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ORIGINAL REPORT

Patient Preferences for Primary Care Provider Roles in Breast Cancer Survivorship Care

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ASSOCIATED CONTENT

Appendix
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ABSTRACT

Purpose
Prior studies have suggested a need for greater clarity about provider roles in team-based cancer care; however, little is known about patients' preferences regarding which providers handle their care needs after primary cancer treatment.

Methods
We surveyed women with newly diagnosed stages 0 to II breast cancer who were treated in 2014 and 2015 as reported to the Georgia and Los Angeles SEER registries (N = 2,372; 68% response rate). Patient preferences regarding which provider handles the following care needs after treatment were ascertained: follow-up mammograms, screening for other cancers, general preventive care, and comorbidity management. Associations between patient demographic factors with preferences for provider roles—oncology-directed care versus primary care provider (PCP)–directed care—were assessed by using multivariable logistic regression.

Results
The majority of women preferred that their PCPs handle general preventive care (79%) and comorbidity care (84%), but a notable minority of women preferred that their oncologists direct this care (21% and 16%, respectively). Minority women—black and Asian versus white—and women with a high school education or less—versus undergraduate college education or more—displayed greater odds of preferring oncology-directed care—versus PCP-directed care—for their general preventive care (black odds ratio [OR], 2.01; 95% CI, 1.43 to 2.82; Asian OR, 1.74; 95% CI, 1.13 to 2.69; high school education or less OR, 1.51; 95% CI, 1.10 to 2.08). Similar variations existed for comorbidity care.

Conclusion
In this sample, minority women and those with less education more often preferred that oncologists direct certain aspects of their care after breast cancer treatment that are normally delivered by a PCP. Efforts to clarify provider roles in survivorship care to patients may be effective in improving team-based cancer care.

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INTRODUCTION

The exponential growth in the population of aging adult survivors of cancer[1] necessitates the delivery of comprehensive, coordinated continuing care after the initial course of treatment. Indeed, the National Academy of Medicine recommends team-based continuing care that promotes cross-specialty provider collaboration, particularly between primary care physicians (PCPs) and oncologists[2]; however, coordination and communication between primary care and oncology care teams remains challenging as a result, in part, of the lack of clarity around provider roles in delivering survivorship care.[3] Current survivorship guidelines suggest that patients with favorable long-term prognosis can be transitioned back to primary care after the completion of initial curative treatment and the PCP role in survivorship care can be enhanced[4-6]; however, guidelines do not explicitly state which provider should handle the numerous aspects of survivorship care.

Prior research has largely focused on identifying provider-level barriers to providing team-based cancer care, including knowledge deficits about survivorship care and differences in practices and attitudes about provider roles in this care among both PCPs and oncologists[7-11]; however, little is known about patients' preferences and expectations regarding which providers deliver the various aspects of survivorship care after primary treatment. To deliver patient-centered care, it is critical to understand how patients perceive provider roles in the delivery of continuing cancer care and whether these preferences vary across patients. Understanding these patient preferences—particularly early in the transition to survivorship—is important as this is a critical time to discuss the goals of survivorship care and coordinate care going forward. This discussion may be particularly important in underserved populations who have historically had difficulty accessing care.[12,13] Whereas team-based care models offer promise for improving continuing care, our ability to design interventions to promote patient-centered, comprehensive, team-based cancer care will be limited without a better understanding of the preferences and expectations of patients themselves.

The objectives of this study were to examine patient preferences for provider roles in follow-up care after primary breast cancer treatment and whether preferences vary by patient demographics in a large, contemporary, diverse, population-based sample of women with breast cancer with a favorable prognosis.

METHODS

Study Population

As described previously,[14] the Individualized Cancer Care Study is a large, diverse, population-based survey of women with early-stage breast cancer and their providers. We identified and accrued 3,930 women who were age 20-79 years with newly diagnosed, early-stage breast cancer (stages 0 to II) as reported to the SEER registries of Georgia and Los Angeles County in 2014 and 2015. Patients were ineligible if they had tumors larger than 5 cm, had four or more positive nodes, or could not complete a questionnaire in English or Spanish (n = 258). Of the remaining 3,672 eligible women who were mailed surveys, 2,502 completed the survey (68% response rate), and those who identified having a PCP at the time of survey (n = 2,372) were included in this analysis.

