Original Article

Treatment Decisions and Employment of Breast Cancer Patients: Results of a Population-Based Survey

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BACKGROUND: Many patients with breast cancer work for pay at the time of their diagnosis, and the treatment plan may threaten their livelihood. Understanding work experiences in a contemporary population-based sample is necessary to inform initiatives to reduce the burden of cancer care. **METHODS:** Women who were 20 to 79 years old and had been diagnosed with stage 0 to II breast cancer, as reported to the Georgia and Los Angeles Surveillance, Epidemiology, and End Results registries in 2014-2015, were surveyed. Of the 3672 eligible women, 2502 responded (68%); 1006 who reported working before their diagnosis were analyzed. Multivariate models evaluated correlates of missing work for >1 month and stopping work altogether versus missing work for ≤1 month. **RESULTS:** In this diverse sample, most patients (62%) underwent lumpectomy; 16% underwent unilateral mastectomy (8% with reconstruction); and 23% underwent bilateral mastectomy (19% with reconstruction). One-third (33%) received chemotherapy. Most (84%) worked full-time before their diagnosis; however, only 50% had paid sick leave, 39% had disability benefits, and 38% had flexible work schedules. Surgical treatment was strongly correlated with missing >1 month of work (odds ratio [OR] for bilateral mastectomy with reconstruction vs lumpectomy, 7.8) and with stopping work altogether (OR for bilateral mastectomy with reconstruction vs lumpectomy, 3.1). Chemotherapy receipt (OR for missing >1 month, 1.3; OR for stopping work altogether, 3.9) and race (OR for missing >1 month for blacks vs whites, 2.0; OR for stopping work altogether for blacks vs whites, 1.7) also correlated. Those with paid sick leave were less likely to stop working (OR, 0.5), as were those with flexible schedules (OR, 0.3). **CONCLUSIONS:** Working patients who received more aggressive treatments were more likely to experience substantial employment disruptions. ***Cancer* 2017;123:4791-9**. © *2017 American Cancer Society.*

KEYWORDS: breast cancer, chemotherapy, employment, job, mastectomy, work.

INTRODUCTION

Work is an important source of income, insurance, and social interactions and may be particularly important for individuals with cancer, who may also find that it gives meaning to life, provides a welcome distraction, and improves their quality of life.[1,2] Unfortunately, a diagnosis of cancer and its treatment can disrupt patient employment, particularly during active therapy but also in its aftermath. Treatment plans are burdensome and exact a heavy toll on all aspects of quality of life, including physical functioning and emotional well-being, with protracted recovery times in some cases. Financial toxicity, which can develop in part because of lost income, is an important yet understudied potential threat to patient and family quality of life after diagnosis.

Prior research regarding the impact of a diagnosis of breast cancer and its treatment on employment experiences has yielded variable results, with some studies suggesting a limited impact but others suggesting substantial and lasting effects.[3-7] The divergence of prior study results may be explained in part by differences in study settings and population

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characteristics, the wide variations in relevant policies and cultures in different nations, and changes in treatments offered over time.

Our own prior work has shown that many patients with breast cancer are working for pay at the time of their diagnosis, that most women with breast cancer who are working for pay before their diagnosis lose work time during treatment, and that many stop working altogether.[5,6] Furthermore, a loss of paid work during treatment can result in permanent and undesirable long-term unemployment.[7] Thus, it is critical that treatments be no more burdensome than necessary and delivered in ways that minimize disruption for patients.

The growing awareness of the burden of cancer treatment is sparking initiatives to reduce it. The use of chemotherapy for early-stage breast cancer is increasingly more selective,[8] and increased attention to symptom control and management may be reducing avoidable morbidity in those who do receive treatment.[9] In contrast, trends in surgical management may be increasing patient morbidity; for example, bilateral mastectomy, usually with breast reconstruction, is being increasingly used for patients with unilateral cancer.[10] However, at the same time, there are trends toward less extensive surgery, such as decreased re-excision[11] and use of axillary dissection after lumpectomy. Thus, there is a growing dichotomy in surgical management with a major potential impact on patient recovery from treatment. It is essential that we understand how this rapidly evolving treatment context may affect the employment of women diagnosed with breast cancer.

