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ORIGINAL REPORT

Correlates of Return to Work for Breast Cancer Survivors

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ABSTRACT

Purpose
To identify correlates of return to work for employed breast cancer survivors.

Patients and Methods
Patients included 416 employed women with newly diagnosed breast cancer identified from the Metropolitan Detroit Cancer Surveillance System. Patients were interviewed by telephone 12 and 18 months after diagnosis. Correlates of return to work at 12 and 18 months were identified using multivariate logistic regression.

Results
More than 80% of patients returned to work during the study period, and 87% reported that their employer was accommodating to their cancer illness and treatment. After adjusting for demographic characteristics, health status, cancer stage, treatment, and job type, heavy lifting on the job (odds ratio = 0.42; 95% CI, 0.18 to 0.99), perceived employer accommodation for cancer illness and treatment (odds ratio = 2.2; 95% CI, 1.03 to 4.8), and perceived employer discrimination because of a cancer diagnosis (odds ratio = 0.27; 95% CI, 0.10 to 0.71) were independently associated with return to work at 12 months after breast cancer diagnosis, and perceived employer accommodation (odds ratio = 2.3; 95% CI, 1.06 to 5.1) was independently associated with return to work at 18 months after breast cancer diagnosis.

Conclusion
A high percentage of employed breast cancer patients returned to work after treatment, and workplace accommodations played an important role in their return. In addition, perceived employer discrimination because of cancer was negatively associated with return to work for breast cancer survivors. Employers seem to have a pivotal role in breast cancer patients' successful return to work.

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INTRODUCTION

Employed women with breast cancer face several challenges as they recover from treatment and attempt to return to the workplace.[1-5] Despite these challenges, many breast cancer survivors are able to return to work and maintain their prediagnosis level of employment and income.[6] The literature suggests that demographic characteristics,[2,7-9] health status,[3,10-16] treatment,[17-20] and physical job tasks[21,22] influence return to work for breast cancer patients, but little is known about the employer's role. The employer might have a major influence on return to work because of employment benefits, job type or tasks, and/or workplace accommodation.[23-26] Using multivariate analysis, we studied several different factors to identify correlates associated with return to work for breast cancer survivors. The purpose of this research was to examine the impact of demographic, clinical, and employment characteristics on return to work for newly diagnosed breast cancer patients.

PATIENTS AND METHODS

Employed, English-speaking women ages 30 to 64 years with a first, primary diagnosis of breast cancer were identified from the Metropolitan Detroit Cancer Surveillance System (Detroit, MI), which is a participant in the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program. In our sample, the earliest diagnosis month and year was June 2001, and the latest diagnosis month and year was April 2002. We enrolled 443 women who were working 3 months before their breast cancer diagnosis. Women were ineligible for the study if they had a previous cancer or lived outside of Wayne, Macomb, and Oakland counties. Eligible patients were offered a $25 incentive payment to complete all interviews. This study was part of a larger study that had a participation rate of 83% for patients who were screened and determined to be eligible.[27] The retention rate was 94% at 12 months and 92% at 18 months. The Institutional Review Board

of Michigan State University (East Lansing, MI) approved this study. All patients provided written informed consent.

Four hundred sixteen enrollees participated in an interview that collected data referring to 3 months before the breast cancer diagnosis and an interview that occurred 12 months after breast cancer diagnosis (Fig 1). The recruitment and enrollment procedures have been explained by Bradley et al.[27] Four hundred seven enrollees also participated in an interview 18 months after the breast cancer diagnosis. All phases of patient ascertainment, including case abstraction, physician notification, participant mailings, and screening, occurred simultaneously. The target sample size was 500 breast cancer patients. Once this was achieved, study enrollment was discontinued. Thus, there were 38 patients who were not screened because accrual was complete and 13 patients who were eligible but excluded because accrual was complete.