Patients were identified via rapid case ascertainment of their initial surgical pathology reports, derived from a list of definitive surgical procedures—performed with the intent of removing the entire tumor and obtaining clear margins, including excisional biopsy. Patients were then surveyed after definitive surgery—average 8 months after diagnosis—about their treatment experiences, knowledge and attitudes, appraisal of communication and decision-making, and quality of life. To encourage response, we provided a $20 cash incentive and used a modified Dillman approach to patient recruitment,[15] including reminders to nonrespondents. All materials were sent in English and Spanish to those with Hispanic surnames. Survey responses were then merged with clinical data by the SEER registries and a deidentified analytic data set was created. The study was approved by the University of Michigan Institutional Review Board.

Measures

As described previously,[14] questionnaire content was developed on the basis of a conceptual framework, research questions, hypotheses, prior literature, and our prior work. We used standard techniques to assess content validity, including systematic review by design experts, cognitive pretesting with patients, and pilot studies in selected clinic populations.

Patient Preferences for Provider Roles in Follow-Up Care

We asked respondents to indicate their preferences regarding the role of oncologists and PCPs in delivering four aspects of their survivorship care: follow-up for breast cancer (mammograms), screening for other cancers, general preventive care (vaccinations, check-ups), and treatment of ongoing or future medical conditions, such as diabetes and heart disease. Specifically, we asked, "After your initial cancer treatment is finished, which doctor would you prefer to see for each of the following?" with possible response categories that included "Prefer primary care provider," "Prefer cancer doctor (ie, oncologist)," "Either one is fine," or "Prefer to see both" for each of the four aspects of care. These responses were mutually exclusive and categorized as PCP-directed versus oncology-directed care (oncology/both/either) for analysis. We performed multiple sensitivity analyses to confirm the robustness of the findings across different specifications of the outcome variable. These included defining the outcome as the original four-level response variable categorized as PCP (referent), oncologist, both, and either and recategorizing the outcome as PCP versus oncology/both, with either excluded. All sensitivity analyses that were performed using these outcome definitions yielded comparable results.

Demographics

Demographic factors were collected via survey and included age at diagnosis and race, which was categorized as white, black, Latina, Asian, and other/unknown. We also collected information on educational attainment (more than high school, high school graduate or some college, or more) and insurance status (private, Medicare, Medicaid, other public, none).

Covariates

Covariates in this analysis included clinical and breast cancer treatment factors, measures of PCP continuity and frequency, and patient-reported worry about recurrence. Clinical factors included the number of comorbid conditions (chronic obstructive pulmonary disease, heart disease, diabetes, or stroke); breast cancer treatment characteristics, including primary surgical treatment modality (lumpectomy, unilateral mastectomy, or bilateral mastectomy); and use of chemotherapy (yes or no) and endocrine therapy (yes or no). To ascertain primary care continuity, respondents were asked, "How long have you been seeing your primary care provider?" with response categories of $<$ 6 months, 6 to 11 months, 1 to 2 years and $>$ 2 years, which were collapsed into $<$ 1 year, 1 to 2 years, and $>$ 2 years for analyses. Patients were also asked "How many times have you seen your PCP since your cancer diagnosis?", which was categorized as 0, 1, 2, or $\geq$ 3. Frequency of worry about recurrence was defined by asking women to indicate on a 5-point scale how often they worried about their cancer coming back in the past month (not at all to always) and was then dichotomized as frequent worry (sometimes, often, or almost always) versus less worry (almost never or rarely).

Statistical Analysis

Overall distribution (weighted percent) of patient preferences for PCP-directed care versus oncology-directed care for each of the four aspects of care—mammograms, screening for other cancers, comorbidity, preventive services—were estimated. Bivariate distributions of patient preferences for PCP-directed care versus oncology-directed care were then compared across age, race, and education for each of the four aspects of follow-up care using Rao-Scott χ^2 tests

Covariate-adjusted associations between patient-level demographics—age, race, education, and insurance—and patient preferences for oncology-directed care were then estimated by using logistic regression for each individual aspect of follow-up care, adjusting for time from diagnosis to survey completion, study site, comorbidity, surgical treatment, chemotherapy, radiation therapy, endocrine therapy, worry about recurrence, and PCP frequency and continuity. PCP-directed care was treated as the consistent referent category across models, as this is an early-stage population for which fully transitioning back to primary care is likely appropriate.