Policies regarding employment support for patients with cancer have also evolved in light of the growing recognition of the importance of these issues,[12,13] and this further motivates the need to examine the impact of treatment on the employment of patients diagnosed in the United States today. In this transformed landscape of public policy, medical evidence, and treatment options, we sought to document patterns and correlates of missed work in a contemporary population-based sample of women recently diagnosed with breast cancer, with a particular focus on associations of employment experiences with the primary surgical treatment selected, to inform initiatives for supporting patients with cancer in their treatment decisions and transitions to survivorship.

MATERIALS AND METHODS

Study Sample and Data Collection

After institutional review board approval, including a waiver of signed informed consent, we selected women aged 20 to 79 years and diagnosed with stage 0 to II breast cancer who had been reported to the Surveillance, Epidemiology, and End Results (SEER) registries of Georgia and Los Angeles County. Eligible patients were identified via pathology reports from "definitive" surgical procedures (those intended to remove the tumor with clear margins) in 2014-2015. Black, Asian, and Hispanic women were oversampled in Los Angeles with a previously described approach.[14] The questionnaire content was developed with a conceptual framework, research questions, and hypotheses. We developed measures drawing from the literature and our prior research. We assessed content validity, including a systematic review by design experts, cognitive pretesting with patients, and pilot studies in clinic populations.[15]

Data Collection

Patient surveys were mailed with a $20 cash incentive (see online supporting information); a modified Dillman method was used, including reminders sent to nonrespondents.[16] All materials were in English. We added Spanish-translated materials for all women with surnames suggesting Hispanic ethnicity. Survey responses were merged with SEER data. The median time from diagnosis to survey completion was 7 months.

Measures

As part of a larger questionnaire that evaluated patients' treatment decisions and experiences after the diagnosis of breast cancer, we asked patients whether they worked for pay before their breast cancer diagnosis and what their employment status was (employed full-time, employed part-time, unemployed and looking for work, temporarily laid off or on sick or other leave, disabled, retired, student, or homemaker). We limited our analytic sample for the current study to those who reported working either full-time or part-time before their diagnosis.

Our primary dependent variable of interest was patient-reported missed work (ie, days missed because of breast cancer or its treatment); the response options were none, less than a week, 7 to 14 days, 15 to 30 days, more than a month, and stopped working altogether. We then categorized these for analysis as we did in our prior work using this measure: missed 0 to 30 days, missed >30 days, or stopped working altogether.[5]

Independent variables included patients' clinical, treatment, sociodemographic, and employment-related characteristics. All of these were measured by self-report except for the tumor stage, which was taken from SEER registry data. Specifically, the clinical factors that we

considered were age (measured continuously and categorized as ≤50, >50 to 65, or >65 to 79 years), stage (American Joint Committee on Cancer stage 0, I, or II), patient-reported comorbidities (the presence of 1 or more medical comorbidities derived from a list pertinent to cancer patients), and overall health status (categorized as excellent, good, fair, or poor). Treatment factors included chemotherapy receipt, radiotherapy receipt, axillary surgery (dichotomized as axillary lymph node dissection vs sentinel node biopsy alone or no surgical nodal intervention), and the type of breast surgery received (categorized as lumpectomy, unilateral mastectomy without reconstruction, unilateral mastectomy with reconstruction, bilateral mastectomy without reconstruction, or bilateral mastectomy with reconstruction). Sociodemographic features included the following: race/ethnicity (non-Hispanic white, non-Hispanic black, non-Hispanic Asian, Latina, or other), educational attainment (high school or less, some college or technical school, or college graduate), household income (<$40,000, $40,000-$89,999, or ≥$90,000), number of people supported by the patient's income, and marital status (married or partnered vs not married or partnered). Employment-related characteristics included the following: self-reported full-time status versus part-time status, work hours (1-35, 36-44, or ≥45 h/wk), paid sick leave, disability benefits, flexible work schedule, and geographic site (Los Angeles vs Georgia).

In addition, we inquired, "Since your breast cancer diagnosis, how much money (income) have you lost due to time off from work?" The response options were $0, $1 to $500, $501 to $2000, $2001 to $5000, $5001 to $10,000, and >$10,000.

