EPIDEMIOLOGY

Early predictors of not returning to work in low-income breast cancer survivors: a 5-year longitudinal study

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Abstract Low-income women may be especially vulnerable to job loss after a breast cancer diagnosis. The identification of early risk factors for not returning to work in the long term could inform interventions to help survivors avoid this outcome. A consecutive sample of low-income, employed, underinsured/uninsured women treated for stage 0–III breast cancer was surveyed 6, 18, 36, and 60 months after diagnosis. Participants were classified according to the survey in which they first reported return to work. If they were not working in every survey they were classified as not returning to work. Correlates of not returning to work were identified. Of 274 participants, 36 % returned to work by 6 months, an additional 21 % by 18, 10 % by 36, and 5 % by 60 months. 27 % never returned to work. Of those not working at 6 months, 43 % never returned. Independent predictors of never returning to work included lowest annual income (<$10,000), Latina ethnicity, high comorbidity burden, and receipt of chemotherapy. Very poor women who stop working during chemotherapy for breast cancer are at risk of not returning to work months and years following treatment. These findings may have clinical and policy implications. Conversely, radiation therapy, axillary node dissection, age, and job type do not appear to be associated with return to work. Clinicians should discuss work-related concerns with patients and facilitate early return to work when desired by the patient. Additional research is needed to develop interventions to optimize return to work.

Keywords Breast cancer · Income · Work · Survivorship

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Introduction

Return to work among cancer survivors is associated with financial security, self-esteem, and quality of life [1–4]. Studies of employment outcomes in predominantly middle- and high-income breast cancer survivors have demonstrated a rate of return to work of 70–80 % during the first year after diagnosis [5, 6]. However, low-income women appear to be more vulnerable to job loss and delayed return to work after a diagnosis of breast cancer than their higher income counterparts, with only 50 % of low-income survivors working 18 months after diagnosis and <60 % at 36 months [1, 5, 7]. This loss of work can have important adverse financial consequences. Those who lose their jobs are more likely to report having difficulty paying bills, purchasing necessities such as food and clothing, and paying for their families' healthcare [4].

In the short term, during and shortly after treatment, receipt of chemotherapy has been associated with an increased risk of missed work and job loss [4, 8]. Conversely, most studies have shown no significant relationship between

chemotherapy and return to work in the long term, at 12–18 months [5], 3 years [9], and 5–15 years after diagnosis [10]. Together, this body of literature indicates that receipt of chemotherapy may delay return to work but does not impact long-term employment outcomes. However, this longitudinal trend has not been studied prospectively or in low-income women, who may have limited sick leave, workplace accommodation, and schedule flexibility, all of which have been associated with increased return to work in middle- and high-income samples [4, 5, 8]. Low-income women are more likely to be unskilled workers and, therefore, more easily replaced. In such cases, women who intend or need to stop working temporarily during chemotherapy may be unable to return to work after treatment completion or in the long term if jobs are unavailable. Low-income women also may be less able to afford treatments for long-term complications such as neuropathy and depression.

The prospective identification of early risk factors for not returning to work in the long term could inform interventions to help patients avoid this outcome. To this end, we undertook a prospective 5-year longitudinal study of low-income, medically underserved women with a new diagnosis of breast cancer. Our goal was to identify early correlates of not returning to work for 5 years after diagnosis. Our hypothesis was that receipt of chemotherapy would be associated with increased risk of not working in the months and years after completion of therapy.

Methods

Eligibility criteria

Eligible participants were English- and/or Spanish-speaking women who were 6 months from diagnosis of localized breast cancer treated with curative intent (stage 0–III), cognitively able to participate, not undergoing treatment for another cancer, and enrolled in California's Breast and Cervical Cancer Treatment Program (BCCTP). The program, which is administered by Medicaid, provides benefits to patients who are uninsured/underinsured, California residents, and have a family income ≤200 % of the Federal Poverty Level. Undocumented immigrants are eligible. This study was approved by the University of California, Los Angeles Human Subjects Protection Committee. Informed consent was obtained from participants before enrollment.