As depicted in Figure 1, we were unable to contact 169 women, and an additional 163 women refused to participate in the study before they were screened for eligibility. To address issues of potential sample bias, we extracted demographic and clinical data from the SEER registry for all potentially eligible cancer patients. Enrolled women were compared in terms of age, race, and stage at diagnosis to women we were unable to contact and women who refused participation after having been determined as eligible for the study. In addition, we extracted demographic and socioeconomic variables that are predictive of individual socioeconomic status and health outcomes from 2000 census block data. Patients we were unable to contact resided in census tracts with a higher percentage of households living in poverty and lived in block groups with a greater percentage of household incomes less than $20,000 (21% to 23%) compared with the residents in census blocks where the enrolled patients resided (13% to 15%). In addition, those patients who refused participation resided in census blocks where the employment rate was low relative to the employment rate in census blocks where participants resided.[27] Given these findings, it is possible that women employed in lower paying jobs had a more difficult return to work experience than women in our sample.

Data Collection

Patients were interviewed by telephone. The surveys collected data on their demographic characteristics, employment status, health status, comorbidity, job tasks, and job benefits. In addition, patients were asked if they agreed with statements regarding their employer accommodation for cancer treatment needs and regarding employer discrimination against them because of their cancer. Data on cancer stage and treatment were extracted from the SEER registry.

Study Variables

The main outcome for this study was return to work 12 and 18 months after a breast cancer diagnosis. Return to work was defined according to a patient's positive response to the question, "Are you currently working?" We chose return to work as the primary outcome because we considered it a measure of recovery for breast cancer survivors. Figure 2 depicts a model of the possible effects of demographic, clinical, and job characteristics on a breast cancer patient's return to work. Clinical variables included cancer summary stage and first cancer-directed treatment abstracted from the SEER registry supplemented by patients' reports, comorbidity using a modified Charlson index[28] with each comorbid condition equal to one (high comorbidity ≥ three comorbid conditions), and self-reported health status (ie, excellent, very good, good, fair, or poor) before diagnosis. Employment variables included type of occupation, full-time employment, self-employment, presence or absence of sick leave and health insurance, job involvement, job tasks (heavy lifting and data analysis), perceived employer accommodation, and perceived employer discrimination.

We asked patients questions about job tasks including heavy lifting and data analysis. Responses to heavy lifting and data analysis questions were ordinal (all/almost all of the time, most of the time, some of the time, or none/almost none of the time) and from the patient's point of view. The heavy lifting and data analysis questions were extracted from the Health and Retirement Study, which has been widely used.[29] We inquired about job involvement using a modification of the job involvement scale developed by Lodahl and Kejner.[30] A minimum job involvement score was 5, and a maximum score

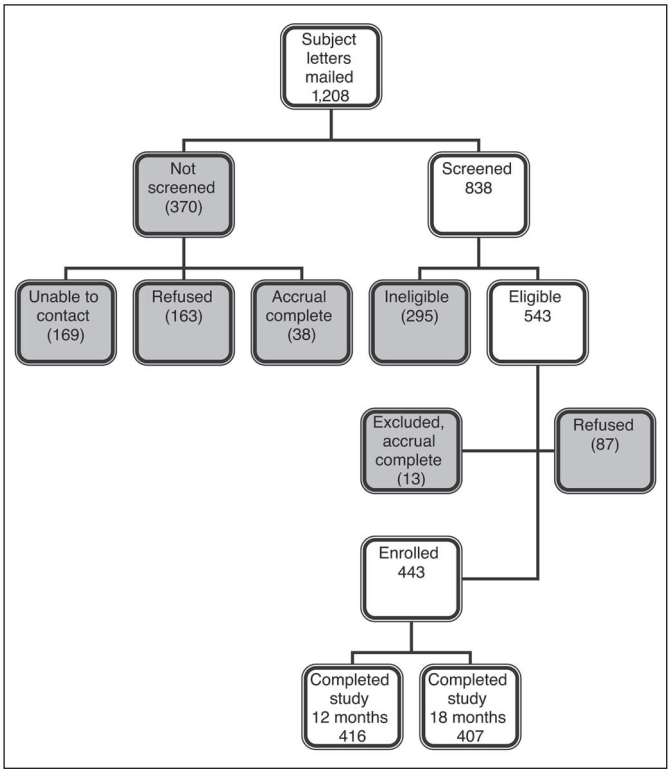

Fig 1. Enrollment of breast cancer patients.