Statistical Analyses

After limiting the study sample to those who had been working before their diagnosis, we described the study sample and its characteristics by the amount of missed work (work missed for 0-30 days, work missed for >30 days, or work stopped altogether). Next, we constructed a multivariate multinomial logistic regression model of the missed work outcome, and we used 0 to 30 days as the reference category. Independent variables included all of the clinical, treatment, sociodemographic, and employment-related characteristics listed previously except for work hours (to avoid collinearity with a self-reported full-time status versus a part-time status). The multivariate analysis used listwise deletion for all missing data; less than 3% of the cases were excluded because of missing data. Finally, we described the amount of lost income by the amount of missed work and made comparisons with the chi-square test. Using the midpoints of the ranges for the survey questions on household income and income lost because of time off work, we also estimated the percentage of annual income lost. Analyses were conducted with SAS 9.4, and P values $< .05$ were considered significant.

Survey design and nonresponse weights were used in all analyses to compensate for the differential probability of selecting patients and survey nonresponse.[17] All percentages and odds ratios (ORs) reported herein are weighted, and the numbers of participants, when provided, are unweighted for clarity. Because of the low levels of item nonresponse, complete case methods were used; analyses of data using multiply imputed data (not shown) were consistent with the results that we report here.

RESULTS

As shown in Figure 1, of the 3930 women diagnosed in 2014-2015 whom we initially selected for our sample on the basis of rapid case ascertainment (which allows earlier survey administration by reducing the time lag from diagnosis to case identification),[18] 258 were subsequently found to be ineligible because they had a prior breast cancer diagnosis or stage III to IV disease; resided outside the SEER registry area; or were deceased, too ill, or unable to complete a survey in Spanish or English. Of the 3672 eligible women remaining, 1170 could not be contacted or did not participate, and this left 2502 respondents (68%). Of these women, we considered the 1006 who reported that they had been working before their diagnosis for further analysis in this study.

Table 1 shows the characteristics of the analytic sample, which was racially and ethnically diverse (48% were white, 19% were black, 20% were Latina, and 11% were

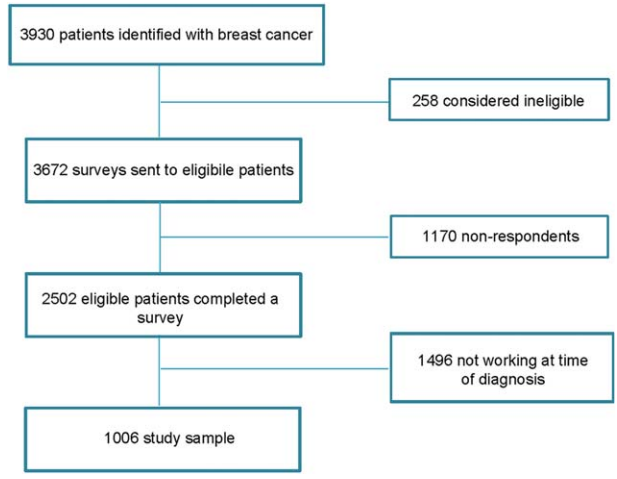

Figure 1. Flow diagram of the study participants.

TABLE 1. Distribution of Patients by Selected Clinical, Treatment, Sociodemographic, and Employment-Related Characteristics

Characteristic	No.[a]	Column %[b]
Age at diagnosis		
≤50 y	353	35
51-65 y	550	55
66-79 y	103	10
Stage		
0	196	20
I	526	53
II	263	27
Any comorbidities		
No	789	78
Yes	217	22
Health status		
Poor	8	1
Fair	97	10
Good	371	37
Very good	404	41
Excellent	117	12
Chemotherapy		
No chemotherapy	658	67
Chemotherapy	327	33
Radiotherapy		
No radiotherapy	474	48
Radiotherapy	518	52
Surgical treatment		
Lumpectomy	608	62
Unilateral mastectomy without reconstruction	77	8
Unilateral mastectomy with reconstruction	81	8
Bilateral mastectomy without reconstruction	38	4
Bilateral mastectomy with reconstruction	184	19
Axillary lymph node dissection		
No	917	91
Yes	89	9
Race		
Non-Hispanic white	485	48
Non-Hispanic black	188	19
Latina	201	20
Non-Hispanic Asian	115	11
Other	17	2
Education		
High school or less	231	23
Some college or technical school	298	30
College graduate or more	460	47
Marital status		
Not partnered	367	37
Married/partnered	625	63
Site		
Georgia	510	51
Los Angeles	496	49
Employment status		
Part-time	162	16
Full-time	844	84
Work time		
1-35 h/wk	213	22
36-44 h/wk	562	57
≥45 h/wk	207	21
Paid sick leave		
No	504	50
Yes	502	50
Disability benefits		
No	613	61
Yes	393	39
Flexible work schedule		
No	624	62
Yes	382	38
Household income		
<$40,000	255	28
$40,000-$89,999	330	36
≥$90,000	337	37
People supported by household income		
1 (self only)	239	24
2	369	37
3	173	18
≥4	204	21