Recruitment and participants

This study is part of a larger, longitudinal study described previously [11]. Of 1,869 women invited to participate, 921

completed a survey 6 months after diagnosis (Fig. 1). Since we were interested in breast cancer-related predictors of not returning to work, these analyses include only women who were employed at the time of diagnosis and who did not retire from paid employment or receive a diagnosis of metastatic breast cancer during the study period. Of 603 women who remained in the study at 60 months, 333 (55 %) were employed before diagnosis. Of these, 18 were excluded because they developed metastatic breast cancer, 23 because they retired from paid employment, and 18 because self-reported work status was missing in one or more survey. Respondents excluded due to incomplete reporting of work status were demographically similar to the study sample.
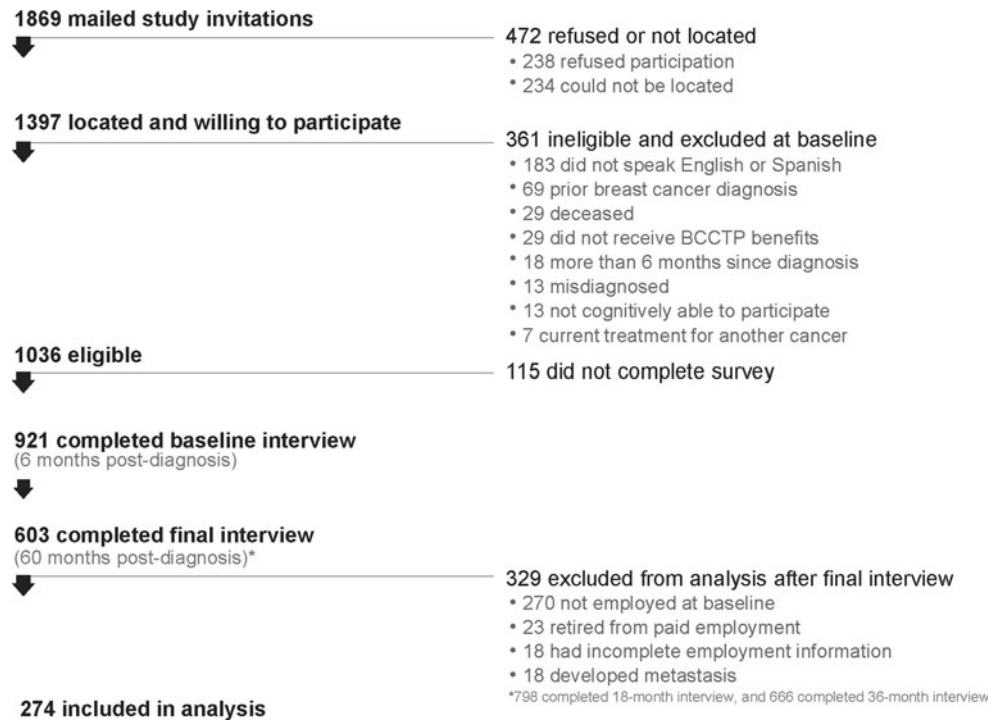
Interviews

1-h Telephone surveys were administered in English or Spanish 6, 18, 36, and 60 months post-diagnosis between March 2003 and June 2010. The study instruments were pilot tested and translated using the standard methods [12].

Variables

The primary outcome in this study was time of the first reported return to work post-diagnosis. No distinction was made between part-time and full-time employment. Participants who reported working at one or more time points were classified into 4 groups according to the survey in which they first reported that they were working (6, 18, 36, or 60 months). Those who said they were not working in every survey were classified as not returning to work. We did not analyze the characteristics of participants who stopped working after returning to work ($n = 55$) separately because the second survey occurred well after the time that adjuvant therapy should have been completed. In light of prior research demonstrating that health-related quality of life in long-term survivors of breast cancer is relatively stable over time [13], we can conclude that stopping work after having returned to work is more likely to be related to non-breast cancer factors, such as changes in the economy or significant family events (e.g., illness of a spouse).