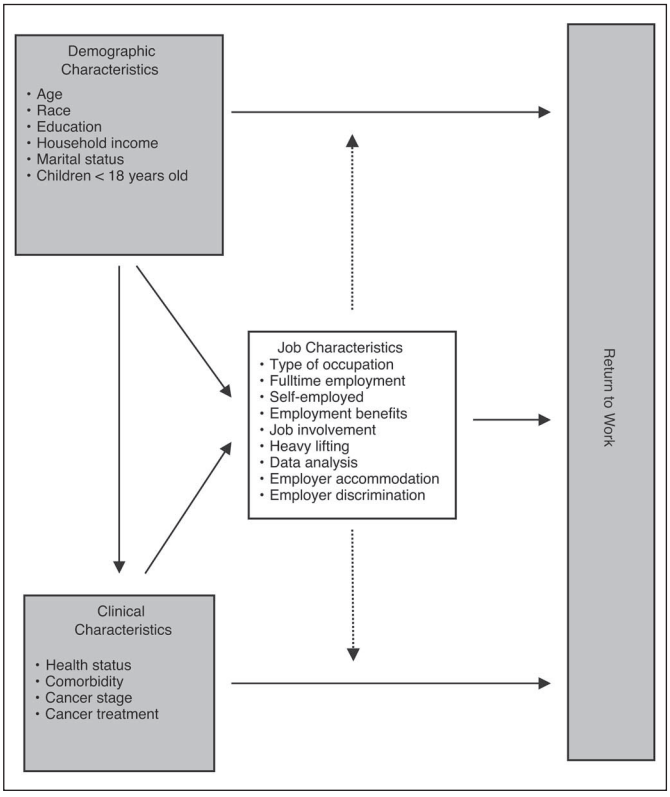

Fig 2. Effect of demographic, clinical, and job characteristics on return to work for breast cancer survivors. Solid line indicates direct effect of variables on various characteristics or return to work. Dotted line indicates modifying effect of variables on direct effects.

was 20. In the analysis, the job involvement score was dichotomized to high (≥ 15) and low. We also inquired about the perceived social support environment of the workplace by asking whether the employer was accommodating to the patient's cancer and need for treatment (strongly agree, agree, disagree, or strongly disagree). In addition, we asked whether the employer discriminated against the patient because of the breast cancer diagnosis (strongly agree, agree, disagree, or strongly disagree). In the reported analysis, the responses for the job characteristics were dichotomized to reflect high or low activity and agreement or disagreement.

Statistical Analysis

Univariate analyses included *t* tests for continuous variables and χ^2 tests for categoric variables. Variables with a statistically significant difference of $P \leq .05$ in the univariate analysis were included in the multivariate logistic regression analysis, and some demographic and treatment variables were included as control variables. For the multivariate analysis, clinical variables included self-reported health status (dichotomized as poor or fair health *v* good, very good, or excellent health), mastectomy (yes *v* no), receipt of radiation therapy, receipt of chemotherapy, and cancer stage. There were only nine patients with metastatic breast cancer, which was too few to allow for separate statistical analysis of distant stage. Thus, regional and distant stages were combined. With return to work as the dependent variable, we used logistic regression to identify independent variables associated with return to work 12 and 18 months after a breast cancer diagnosis. The STATA statistical program version 7.0 (STATA Corp, College Station, TX) was used for all analyses.

RESULTS

Table 1 lists the characteristics of the participants. The mean age at the time of diagnosis was 50.8 years, and patients had a mean household income of $46,800. Twenty percent of the women were black, most were married, and more than 70% had some college or a college degree. At baseline, most women reported good to excellent health, but compared with white women, black women were more likely to report fair or poor health ($P = .024$), and more had advanced, regional disease ($P = .016$). The most common stage of disease was local followed by regional, in situ, and distant (2.2%). Less than half of patients had a mastectomy, but more than half received radiation and chemotherapy. Most women were employed full time with white collar positions, and few were self-employed. Women were employed in managerial/professional positions (35%) followed by technical/sales/administrative jobs (26%), service positions (24%), operators/fabricators/laborers jobs (4%), precision production/craft/repair jobs (1%), and other jobs (10%). Half of the patients reported data analysis as a job task, and few women reported heavy lifting as a job task (11%). A high percentage of women (87%) perceived that their employer was accommodating to their illness and need for treatment, and few women perceived that they were discriminated against because of their cancer diagnosis (7%). Every woman who returned to work returned to her same position of employment. At 12 months after breast cancer diagnosis, 18% of patients were not working, and at 18 months, 17% were not working. There were 341 women who returned to work at 12 months, and 26 (7.6%) of these women were not working at 18 months (Fig 3).