[a] Unweighted number.
[b] Weighted percentages (to compensate for the differential probability of selection and survey nonresponse).
Ns do not add to 1006 due to missing responses.
Percentages do not add to 100 due to rounding.

Asian). Most patients (62%) underwent lumpectomy, 16% underwent unilateral mastectomy (8% with reconstruction), and 23% underwent bilateral mastectomy (19% with reconstruction). One-third (33%) received chemotherapy. The vast majority (84%) reported working full-time before their diagnosis; however, only half (50%) had jobs that allowed for paid sick leave, 39% had disability benefits, and 38% had a flexible work schedule.

Bivariate associations between employment experiences and patient characteristics are provided in Supporting Table 1 (see online supporting information). In a multivariate analysis including treatment and clinical factors alone, several factors were significantly correlated with missing more than a month of work or stopping work altogether versus missing up to 30 days (Table 2). Those with poorer health (vs excellent health) were overall less likely ($P < .001$) to miss work (OR for stopping work altogether, 2.5; 95% confidence interval [CI], 1.2-5.1). Chemotherapy receipt also correlated with stopping work (OR for missing >1 month, 1.3; 95% CI, 0.8-2; OR for stopping work altogether, 3.9; 95% CI, 2.6-5.8). Surgical treatment was strongly correlated with missing >1 month of work (OR for bilateral mastectomy with reconstruction vs lumpectomy, 7.8; 95% CI, 4.5-13.4) and with stopping work altogether (OR for bilateral mastectomy with reconstruction vs lumpectomy, 3.1; 95% CI, 1.6-5.9). Race was correlated with missed work ($P = .01$). For blacks versus whites, the OR was 2.0 for missing more than 1 month (95% CI, 1.3-3.2) and 1.7 for stopping work altogether (95% CI, 1.1-2.8). Those with paid sick

TABLE 2. Adjusted ORs for Work Loss by Sociodemographic, Clinical, and Employment-Related Factors

Factor	OR (CI)		*P*
	Missed Work for >1 mo vs ≤1 mo	Stopped Working vs Missed Work for ≤1 mo	
Age			.158
≤50 y	1.0	1.0	
51-65 y	0.7 (0.4-1)	0.7 (0.4-1)	
66-79 y	0.3 (0.1-0.5)	0.7 (0.4-1.2)	
Stage			.174
0 (reference)	1.0	1.0	
I	1.4 (0.9-2.2)	1.3 (0.8-2)	
II	1.4 (0.8-2.5)	1.4 (0.8-2.4)	
Any comorbidities	0.8 (0.6-1.3)	0.7 (0.5-1)	.285
Health status			<.001
Poor or fair	1.3 (0.6-2.7)	2.5 (1.2-5.1)	
Good	1.7 (0.9-3.1)	1.7 (0.9-3.3)	
Very good	1.1 (0.6-1.9)	0.8 (0.4-1.6)	
Excellent (reference)	1.0	1.0	
Chemotherapy	1.3 (0.8-2)	3.9 (2.6-5.8)	<.001
Radiotherapy	1.1 (0.7-1.7)	1.2 (0.7-1.8)	.488
Surgical treatment			<.001
Lumpectomy (reference)	1.0	1.0	
Unilateral mastectomy without reconstruction	4.0 (2.1-7.7)	2.5 (1.3-4.9)	
Unilateral mastectomy with reconstruction	4.0 (2.1-7.5)	2.3 (1.2-4.5)	
Bilateral mastectomy without reconstruction	2.6 (1-7.1)	2.9 (1.3-6.6)	
Bilateral mastectomy with reconstruction	7.8 (4.5-13.4)	3.1 (1.6-5.9)	
Axillary lymph node dissection			.300
No	1.0	1.0	
Yes	0.5 (0.3-1.1)	0.8 (0.5-1.5)	
Race			.014
Non-Hispanic white (reference)	1.0	1.0	
Non-Hispanic Asian	1.6 (0.9-2.8)	2.6 (1.4-4.8)	
Non-Hispanic black	2 (1.3-3.2)	1.7 (1.1-2.8)	
Latina	1.4 (0.9-2.4)	2.1 (1.2-3.7)	
Other	0.5 (0.1-4.5)	2.8 (0.9-8.8)	
Education			.846
High school or less (reference)	1.0	1.0	
Some college or technical school	1 (0.6-1.6)	1.4 (0.9-2.2)	
College graduate	0.9 (0.5-1.5)	1 (0.6-1.6)	
Married/partnered	0.9 (0.6-1.5)	1.5 (0.9-2.3)	.546
Georgia (vs Los Angeles)	0.6 (0.4-0.8)	0.8 (0.5-1.2)	.004
Part-time employment	0.3 (0.2-0.5)	1 (0.6-1.5)	.252
Paid sick leave	1.3 (0.9-2)	0.5 (0.3-0.7)	.002
Disability benefits	2.7 (1.8-3.9)	1.6 (1-2.4)	<.001
Flexible work schedule	0.7 (0.5-1)	0.3 (0.2-0.5)	<.001
Household income			.043
<$40,000 (reference)	1.0	1.0	
$40,000-$89,999	0.8 (0.5-1.3)	0.6 (0.4-0.9)	
≥$90,000	0.6 (0.4-1.1)	0.6 (0.3-1)	
People supported by household income			.009
1 (self only; reference)	1.0	1.0	
2	1.2 (0.7-2)	0.7 (0.4-1.1)	
3	1.3 (0.7-2.4)	1.3 (0.7-2.3)	
≥4	1.3 (0.7-2.5)	0.4 (0.2-0.8)	

