the identification and execution of workplace accommodations may be underutilized and a fruitful area for intervention.

The data indicated that women who were younger, lived alone, and had received fewer chemotherapy treatments

were more likely to still be working at the time of the survey. This is intuitively understandable, however, as with all of the models, we cannot draw conclusions about the directionality of these associations. It is impossible to determine whether the younger women were more able to stay employed or perhaps were required to stay employed for financial reasons. The univariate analyses suggested that increased symptom burden and lower functional status was related to discontinuation of employment, which mirrors the results of a recent studies of breast cancer survivors²⁴⁻²⁶ and men and women living with advanced cancer.³

It is interesting to note that aside from age, none of the measured constructs was particularly helpful in determining who wanted to resume work. A metasynthesis of qualitative research indicated that the meaning and importance of work are idiosyncratic and can change after a cancer diagnosis.²⁷ That suggests that clinicians should be open-minded and avoid assumptions about who does and does not need and want to work while living with advanced cancer. Furthermore, this could be suggestive of the potential difficulty of maintaining work status when disabled and older.²⁸ The rates of early retirement can be high for survivors of some cancers and for older women in particular.^{29,30} Future research needs to determine if early retirement is due to actually not wanting to go back to work, or the societal pressures of ageism.

The strongest predictors of being distressed and being interested in receiving help regarding work status included symptom burden and dissatisfaction with function and mobility. This is encouraging because performance and mobility status may be improved with cancer rehabilitation, suggesting that established delivery structures could be leveraged to better support the needs of patients wanting to retain or regain employment.^{31,32} However, it is important to note that women who reported consistent exercise engagement were almost 5 times more likely to be interested in receiving help from professionals regarding employment. That underscores findings from a Cochrane review regarding return to work interventions for cancer survivors which found no evidence to suggest that unidimensional programs focusing on physical exercise translated into improvements in employment outcomes (nor did psychoeducational interventions).³³ Instead, the more promising interventions were multicomponent interventions, addressing both physical and psychosocial challenges. A 2017 study³⁴ emphasized the importance of interventions to address self-efficacy and positive thinking, which may be relevant to our study where women reported being less productive, but may have needed help seeing their ability to improve with rehabilitative services.

It is also important to note that the measured constructs that were primarily focused on symptoms and impairments never explained more than 36% of the variance in any of the models. Future descriptive and interventional research needs to adopt a multidimensional perspective and focus not only on the personal characteristics, but also the environmental and job characteristics that may be amenable to change in the face of progressive disease.²⁷

Study limitations

The cross-sectional data used in this secondary analysis were collected in 1999 as part of a study where the primary

aim was to describe physical impairments of a sample of women living with advanced cancer. As such, no qualitative data were collected regarding job requirements or workplace accommodations requested by or granted to participants and we did not rigorously assess cognitive function, all factors that have been identified as issues affecting employment.^{22,35} Admittedly, the KPS and FIM are somewhat gross measures of function, which could affect our ability to detect meaningful associations between functioning and employment. Further, cancer treatment has advanced and workplace cultures may have changed since the original study was conducted. However, even more recent reports suggest that employment retention among cancer survivors remains problematic and that vocation engagement strategies are either not offered to these patients or offered in a delayed fashion.³⁶ All these aspects of the dataset may affect the generalizability of these findings. In addition, we did not control for multiple comparisons, which should temper inferences drawn from the results.

Conclusion

With steadily increasing cancer prevalence and survival, there is a need to systematically assess and support survivors' capacity to maintain employment. Most of the women in this sample had stopped working and/or reduced their activity and productivity. Their reduced employment was strongly associated with potentially actionable clinical targets; higher symptom burden and lower functional status, that fall within cancer rehabilitation's mission to an individual's physical, functional, social, and vocational abilities.³⁷ Stakeholders, scientists, clinicians, survivors, and advocates need to unite to identify scalable and sustainable ways to optimize employment outcomes for people living with cancer.

Supplier

a. STATA v14.0; StataCorp.

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