In the 12-month univariate analysis, factors associated with a lower likelihood of return to work were lower annual household income, less than high school education, fair/poor health status before diagnosis, advanced-stage tumors, blue collar occupation, heavy lifting required by the job, and perceived employer discrimination related to the cancer diagnosis (Table 2). However, college graduation,

Table 1. Characteristics of Employed Breast Cancer Survivors

Variable*	12-Month Interview		18-Month Interview	
	No.	%	No.	%
Age, years				
Mean	50.8		50.9	
Standard deviation	7.5		7.5	
Household income, × $1,000				
Mean	46.8		46.8	
Standard deviation	3.0		3.0	
Race				
White	332	80	325	80
Black	84	20	82	20
Total	416	100	407	100
Education				
No HS diploma	20	5	20	5
HS diploma	94	23	90	22
Some college	158	38	154	38
College degree	144	35	143	35
Total	416	—†	407	100
Marital status				
Married	251	60	247	61
Div, Sep, Wid	124	30	124	30
Never married	41	10	39	10
Total	416	100	407	—†
Children < 18 years old at home				
Yes	128	31	122	30
No	288	69	285	70
Total	416	100	407	100
Fair/poor health				
Yes	40	10	39	10
No	376	90	368	90
Total	416	100	407	100
High comorbidity‡				
Yes	27	6	19	5
No	386	94	388	95
Total	413	100	407	100
Cancer stage				
In situ	108	26	107	26
Local	175	42	171	42
Regional/distant	120	29	116	29
Unknown	13	3	13	3
Total	416	100	407	100
Mastectomy				
Yes	181	44	176	43
No	235	56	231	57
Total	416	100	407	100
Radiation therapy				
Yes	232	56	227	56
No	184	44	180	44
Total	416	100	407	100
Chemotherapy				
Yes	242	58	234	58
No	174	42	173	42
Total	416	100	407	100
Fulltime employee				
Yes	320	77	313	77
No	96	23	94	23
Total	416	100	407	100
Self-employed				
Yes	45	11	44	11
No	370	89	362	89
Total	415	100	406	100

(continued on following page)

Table 1. Characteristics of Employed Breast Cancer Survivors (continued)

Variable*	12-Month Interview No.	12-Month Interview %	18-Month Interview No.	18-Month Interview %
Health insurance				
Yes	398	96	389	96
No	18	4	18	4
Total	416	100	407	100
Sick leave				
Yes	267	64	262	64
No	149	36	145	36
Total	416	100	407	100
Job type§				
White collar	250	67	247	67
Blue collar	125	33	120	33
Total	375	100	367	100
High job involvement‖				
Yes	72	17	72	18
No	341	83	332	82
Total	413	100	404	100
Heavy lifting				
Yes	44	11	42	10
No	372	89	365	90
Total	416	100	407	100
Data analysis				
Yes	207	50	205	50
No	209	50	202	50
Total	416	100	407	100
Employer accommodation¶				
Yes	363	87	354	87
No	53	13	53	13
Total	416	100	407	100
Cancer discrimination¶				
Yes	28	7	26	6
No	388	93	381	94
Total	416	100	71	100

Abbreviations: HS, high school; Div, Sep, Wid, divorced, separated, or widowed.
*Patients reported data as it existed 3 months before cancer diagnosis for age, income, race, education, marital status, children at home, health status, sick leave, employment type, and health insurance. Cancer stage was reported at time of diagnosis. Other variables are from data collected 12 or 18 months after breast cancer diagnosis.
†Does not equal 100% because of rounding.
‡Three or more comorbid conditions.
§Forty-one patients at 12 months and 40 patients at 18 months did not specify job type.
‖Total job involvement score ≥ 15.
¶As perceived by patient.