Abbreviations: CI, confidence interval; OR, odds ratio.
ORs were produced from a multiple-variable logistic regression model. The model incorporated weights to make adjustments for sampling and response rates. *P* values represent the chi-square overall test for association.

leave were less likely to stop working altogether (OR, 0.5; 95% CI, 0.3-0.7). Those with a flexible work schedule were less likely to stop working altogether (OR, 0.3; 95% CI, 0.2-0.5) or to miss more than a month of work (OR, 0.7; 95% CI, 0.5-1). Conversely, women with disability benefits were more likely to stop working (OR, 1.6; 95% CI, 1-2.4) or miss more than a month of work (OR, 2.7; 95% CI, 1.8-3.9). Also significant were the study site (with patients from Georgia less likely to miss more than a month of work: OR, 0.6; 95% CI, 0.4-0.8), the

household income (OR for stopping work for the highest income group [income ≥ $90,000], 0.6; 95% CI, 0.3-1), and the number supported by the family income (with those whose household income supported ≥4 persons being less likely to stop working altogether: OR, 0.4; 95% CI, 0.2-0.8). Notably, 7% of the patients (13% of those receiving radiotherapy) were still receiving radiotherapy at the time of the survey; excluding these patients did not affect the significance of any covariates in the model.

Figure 2 shows adjusted rates of missed work by surgical treatment received. Patients undergoing lumpectomy were far less likely to miss more than a month of work or stop working altogether in comparison with women undergoing mastectomy.

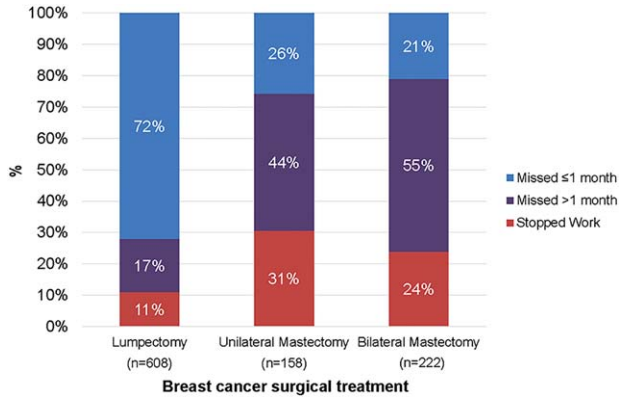

Figure 2. Amount of work lost by breast cancer surgical treatment. This figure depicts marginal probabilities of missed work by surgical treatment. The probabilities were derived from a multivariate model adjusted for age, stage, comorbidities, health status, chemotherapy, radiotherapy, axillary lymph node dissection, race, education, marital status, geographic site, employment status, job benefits, income, and household size, and they were weighted to reflect sampling and response rates. Percentages do not total to 100% due to rounding.