All statistical analyses incorporated weights to allow our statistical inference to be more representative of the target population and to reduce potential bias as a result of nonresponse. This included the use of design weights to account for differential probability of sample selection and nonresponse weights to account for disproportionate nonresponse rates across different patient subgroups.[14,16,17] All analyses were performed by using SAS (SAS/STAT User's Guide, Version 9.4; SAS Institute, Cary, NC) and two-sided tests. *P* values $< .05$ were considered statistically significant.

Table 1. Patient Demographic and Clinical Characteristics (N = 2,372)

Characteristic	Weighted (%)
Demographic	
Age at survey, years	
< 50	13
50-59	24
60-69	35
≥ 70	28
Race	
White	54
Black	18
Latina	15
Asian	10
Other/unknown/missing	2
Insurance	
Medicaid	11
Medicare or VA	27
Private or other	46
None/missing	16
Education	
High school degree or less	29
Some college	29
College degree or more	39
Missing	3
Clinical	
Comorbid condition	
None	70
At least one condition	23
More than one condition	6
Surgical management	
Lumpectomy	63
Unilateral mastectomy	17
Bilateral mastectomy	17
Missing	3
Received chemotherapy	
No	71
Yes	26
Started endocrine therapy	
No	29
Yes	68
Received radiation treatment	
No	37
Yes	60
Worry about recurrence	
Less worry	64
Frequent worry	36
PCP frequency	
Have not seen PCP since diagnosis	25
One visit	25
Two visits	21
Three or more visits	27
PCP continuity	
< 6 months	9
6-11 months	9
1-2 years	13
> 2 years	67
Site	
Los Angeles	47
Georgia	53
Time from diagnosis to survey (months), mean (SD)	8.30 (3.54)

Abbreviations: PCP, primary care provider; SD, standard deviation; VA, Veterans Affairs.

RESULTS

Table 1 lists the demographic and clinical characteristics of the sample of 2,372 women who were included in this analysis. The majority of women were age > 60 years (63%) and were white (54%), followed by black (18%), Latina (15%), and Asian (10%). Forty-five percent had private insurance and 39% had a college education or more. More than one quarter had at least one other comorbid condition (30%). The majority of women received a lumpectomy (63%), 26% received chemotherapy, 60% received radiation therapy, and 68% had initiated endocrine therapy at the time of survey. More than one third of women (36%) reported frequently worrying about breast cancer recurrence. The majority of women (67%) reported seeing their PCP for more than 2 years and 73% of having at least one visit with their PCP on average since their diagnosis (Table 1).

Patient preferences for provider roles for general preventive care, comorbidity care, mammography, and screening for other cancers are displayed in Figure 1. For general preventive and comorbidity care, the majority of women preferred that their PCPs handle these services (79% and 84%, respectively), but notable percentages of women preferred that their oncologists handle these services (21% and 16%, respectively). The majority of women reported they preferred that their oncologists handle their mammography (93%) and second cancer screening (91%), rather than their PCP (Fig 1).

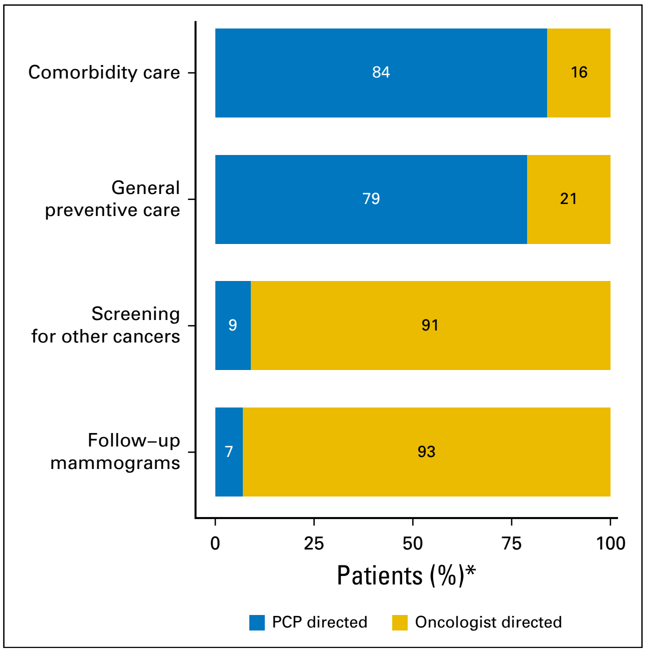

Fig 1. Patient preferences for provider roles in survivorship care (weighted %). (*)Of 2,372 women, 79 were missing preferences for mammography, 89 were missing second cancer screening, 82 were missing preventive care, and 85 were missing comorbidity preferences. For mammography, 12.6% responded "Either" and 18.6% responded "Both." For second cancer screenings, 12.0% responded "Either" and 14.5% responded "Both." For preventive care, 8.0% and 7.0% responded "Either" or "Both," respectively and for comorbidity care, 5.4% and 6.8% responded "Either" or "Both," respectively. "Either" and "Both" were combined with those who responded "Oncologist" into the "Oncologist-directed" category for analyses. PCP, primary care provider.