All independent variables were baseline characteristics and refer to the time of the first survey (6 months post-diagnosis) except job type, which refers to the time just before diagnosis. Baseline financial status was evaluated along two measures: annual household income (<$10,000, $10,000–$20,000, or >$20,000) and perceived adequacy of financial resources to cover participant needs (adequate/inadequate). Education was classified as no high school diploma, completed high school and/or some college, and completed college and/or a post-graduate degree. Family

Fig. 1 Recruitment flow

1869 mailed study invitations
→ 472 refused or not located
- 238 refused participation
- 234 could not be located

1397 located and willing to participate
→ 361 ineligible and excluded at baseline
- 183 did not speak English or Spanish
- 69 prior breast cancer diagnosis
- 29 deceased
- 29 did not receive BCCTP benefits
- 18 more than 6 months since diagnosis
- 13 misdiagnosed
- 13 not cognitively able to participate
- 7 current treatment for another cancer

1036 eligible
→ 115 did not complete survey

921 completed baseline interview
(6 months post-diagnosis)

603 completed final interview
(60 months post-diagnosis)*
→ 329 excluded from analysis after final interview
- 270 not employed at baseline
- 23 retired from paid employment
- 18 had incomplete employment information
- 18 developed metastasis

*798 completed 18-month interview, and 666 completed 36-month interview

274 included in analysis

structure was evaluated along three measures: married/partnered versus not married/partnered, children ≤17 years old living at home (0/1/2+), and seniors ≥65 years old living at home (0/1+). Social support was assessed by asking the participant if she had anyone to provide emotional support, help with daily tasks, and/or accompany her to medical appointments [14].

Participants self-identified their race/ethnicity and place of birth. Acculturation was evaluated among participants who had spoken a language other than English as children using an index based on language use and preference [15].

Job type was classified according to the U.S. Census Bureau Index of Occupations [16] and collapsed into four categories (operator/fabricator, professional/manager, service, and technical/sales/administrative) based on previously used methods [1, 5, 6, 17–19]. Examples of operators/fabricators include farm and factory workers; professionals/managers include teachers and financial workers; service jobs include housekeepers, food servers, and nannies; technical/sales/administrative jobs include clerks, administrative assistants, and skilled technical workers. Weekly hours worked before diagnosis was dichotomized as full time versus part time ($\geq$35 vs. <35 h).

Comorbid medical conditions, evaluated using the Charlson Comorbidity Index modified for patient report, were classified as any or none [20, 21]. Clinical cancer and treatment variables were abstracted from the medical record.

Analyses

In univariate analyses, survey and clinical variables were compared by time of the first employment or no return to work using ANOVA for continuous variables and Chi-squared (or Fisher's exact) tests for categorical variables. A multinomial logistic regression was then conducted to identify independent predictors of not returning to work using this outcome as the reference category and including variables that were statistically significant in the univariate analyses (two-sided $p < 0.05$). Where two variables were highly correlated ($p < 0.0001$) the more clinically meaningful variable was included in the model (e.g., chemotherapy was included but cancer stage was not). To separate the effects of chemotherapy and axillary lymph node dissection (ALND) and determine which to include in the model, we created an interaction term and tested its association with return to work. In another set of analyses we fit the same multivariable model after dichotomizing the primary outcome (no return to work vs. return at any time during the study period).

Results

Participant characteristics

Table 1 lists the baseline characteristics of the study sample ($n = 274$). More than half of the study participants

Table 1 Participant characteristics

	No. (%), $n = 274$
Demographics	
Age	
Median	49
Range	26–85
Birthplace[a]	
United States	118 (43)
Outside of the United States	155 (57)
Annual household income[a]	
<$10,000	80 (30)
$10,000–$20,000	86 (32)
>$20,000	103 (38)
Financial resources adequate to meet needs[a]	
Adequate	99 (37)
Inadequate	171 (63)
Race/ethnicity	
Latina	145 (53)
Non-Latina White	90 (33)
Other	39 (14)
Marital status	
Married/partnered	125 (46)
Not married/partnered	149 (54)
Children ≤17 years old at home[a]	
None	111 (48)
One	48 (21)
Two or more	71 (31)
Seniors ≥65 years old at home[a]	
None	194 (83)
One or more	39 (17)
Education[a]	
Did not complete high school	99 (36)
High school ± some college	124 (45)
College ± post-graduate	50 (18)
Acculturation	
More acculturated	20 (12)
Less acculturated	148 (88)
Social support	
Support—emotional[a]	
No support	29 (11)
Some support	244 (89)
Support—help with daily tasks[a]	
No support	47 (17)
Some support	226 (83)
Support—accompanied participant to doctor's visits[a]	
No support	40 (15)
Some support	233 (85)
Work related (before diagnosis)	
Job type before diagnosis	
Operator/fabricator	44 (16)