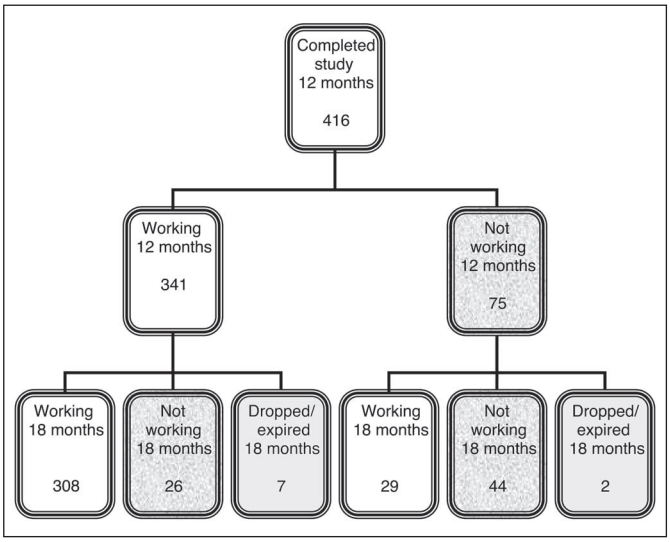

Fig 3. Work history of enrolled breast cancer patients.

in situ cancer stage, having sick leave, white collar occupation, and perceived employer accommodation for cancer illness and treatment needs were associated with a greater likelihood of return to work. At 18 months after diagnosis, older age, black race, less than high school education, and fair/poor health status were associated with a lower likelihood of return to work, whereas in situ stage and perceived employer accommodation were associated with a greater likelihood of return to work.

Table 3 lists the logistic regression analysis results for return to work at 12 months. Women who perceived that their employer was accommodating for their illness or cancer treatment were more likely to return to work (odds ratio = 2.2; 95% CI, 1.03 to 4.8). However, women who had fair/poor health status before diagnosis (odds ratio = 0.31; 95% CI, 0.14 to 0.73), advanced tumors (odds ratio = 0.23; 95% CI, 0.08 to 0.65), jobs that involved heavy lifting (odds ratio = 0.42; 95% CI, 0.18 to 0.99), or perceived employer discrimination because of the cancer diagnosis (odds ratio = 0.27; 95% CI, 0.10 to 0.71) were less likely to return to work. Table 3 also shows the same model with return to work at 18 months as the outcome. Patients who perceived that their employer was accommodating were again more likely to return to work (odds ratio = 2.3; 95% CI, 1.06 to 5.1). Patients with older age (odds ratio = 0.95; 95% CI, 0.91 to 0.99), black race (odds ratio = 0.35; 95% CI, 0.18 to 0.68), or fair/poor health status 3 months before diagnosis (odds ratio = 0.33; 95% CI, 0.14 to 0.77) were less likely to return to work.

DISCUSSION

In this study, a high proportion of patients reported that their employer was accommodating, which suggests that most employers were sensitive to the health needs of their employees with breast cancer. More than 89% of the patients in this study qualified for accommodations according to the Americans with Disabilities Act because they worked for employers with 15 or more employees. The Americans with Disabilities Act and its impact on working cancer survivors has been comprehensively reviewed by Hoffman.[31]

The perceived willingness of the employer to accommodate their workers' illness and treatment needs was an important factor for return to work. This finding has implications for employers and recovering breast cancer employees, and, to our knowledge, this is the first time this result has been reported. In a review, Spelten et al[24] concluded that a supportive work environment seemed to facilitate return to work and that more systematic research was needed. Chirikos et al[7] reported that 41% of breast cancer patients expressed a need for special accommodations to keep working but did not link employer accommodation to return to work as an outcome. Greenwald et al[32] found that return to work was positively associated with a cancer employee's ability to control the number of hours worked and amount of work, but this study did not include breast cancer patients.