Table 2. Distribution (weighted %) of Patient Preferences for Provider Roles by Patient Demographic Characteristic

	Mammogram		Second Cancer Screening		Preventive Care		Comorbidity Care	
Characteristic	PCP	Oncology	PCP	Oncology	PCP	Oncology	PCP	Oncology
Age, years								
< 50	4	96	6	94	78	22	81	19
50-59	5	95	9	91	80	20	83	17
60-69	8	92	10	90	80	20	85	15
≥ 70	8	92	8	92	79	21	84	16
P	.056		.294		.892		.479	
Race								
White	7	93	9	91	85	15	89	11
Black	6	94	6	94	72	28	79	21
Latina	7	93	9	91	72	28	77	23
Asian	6	94	11	89	71	29	77	23
Other/missing	11	89	14	86	81	19	84	16
P	.786		.1418		< .001		< .001	
Education								
High school or less	8	92	9	91	73	27	78	22
Some college	9	91	8	92	82	18	86	14
College or more	5	95	9	91	83	17	87	13
P	.002		.809		< .001		< .001	
Insurance								
None or missing	7	93	11	89	75	25	81	19
Medicaid	10	90	9	91	68	32	72	28
Medicare or VA	7	93	8	92	82	18	85	15
Private or other	6	94	8	92	81	19	87	13
P	.160		.456		< .001		< .001	

NOTE. Data are given as percent, unless otherwise noted.
Abbreviations: PCP, primary care provider; VA, Veterans Affairs.

For general preventive care and comorbidity care, whereas the majority of women preferred PCP-directed care, variations existed across race and education as listed in Table 2. For both service types, there was significant variation in provider preference across race: Asian women were most likely to report this preference for both preventive care (29%) and comorbidity care (23%), followed by Latina women (28% and 23%, respectively), black women (28% and 21%, respectively), and white women (15% and 11%, respectively; $P < .001$). A greater proportion of women with high school education or less preferred that their oncologists handle these services compared with women with a college education or more ($P < .001$; Table 2).

For mammography and second cancer screenings, the majority of women preferred that their oncologists direct this care, rather than their PCPs, but there was less variation across age, race, and education, also as listed in Table 2. For mammography, the proportion of women who preferred that their oncologists handle this care decreased slightly with age ($P = .06$), with 96% of those younger than 50 years reporting this preference compared with 92% of those older than 70 years. A greater proportion of women with a college education or more preferred that their oncologists direct this care compared with women with a high school education or less (95% *v* 92%; $P = .002$). For second cancer screenings, no significant variation existed across age, race, education, or insurance (Table 2).

Figures 2 and 3 display covariate-adjusted associations between patient sociodemographic characteristics—age, race, education, and insurance—and patient-reported preferences for provider roles in follow-up care, comparing a preference for oncology-directed care versus PCP-directed care for each of the four aspects of follow-up care. For general preventive care (Fig 2A), the odds of black and Asian women reporting a preference that their oncologists handle this care, rather than their PCPs, were significantly greater than the odds of white women reporting this preference (black odds ratio [OR], 2.00; 95% CI, 1.43 to 2.82; Asian OR, 1.95; 95% CI, 1.28 to 2.97). The odds of women with a high school education or less preferring that their oncologists handle their preventive care, rather than their PCPs, were 1.53 times the odds of women with a college education or more reporting this preference (adjusted OR, 1.53; 95% CI, 1.12 to 2.11; Fig 2A). For comorbidity care (Fig 2B), black women were again more likely to prefer that their oncologists handle this care, rather than their PCPs, compared with white women (black OR, 1.93; 95% CI, 1.34 to 2.79; Fig 2B). Women with less than a high school education were more likely to prefer that their oncologists handle their comorbidity care compared with women with a college education or more (OR, 1.50; 95% CI, 1.06 to 2.12; Fig 2B). Women with private or other insurance were less likely to prefer that their oncologists handle their comorbidity care compared with women with Medicaid insurance (OR, 0.56; 95% CI, 0.36 to 0.85). Full multivariable-adjusted results for all covariates are listed in Appendix Table A1 (online only).