Table 1 continued

	No. (%), $n = 274$
Professional/manager	49 (18)
Service	130 (47)
Technical/sales/administrative	51 (19)
Full- vs. part-time employment before diagnosis[a]	
Full time	189 (69)
Part time	83 (31)
Clinical variables	
Comorbid conditions	
None	199 (73)
One or more	75 (27)
Cancer stage	
DCIS	25 (10)
I	76 (31)
II	106 (44)
III	35 (14)
Type of breast surgery[a]	
Mastectomy	101 (39)
Breast-conserving surgery	156 (61)
Breast reconstruction (if mastectomy)	
Received	16 (16)
Not received	85 (84)
Axillary node dissection[a]	
Received	168 (65)
Not received	90 (35)
Chemotherapy[a]	
Received	180 (70)
Not received	77 (30)
Endocrine therapy[a]	
Received	171 (69)
Not received	78 (31)
Radiation therapy[a]	
Received	185 (73)
Not received	70 (27)

DCIS ductal carcinoma in situ

[a] Data missing for ≥1 participant. Percentages calculated over complete data

reported an annual household income ≤$20,000; 98 % reported annual household income ≤$40,000 (data not shown). Just over half (53 %) described themselves as Latina. Overall educational attainment was low; 36 % had not completed high school. Service jobs were the most commonly reported occupational category (47 %). The majority of participants (73 %) reported no comorbid medical conditions. Most received chemotherapy (70 %), radiation (73 %), and endocrine therapy (69 %). In terms of surgery, 39 % underwent mastectomy, and 65 % underwent ALND.
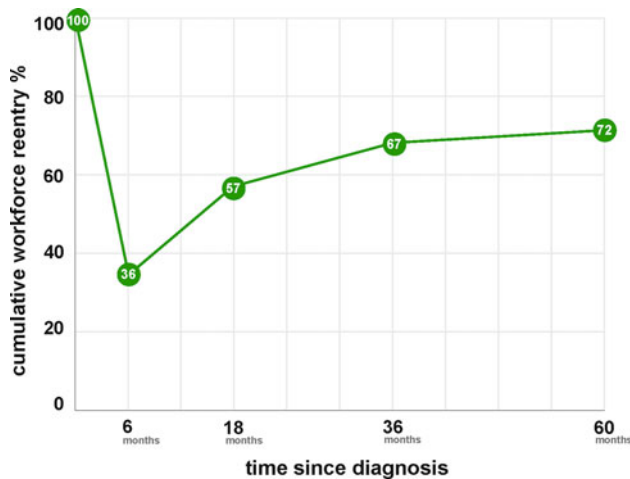
Fig. 2 Cumulative workforce reentry

Time of the first reported return to work

During the 5 years after a diagnosis of breast cancer, 27 % of participants reported that they had not returned to work in every survey. Just over a third of participants (36 %) reported that they were working at the time of the 6-month survey, with fewer participants reporting that they had returned to work by each subsequent survey (21, 10, and 5 % by 18, 36, and 60 months, respectively). Of 174 participants who were not working in the 6-month survey, 43 % reported not returning to work throughout the study period. Cumulative workforce reentry is shown in Fig. 2.

Predictors of not returning to work

Results of univariate analyses are reported in Table 2. Since only 5 % of participants first reported return to work at 60 months and the two groups had similar baseline characteristics, participants who reported first return to work at 36 and 60 months were combined into one group to increase the power of the analyses. Variables significantly associated with return to work included age, annual household income, adequacy of financial resources, race/ethnicity, education, comorbidity burden, cancer stage, ALND, and chemotherapy. Among participants who never reported return to work, the percentage who received chemotherapy was almost twice as high as the percentage who did not receive chemotherapy. Moreover, participants who reported that they were still actively undergoing chemotherapy at the time of their 6-month survey were much more likely to report that they were not working at 6 months (81 % of those receiving chemotherapy vs. 55 % of those not in treatment, $p < 0.0001$, data not shown). There was no corresponding employment difference among patients still undergoing radiation therapy at the time of the 6-month survey, and overall receipt of radiation therapy was not associated with return to work. The relationship between receipt of chemotherapy and cumulative workforce reentry is shown in Fig. 3.