Table 2. Univariate Analysis of RTW for Breast Cancer Survivors

Variable*	12-Month RTW		12-Month No RTW		12-Month Total		18-Month RTW		18-Month No RTW		18-Month Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Age, years†												
Mean	50.5		51.9				50.6		52.6			
Standard deviation	7.4		8.0				7.4		7.8			
Mean household income, × $1,000‡												
Mean	48.6		39.5				47.9		41.4			
Standard deviation	2.8		3.7				2.8		3.5			
Race§												
White	278	84	54	16	332	100	280	86	45	14	325	100
Black	63	75	21	25	84	100	56	68	26	32	82	100
Education†‖												
No HS diploma	13	65	7	35	20	100	13	65	7	35	20	100
HS diploma	71	76	23	24	94	100	70	78	20	22	90	100
Some college	130	82	28	18	158	100	128	83	26	17	154	100
College degree	127	88	17	12	144	100	125	87	18	13	143	100
Marital status												
Married	206	82	45	18	251	100	205	83	42	17	247	100
Div, Sep, Wid	99	80	25	20	124	100	99	82	22	18	121	100
Never married	36	88	5	12	41	100	32	82	7	18	39	100
Children < 18 years old at home												
Yes	110	86	18	14	128	100	106	87	16	13	122	100
No	231	80	57	20	288	100	230	81	55	19	285	100
Fair/poor health‖¶												
Yes	27	68	13	32	40	100	26	67	13	33	39	100
No	314	84	62	16	376	100	310	84	58	16	368	100
High comorbidity#												
Yes	19	70	8	30	27	100	14	74	5	26	19	100
No	320	83	66	17	386	100	322	83	66	17	388	100
Cancer stage†**												
In situ	98	91	10	9	108	100	97	91	10	9	107	100
Local	144	82	31	18	175	100	139	81	32	19	171	100
Regional/distant	89	74	31	26	120	100	92	79	24	21	116	100
Unknown	10	77	3	23	13	100	8	62	5	38	13	100
Mastectomy												
Yes	150	83	31	17	181	100	146	83	30	17	176	100
No	191	81	44	19	235	100	190	82	41	18	231	100
Radiation therapy												
Yes	187	81	45	19	232	100	190	84	37	16	227	100
No	154	84	30	16	184	100	146	81	34	19	180	100
Chemotherapy												
Yes	195	81	47	19	242	100	189	81	45	19	234	100
No	146	84	28	16	174	100	147	85	26	15	173	100
Fulltime employee												
Yes	265	83	55	17	320	100	260	83	53	17	313	100
No	76	79	20	21	96	100	76	81	18	19	94	100
Self-employed												
Yes	36	80	9	20	45	100	37	84	7	16	44	100
No	304	82	66	18	370	100	298	82	64	18	362	100
Health insurance												
Yes	327	82	71	18	398	100	322	83	67	17	389	100
No	14	78	4	22	18	100	14	78	4	22	18	100
Sick leave‖												
Yes	228	85	39	15	267	100	221	84	41	16	262	100
No	113	76	36	24	149	100	115	79	30	21	145	100
Job type‖												
White collar	215	86	35	14	250	100	205	83	42	17	247	100
Blue collar	93	74	32	26	125	100	96	82	24	18	120	100
High job involvement††												
Yes	59	82	13	18	72	100	60	83	12	17	72	100
No	282	83	59	17	341	100	274	82	58	18	332	100

(continued on following page)

Table 2. Univariate Analysis of RTW for Breast Cancer Survivors (continued)

Variable*	12-Month RTW		12-Month No RTW		12-Month Total		18-Month RTW		18-Month No RTW		18-Month Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Heavy lifting‡												
Yes	29	66	15	34	44	100	32	76	10	24	42	100
No	312	84	60	16	372	100	304	83	61	17	365	100
Data analysis												
Yes	176	85	31	15	207	100	173	84	32	16	205	100
No	165	79	44	21	209	100	163	81	39	19	202	100
Employer accommodation§**‡‡												
Yes	308	85	55	15	363	100	301	85	53	15	354	100
No	33	62	20	38	53	100	35	66	18	34	53	100
Cancer discrimination**‡‡												
Yes	16	57	12	43	28	100	18	69	8	31	26	100
No	325	84	63	16	388	100	318	84	63	16	381	100