Those who missed more work also reported losing greater amounts of income because of time off work since their breast cancer diagnosis ($P < .001$), as shown in Table 3. Specifically, among those who missed 0 to 30 days, 74% lost $0 to $500, and only 6% lost >$5000. Among those who missed >30 days, 40% lost $0 to $500, and 29% lost >$5000. Among those who stopped working altogether, 17% lost $0 to $500, and 54% lost >$5000. The median patient reported losing 3.6% of her annual household income because of time off work, and 19% of the patients reported losing 10% or more of their annual household income

Of the women in our analytic sample, all of whom had been employed before their diagnosis, 65% reported that their current employment status at the time of the survey was full-time employment, 15% reported part-time employment (including 38 of the 844 women who had been working full-time before their diagnosis), 3% were unemployed and looking for work, 6% were temporarily laid off or on sick or other leave, 4% were disabled, 4% were retired, 1% were students, and 2% were homemakers.

DISCUSSION

In this large, modern, and diverse cohort of patients newly diagnosed with breast cancer, we observed striking variations in the rates of missed work by the type of surgery received along with findings consistent with prior research regarding the impact of chemotherapy, sociodemographic factors, and the employment context. These findings are important because never before have women with breast cancer faced such a wide range of choices for surgical management, nor has the dichotomy in surgical treatment options been more dramatic. Some women receive breast conservation, whereas others receive bilateral mastectomy for exactly the same condition, often also with reconstruction. Understanding the employment effects of different

TABLE 3. Amount of Missed Work by Income Reported Lost Because of Work Loss

	0-30 days Missed		>30 days Missed		Stopped Working	
Income Lost Because of Time Off Work	No.	Column % (Weighted)	No.	Column % (Weighted)	No.	Column % (Weighted)
$0	298	66	121	37	22	14
$1-$500	37	8	10	3	5	3
$501-$2000	54	12	57	16	15	8
$2001-$5000	34	8	55	16	35	22
$5001-$10,000	14	3	63	18	33	20
>$10,000	12	3	35	11	60	34

The percentages have been weighted to reflect sampling and response rates.
Percentages do not add to 100 due to rounding.

surgical decisions is critically important to the many patients who consider surgical treatments more aggressive than medically necessary to treat their cancer. Surgeons who treat patients with breast cancer can now provide compelling evidence that women who undergo mastectomy experience considerably higher risks of missed work than those who receive breast-conserving therapy. Moreover, the current data allow quantification of the financial impact of this missed work, and these data may be very useful in helping patients understand the full impact of treatment decisions.

Strikingly, the magnitude of the risk to employment with more aggressive surgery observed in this study was similar to the risks associated with chemotherapy, which has traditionally been the major target of efforts to reduce the burden of cancer care. Indeed, most prior studies of the immediate treatment impact on breast cancer patients' employment have focused on chemotherapy.[19,20] Several studies have suggested that patients who receive chemotherapy are most likely to experience disruptions in employment[21] and prolonged absences.[22] Although evidence has been more mixed regarding the long-term effects of treatment on employment, with some studies suggesting that breast cancer treatment and particularly adjuvant chemotherapy might not delay or prevent the ultimate return to work,[3,4] there is reason to believe that the adverse effects of chemotherapy on employment may be long-lasting. In our group's prior work, adjuvant chemotherapy receipt was associated with long-term job loss among survivors at 4 years, and many of these women were actively seeking employment; this suggests that this was involuntary.[7] Women who lacked employment support (sick leave or flexible hours) were most vulnerable. Studies in other settings, including ones with greater employment support, have also documented greater rates of job discontinuation or decreased work time among breast cancer survivors who received chemotherapy.[23] Moreover, recent research has highlighted how certain women, including those with low incomes, may be particularly vulnerable to the risk of not returning to work in the months and years after treatment.[24]