Participants who had chemotherapy were at higher risk of not returning to work, regardless of whether or not they underwent ALND (data not shown). Those who had ALND but no chemotherapy had similar return to work than those who received neither treatment. Therefore, chemotherapy rather than ALND was included in the multinomial logistic regression model (Table 3). Controlling for all other variables in the model, women who received chemotherapy had more than six times the odds as non-recipients of not returning to work throughout the study period than of working at 6 months. A similar relationship was seen for income. In this uniformly low-income sample, those earning less than $10,000 annually had more than five times the odds as those earning at least $20,000 of never reporting return to work than of working at 6 months. Latinas had more than three times the odds as non-Latina whites of never reporting return to work than of working at 6 months. For the comparison between not returning to work and working by 6 months, no significant relationship was identified according to comorbidity burden. However, those with at least one comorbid condition had four times the odds as those without any comorbid conditions of never returning to work than of working by 36–60 months. Education and age were not significantly associated with never returning to work.

Similar results were seen after dichotomizing the primary outcome (not returning to work vs. return at any time during the study). Income, the presence of at least one comorbid condition, and receipt of chemotherapy all were significantly associated with not returning to work; age and education were not associated with not returning to work. In contrast with the multinomial model, in this model race/ethnicity was not associated with not returning to work.

Discussion

In this study we found that more than a quarter of low-income, medically underserved breast cancer survivors who had been employed before their diagnosis did not return to work during the subsequent 5 years. Most women who returned to work did so early; 36 % of the study participants were working at 6 months and another 21 % had returned to work by 18 months. Among those not working 6 months after diagnosis, however, almost half never returned to work. As we had hypothesized, receipt of chemotherapy was an independent predictor of never returning to work. Since most participants who were undergoing chemotherapy at 6 months also reported that they were not working at that time, our findings indicate

Table 2 Univariate analysis of time of the first reported return to work

	Working at 6 months, No. (%), n = 100	Working at 18 months, No. (%), n = 58	Working at 36–60 months, No. (%), n = 41	No reported return to work, No. (%), n = 75	p value
Demographics					
Age					<0.05
Median	49	48	45	50	
Range	34–85	26–63	34–65	31–65	
Birthplace[a]					
United States	49 (42)	28 (24)	12 (10)	29 (25)	
Outside of the United States	50 (32)	30 (19)	29 (19)	46 (30)	0.11
Annual household income[a]					
<$10,000	15 (19)	19 (24)	13 (16)	33 (41)	
$10,000–$20,000	37 (43)	20 (23)	13 (15)	16 (19)	
>$20,000	45 (44)	19 (18)	15 (15)	24 (23)	<0.005
Financial resources adequate to meet needs[a]					
Adequate	52 (53)	21 (21)	11 (11)	15 (15)	
Inadequate	47 (27)	36 (21)	29 (17)	59 (35)	<0.0005
Race/ethnicity					
Latina	39 (27)	34 (23)	26 (18)	46 (32)	
Non-Latina White	46 (51)	19 (21)	9 (10)	16 (18)	
Other	15 (38)	5 (13)	6 (15)	13 (33)	<0.01
Marital status					
Married/partnered	44 (35)	30 (24)	20 (16)	31 (25)	
Not married/partnered	56 (38)	28 (19)	21 (14)	44 (30)	0.64
Children ≤17 years old at home[a]					
None	42 (38)	24 (22)	13 (12)	32 (29)	
One	16 (33)	14 (29)	10 (21)	8 (17)	
Two or more	17 (24)	17 (24)	12 (17)	25 (35)	0.18
Seniors ≥65 years old at home[a]					
None	64 (33)	43 (22)	33 (17)	54 (28)	
One or more	15 (38)	11 (28)	2 (5)	11 (28)	0.28
Education[a]					
Did not complete high school	23 (23)	19 (19)	21 (21)	36 (36)	
High school ± some college	55 (44)	28 (23)	11 (9)	30 (24)	
College ± post-graduate	21 (42)	11 (22)	9 (18)	9 (18)	<0.005
Acculturation					
More acculturated	9 (45)	4 (20)	2 (10)	5 (25)	
Less acculturated	44 (30)	32 (22)	28 (19)	44 (30)	0.52
Social support					
Support—emotional[a]					
No support	7 (24)	6 (21)	6 (21)	10 (34)	
Any support	93 (38)	52 (21)	35 (14)	64 (26)	0.43
Support—help with daily tasks[a]					
No support	19 (40)	12 (26)	3 (6)	13 (27)	
Any support	81 (36)	46 (20)	38 (17)	61 (27)	0.32
Support—accompanied participant to doctor's visits[a]					
No support	13 (33)	7 (18)	11 (28)	9 (23)	
Any support	87 (37)	51 (22)	30 (13)	65 (28)	0.12