Abbreviations: RTW, return to work; HS, high school; Div, Sep, Wid, divorced, separated, widowed.
*Patients reported data as it existed 3 months before cancer diagnosis for age, income, race, education, marital status, children at home, health status, sick leave, employment type, and health insurance. Cancer stage was reported at time of diagnosis. Other variables from data collected 12 or 18 months after breast cancer diagnosis. Group comparisons made using χ^2 test.
†Significant difference for 18-month RTW and no RTW between-group comparisons at $P \leq .05$.
‡Significant difference for 12-month RTW and no RTW between-group comparisons at $P \leq .01$.
§Significant difference for 18-month RTW and no RTW between-group comparisons at $P \leq .001$.
‖Significant difference for 12-month RTW and no RTW between-group comparisons at $P \leq .05$.
¶Significant difference for 18-month RTW and no RTW between-group comparisons at $P \leq .01$.
#Three or more comorbid conditions.
**Significant difference for 12-month RTW and no RTW between-group comparisons for $P \leq .001$.
††Total job involvement score ≥ 15.
‡‡As perceived by patient.

Few women (7%) reported problems with discrimination because of cancer, suggesting that this was not a widespread problem for breast cancer patients in our sample. However, women who reported that they had been discriminated against because of their cancer were significantly less likely to return to work at 12 months. Other investigators have reported some or no employment effects of perceived employer discrimination as a result of illness.[33,34] The manifestations of perceived job discrimination attributable to illness and need for treatment warrants further investigation.

Our study of the impact of demographic and clinical characteristics on breast cancer patients' return to work yielded results similar to other research.[1,5,11-15,21,23,35] Compared with younger patients, older patients were less likely to return to work at 18 months. We would expect age to be associated with retirement, although it is not mandatory in the United States. In addition, black race, low health status, and advanced tumor stage negatively affected return to work for breast cancer patients. In some studies, white collar workers were more likely to return to work and receive accommodations when compared with their counterparts.[36-38] We controlled for white collar/blue collar job type in our multivariate analysis and found that, although job type was not statistically significant, heavy lifting as a job task was statistically significantly associated with a lower likelihood of return to work. Data analysis as a job task was not statistically significantly associated with return to work. Chemotherapy had no effect on return to work, and this finding is consistent with the research of other investigators who reported no effect of chemotherapy on return to work or long-term quality of life for breast cancer survivors.[19,39-41]

There was some variation between the 12- and 18-month assessments of return to work, and some of the difference was a result of a core of women moving in and out of the workforce. We found no distinguishing characteristics of these women to explain their movement in and out of the workforce. Some of the variation between the 12- and 18-month assessments may be attributable to reduction in treatment-related symptoms and employer adaptation to the patient's health condition.

A strength of this study is its prospective, longitudinal design. Bushunow et al[19] studied return to work of breast cancer patients at 1, 3, 6, and 12 months, but this study was retrospective and focused only on the effect of chemotherapy. Other studies have been cross sectional and not designed to account for differences over time.[21,42] The sample includes a sizeable minority population, which is absent from some other studies.

Several limitations are noted. First, the study sample from the Detroit metropolitan area may not be representative of breast cancer survivors from other parts of the country, especially those residing in rural areas. Our study sample was restricted to employed women, thus they were younger and in better health relative to the population of women diagnosed with breast cancer. In addition, our own analyses indicated that women from poorer areas or with less well-paying jobs may have been under-represented in our sample. Second, we lacked extensive clinical information normally found in a medical record audit. Data were either absent or inconsistently reported for axillary node dissections, disease recurrence, and initiation of hormone therapy, all of which might affect return to work. Third, questions regarding job tasks, accommodation, and discrimination were subject to patient interpretation. The interviewers did not provide definitions of the job tasks, and patients may have interpreted their job responsibilities differently. We did not validate attempts or denial of accommodation by visiting the workplace.