As Hassett et al[21] noted in relevant prior work, these findings "reinforce the need to assess the impact of treatments, especially new treatments, on patient-centered outcomes such as employment." Notably, at the time of most prior studies, rates of mastectomy overall were considerably lower than those in the current era, and bilateral mastectomy was rarely used, so it was not evaluated separately from unilateral mastectomy in terms of its impact on employment. However, in recent years, in the wake of celebrity disclosures and growing patient interest, rates of mastectomy overall and particularly in combination with contralateral prophylactic mastectomy have surged: more than 1 in 5 patients in the current sample of working patients had undergone bilateral mastectomy. Although some women with early-stage breast cancer are not candidates for breast conservation, most are. Therefore, it is crucial to ensure that patients are fully informed of the risks of treatment, including the potential for its impact on employment (a critical component of financial toxicity), to optimize the true goals of shared decision making. With the growing use of mastectomy, further research is necessary to monitor whether the short-term impact of more aggressive surgery that was observed in the current study will also translate into longer term consequences for these women's employment and well-being.

Prior research has emphasized the importance of workplace accommodations in promoting a return to work.[25,26] In our current study, flexible work arrangements were associated with substantial decreases in missing more than 30 days of work or stopping altogether, although disability benefits were found to have the converse association; this suggests that some missed work may reflect the ability of a patient to take the time that she needs to recover. Nevertheless, even after we had accounted for flexibility and other workplace policies, treatments and particularly more aggressive surgery had a strong effect that merits note.

Although our study has numerous strengths, including its large and recent sample drawn from population-based registries, it also has limitations that merit consideration. First, as in any observational study, correlation may not imply causation. Still, there is little reason to believe that those who selected more aggressive treatments were predisposed to missing or stopping work after adjustments for multiple sociodemographic and employment factors. Second, not all missed work is necessarily concerning; voluntary time off might benefit patients by giving them a chance to cope with their diagnosis and treatment. Further research is necessary to determine whether the short-term impact that we observed translates into long-term challenges, particularly among the youngest patients, with the greatest years of potential employability, who most often selected the most aggressive surgical options. Third, this study was intended to assess associations between treatment and employment outcomes; therefore, it included only patients diagnosed with breast cancer and not noncancer patients from the population. Although studies evaluating the employment effects

of a cancer diagnosis in patients versus healthy controls are important, the inclusion of healthy controls was not necessary to study the treatment effects that we sought to evaluate here. Fourth, because patients were surveyed relatively soon after their diagnosis to minimize recall bias, a minority were still completing adjuvant therapy, and the full impact of such treatments (particularly radiotherapy) might not be appreciated because of the timing of the survey administration. Fifth, to minimize the respondent burden in the context of a larger study evaluating breast cancer treatment decisions, only select employment-related factors were evaluated. We hope to conduct follow-up research with this cohort as they proceed further into the survivorship phase; this will allow us to capture long-term, detailed measures of employment-related constructs of importance to patients. Finally, our study was conducted in 2 large US areas; the results should be generalized with caution to other US settings and not at all to countries with markedly dissimilar employment support policies or cultures.

Implications for Clinical Care

Our results show that treatment has a profound effect on returning to work in the modern era despite improvements in symptom control and changes in social policy. In addition to policies that further improve employment support, practical actions by clinicians to reduce the overuse of aggressive treatments are of critical importance. In particular, when patients are being counseled about surgical treatment options, the potential impact on employment outcomes and the financial impact quantified in this study merit discussion to ensure that patients make choices fully informed about potential consequences.

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CONFLICT OF INTEREST DISCLOSURES

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AUTHOR CONTRIBUTIONS

Reshma Jagsi: Conceptualization, supervision, project administration, funding acquisition, methodology, writing–original draft, investigation, and writing–review and editing. **Paul H. Abrahamse:** Methodology, software, validation, formal analysis, data curation, investigation, and writing–review and editing. **Kamaria L. Lee:** Investigation and writing–review and editing. **Lauren P. Wallner:** Investigation and writing–review and editing. **Nancy K. Janz:** Investigation and writing–review and editing. **Ann S. Hamilton:** Resources, investigation, and writing–review and editing. **Kevin C. Ward:** Resources, investigation, and writing–review and editing. **Monica Morrow:** Investigation and writing–review and editing. **Allison W. Kurian:** Investigation and writing–review and editing. **Christopher R. Friese:** Investigation and writing–review and editing. **Sarah T. Hawley:** Investigation and writing–review and editing. **Steven J. Katz:** Conceptualization, supervision, project administration, funding acquisition, methodology, investigation, and writing–review and editing.

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