Table 2 continued

	Working at 6 months, No. (%), n = 100	Working at 18 months, No. (%), n = 58	Working at 36–60 months, No. (%), n = 41	No reported return to work, No. (%), n = 75	p value
Work related					
Job type before diagnosis					
Operator/fabricator	9 (20)	8 (18)	9 (20)	18 (41)	
Professional/manager	23 (47)	8 (16)	7 (14)	11 (22)	
Service	45 (35)	30 (23)	21 (16)	34 (26)	
Technical/sales/administrative	23 (45)	12 (24)	4 (8)	12 (24)	0.15
Full- vs. part-time employment before diagnosis[a]					
Full time	69 (37)	41 (22)	28 (15)	51 (27)	
Part time	29 (35)	17 (20)	13 (16)	24 (29)	0.98
Clinical variables					
Comorbid conditions					
None	73 (37)	46 (23)	34 (17)	45 (23)	
One or more	27 (36)	12 (16)	6 (8)	30 (40)	<0.01
Cancer stage					
DCIS	16 (64)	2 (8)	2 (8)	5 (20)	
I	36 (47)	15 (20)	9 (12)	16 (21)	
II	30 (28)	30 (28)	21 (20)	25 (24)	
III	5 (14)	6 (17)	6 (17)	18 (51)	<0.0005
Type of breast surgery[a]					
Mastectomy	27 (27)	25 (25)	20 (20)	29 (29)	
Breast-conserving surgery	65 (42)	31 (20)	20 (13)	40 (26)	0.08
Breast reconstruction (if mastectomy)					
Received	6 (38)	4 (25)	4 (25)	2 (13)	
Not received	21 (25)	21 (25)	16 (19)	27 (32)	0.42
Axillary node dissection[a]					
Received	48 (29)	38 (23)	35 (21)	47 (28)	
Not received	45 (50)	18 (20)	5 (6)	22 (24)	<0.001
Chemotherapy[a]					<0.0001
Received	44 (24)	47 (26)	33 (18)	56 (31)	
Not received	49 (64)	9 (12)	7 (9)	12 (16)	
Endocrine therapy[a]					
Received	62 (36)	39 (23)	22 (13)	48 (28)	
Not received	31 (40)	16 (21)	13 (17)	18 (23)	0.72
Radiation therapy[a]					
Received	65 (35)	40 (22)	29 (16)	51 (28)	
Not received	28 (40)	16 (23)	10 (14)	16 (23)	0.84

DCIS ductal carcinoma in situ

[a] Data missing for ≥1 participant. Percentages calculated over complete data for this variable

that the relationship between chemotherapy and not returning to work in the long term is related to the time taken off for treatment. Encouraging and facilitating early return to work or continued employment, if treatment side effects are controlled and working is feasible, could abrogate the adverse impact of chemotherapy on long-term work outcomes.