Table 3. Multivariate Analysis of Return to Work for Breast Cancer Survivors*

Variable†	12-Month Return to Work (n = 404)			18-Month Return to Work (n = 395)		
	OR	95% CI	*P*	OR	95% CI	*P*
Age at diagnosis	0.96	0.93 to 1.0	.08	0.95	0.91 to 0.99	.01
Household income	1.0	0.90 to 1.1	.83	0.96	0.85 to 1.1	.52
Race						
White	1.0	Reference		1.0	Reference	
Black	0.84	0.42 to 1.7	.64	0.35	0.18 to 0.68	.002
Education						
No HS diploma	1.0	Reference		1.0	Reference	
HS diploma	1.0	0.29 to 3.5	.99	1.9	0.56 to 6.6	.29
Some college	1.2	0.33 to 4.1	.81	2.5	0.74 to 8.7	.14
College degree	1.8	0.45 to 6.9	.41	3.7	0.98 to 14.2	.053
Marital status						
Married	1.0	Reference		1.0	Reference	
Div, Sep, Wid	1.4	0.63 to 2.9	.43	1.4	0.65 to 3.1	.39
Never married	2.4	0.74 to 8.1	.14	1.2	0.41 to 3.8	.70
Fair/poor health	0.31	0.14 to 0.73	.007	0.33	0.14 to 0.77	.01
Stage						
In situ	1.0	Reference		1.0	Reference	
Local	0.54	0.23 to 1.3	.16	0.77	0.33 to 1.8	.53
Regional/distant	0.23	0.08 to 0.65	.005	0.66	0.25 to 1.8	.42
Mastectomy	1.2	0.63 to 2.4	.56	1.4	0.74 to 2.8	.28
Radiation therapy	0.73	0.38 to 1.4	.35	1.3	0.70 to 2.6	.38
Chemotherapy	1.3	0.60 to 2.8	.50	0.66	0.31 to 1.4	.28
Sick leave	1.6	0.88 to 3.1	.12	1.3	0.67 to 2.4	.48
Job type						
White collar	1.0	Reference		1.0	Reference	
Blue collar	0.73	0.38 to 1.4	.36	1.1	0.55 to 2.2	.79
Data analysis	1.3	0.71 to 2.5	.37	1.1	0.60 to 2.0	.75
Heavy lifting	0.42	0.18 to 0.99	.048	1.2	0.48 to 3.2	.66
Accomodation‡	2.2	1.03 to 4.8	.043	2.3	1.06 to 5.1	.035
Cancer discrimination‡	0.27	0.10 to 0.71	.008	0.49	0.18 to 1.4	.18

Abbreviations: OR, odds ratio; HS, high school; Div, Sep, Wid, divorced, separated, or widowed.
*Logistic regression models with return to work as the dependent variable.
†Patients reported data as it existed 3 months prior to cancer diagnosis for age, income, race, education, marital status, health status, sick leave, and job type. Cancer stage at time of diagnosis. Other variables from data collected 12 or 18 months after breast cancer diagnosis.
‡As perceived by patient.

Emotional readiness and other psychosocial variables may play an important role in a woman's decision to return to work, but we did not assess patients' feelings about work re-entry. It is possible that workers may use lack of accommodation to justify their decision to quit work or workers may legitimately feel disenfranchised by their employers. Further research is warranted to assess patient and employer understanding of workplace accommodation and to assess the accuracy of patient reports regarding accommodation. Likewise, we neither determined whether discrimination actually occurred nor asked women to explain what they meant by accommodation or discrimination or to provide examples. Nevertheless, the employee's perception of discrimination reflects an impression of a negative job environment, which could possibly be a barrier for job return.

Recurrent disease, which was not measured by our study, might influence a woman's desire and/or ability to return to work. However, we suspect that this problem had little impact on our results because there were only nine patients with metastatic disease and other investigators have reported low rates of recurrence within 18 months of a breast cancer diagnosis.[43-45]

This study highlights the importance of the employer's role in the recovery of employed breast cancer patients. In addition to good health and early tumor stage, workplace accommodation as perceived by the employee is a key factor that increases the likelihood of return to work. Our findings suggest that employer sensitivity and response to their employee's cancer illness and treatment needs will facilitate the return of valuable workers to the workplace. Breast cancer patients can be encouraged to know that when they return to work they are likely to find a workplace environment that is willing to help them adapt to the challenges they face from their illness.

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