Our finding of an association between receipt of chemotherapy and not returning to work in the long term is in contrast to prior research not focused on low-income, medically underserved women. Although higher rates of job loss in the short term have been found among women treated with chemotherapy [4, 8], most studies of long-term employment outcomes have shown no relationship between
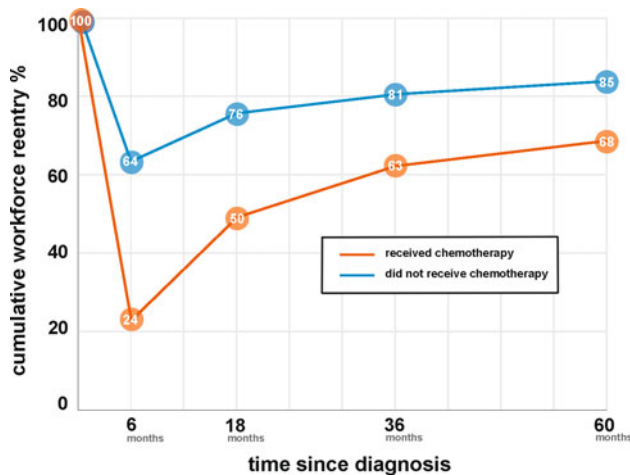
Fig. 3 Chemotherapy and cumulative workforce reentry

chemotherapy and return to work [5, 9, 10]. Low-income women, such as those in our study, may be less likely to return to work after chemotherapy due to lack of workplace accommodation, including sick leave and schedule flexibility, all of which have been associated with increased return to work in higher income samples [4, 5, 8]. According to the Bureau of Labor Statistics, paid sick leave

is available to only 21 % of workers in the lowest 10 % of wage earners nationwide compared to 87 % of those in the highest 10 % [22]. Women who lack these benefits and stop working have no guarantee that their positions will be available once they are ready to return. Our findings indicate that receipt of chemotherapy may have a more pronounced and long-term effect in such populations, such that women who stop working during treatment are at risk of never resuming work.

The increased vulnerability of low-income women to not working in the long term also is supported by the finding that, within this uniformly low-income cohort of breast cancer survivors, those in the lowest income category had the highest risk of never returning to work. Extreme poverty may be a proxy for workplace characteristics, such as working in the informal sector (working for cash in jobs such as babysitting or housekeeping). Unless an employee is a member of a union, informal employment typically has no associated sick leave or disability benefits, and an employee may quickly be replaced if she takes any time off from work.

To our knowledge, this is the first prospective, longitudinal study to report 5 years of work outcomes in low-income women treated for breast cancer. Additional strengths of this

Table 3 Multinomial logistic regression of time of the first reported working versus no reported return to work ($n = 251$)

	Odds ratio for 6 months versus no reported return to work (95 % CI)		Odds ratio for 18 months versus no reported return to work (95 % CI)		Odds ratio for 36–60 months versus no reported return to work (95 % CI)	
Age**	0.98	(0.93–1.03)	0.96	(0.91–1.01)	0.95	(0.90–1.01)
Annual household income						
<$10,000[†]	0.19	(0.07–0.47)	0.80	(0.33–1.98)	0.61	(0.23–1.65)
$10,000–$20,000	1.12	(0.45–2.74)	1.84	(0.70–4.85)	1.48	(0.52–4.25)
>$20,000*	1		1		1	
Race/ethnicity						
Latina[†]	0.31	(0.12–0.81)	0.73	(0.27–1.97)	0.80	(0.24–2.61)
Other	0.41	(0.13–1.30)	0.36	(0.10–1.33)	0.98	(0.25–3.91)
Non-Latina white*	1		1		1	
Education						
Did not complete high school	0.64	(0.18–2.25)	0.43	(0.12–1.56)	0.64	(0.16–2.48)
High school ± some college	0.93	(0.31–2.80)	0.70	(0.22–2.21)	0.36	(0.10–1.30)
College ± post-graduate*	1		1		1	
Comorbid conditions						
One or more[†]	0.60	(0.27–1.32)	0.46	(0.20–1.07)	0.25	(0.08–0.73)
None*	1		1		1	
Chemotherapy						
Received[†]	0.15	(0.07–0.36)	0.87	(0.32–2.37)	0.69	(0.23–2.08)
Not received*	1		1		1	

[†] Statistically significant relationship based on confidence intervals, as shown, for at least one comparison between time of the first reported return to work and no reported return to work

* Reference category (odds ratio = 1.00)

** Odds ratio corresponds to a 1-year increase in age

study include its high response and retention rates, which are similar to those reported in prior studies of wealthier samples [5, 6, 9]. In our analyses we investigated the best way to collapse groups by time of the first reported return to work. Although our multivariable multinomial model (no return to work vs. time of return to work) and multivariable model (no return to work vs. return at any time during the study) differed with respect to race/ethnicity, the relationship between not returning to work and receipt of chemotherapy was not sensitive to variation in how the groups were collapsed, buttressing the credibility of this finding (income and comorbidity burden also were associated with not returning to work in both models). By focusing on the more complete model, which included time of the first reported return to work, we were able to demonstrate the importance of continuing to work on long-term work outcomes even as early as 6 months after diagnosis.

A limitation of our study is that we do not have information about participants' work status between surveys or amount of time taken off from work for those working at 6 months. After initially returning to work, most participants also reported working in all subsequent surveys, so it is likely that few women stopped and then restarted work between surveys, such that their absences are not captured in our data. However, future research should investigate whether there is a threshold number of missed work days after which women are less likely to return to work. The role of symptom management also should be investigated. A limitation of this study is that we do not have information about quality of life at baseline, but in a previous study we demonstrated that psychosocial health was associated with return to work 18 months after diagnosis among both low-income Latina and non-Latina white breast cancer survivors [1]. With respect to symptom control earlier on in the disease trajectory, previous research has indicated that depression, pain, and nausea were the three most commonly reported symptoms, occurring in 63, 56, and 42 % of low-income breast cancer patients 6 months after diagnosis [23]. However, only 26 % of physicians were aware of their patients' depressive symptoms, compared to more than 70 % who were aware of their patients' pain and two-thirds who were aware of their patients' nausea, and physician recognition of depression was least common in less-acculturated Latinas and Asian/Pacific Islanders. Importantly, physician awareness of depression and of pain was associated with resolution of these symptoms. Improved symptom recognition and management by clinicians has the potential to be an important factor in facilitating early return to work and, therefore, long-term employment outcomes. Public policy should support increased clinician awareness of patient symptoms and promote understanding of the potential impact of adequate symptom management on both short-term and long-term outcomes.

Another limitation of our study is the lack of detailed information about participants' work conditions and relationship with their employer, both of which may affect the relationship between receipt of chemotherapy and return to work [5]. The role of employee negotiation in obtaining accommodation remains poorly understood. Those least likely to obtain accommodation may be undocumented workers and those working for individual employers or small businesses, since employers of fewer than 15 workers are not obligated to provide accommodation under the Americans with Disabilities Act [24]. Brown et al. [25] recently reported on the development of an electronic education tool for cancer patients to improve communication with an employer. Additional research is needed to understand how such interventions might enhance survivors' negotiation skills and improve employment outcomes on a large scale.

In its landmark report, *From Cancer Patient to Cancer Survivor: Lost in Transition*, the Institute of Medicine charged clinicians with addressing employment concerns with their patients and recommended that providers familiarize themselves with legal protections for survivors at work, provide patients with information about these protections and employment programs, and ask patients if they are experiencing health problems that affect their ability to work [26]. Future research should focus on better understanding the reasons for the relationship between job loss and receipt of chemotherapy so that appropriate interventions may be developed.

Our findings may have important policy implications. The recent passage of "Right to Work" legislation in several states [27], severely restricting the ability of unions to protect workers' rights, may disproportionately affect workers with cancer. Those whose jobs previously were safeguarded in the event of a prolonged absence due to illness may find that these same protections are eliminated in the absence of organized labor. Such drawbacks of the new legislation should be highlighted as should its disparate impact on cancer patients and those with other life-threatening medical problems requiring long-term treatment. Similarly, the scope of the Americans with Disabilities Act should be extended to include employees of small businesses, which includes many non-unionized, low-income workers, who are less likely to have sick leave and disability benefits and are, therefore, at risk of job loss due to severe illness. For those who ultimately lose their jobs and are unable to find similar positions when they are ready to return to work, job reorientation and skill-building programs could help shorten the period of unemployment and associated financial hardship. Just as the Institute of Medicine charged clinicians with advocating for their patients by empowering them with the information needed to protect themselves at work, so should the larger

oncology community, including the patient advocacy movement, promote local and national policy changes to address these concerns.

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