For mammography (Fig 3A), there were no significant differences in the odds of women preferring their oncologists versus their PCPs across levels of race or age (Fig 3A); however, lower educational attainment was associated with greater odds of reporting preferences for PCP-directed care—versus oncology-directed care—compared with women with a college education or more (some college OR, 0.49; 95% CI, 0.31 to 0.77; less than high school education OR, 0.63; 95% CI, 0.39 to 1.02). For

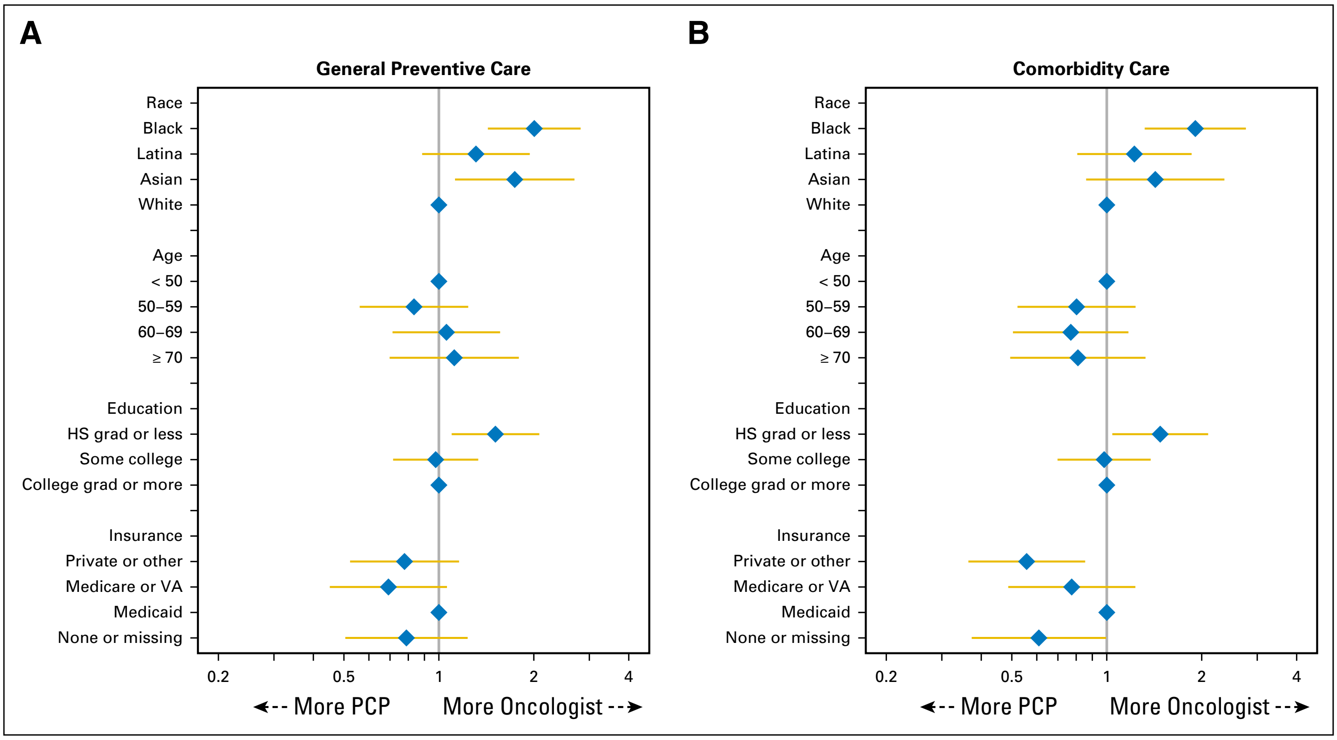

Fig 2. (A and B) Covariate-adjusted odds ratios (ORs) and 95% CIs comparing patient preferences for provider roles in general preventive care (A) and comorbidity care (B). ORs were obtained from the logistic regression, which includes the following covariates: age, race, education, insurance, comorbidities, treatment, time from diagnosis to survey, radiation treatment, chemotherapy treatment, endocrine therapy, primary care provider (PCP) frequency, PCP continuity, worry about recurrence, and site. (A) Of 2,372 women, 286 were excluded from the model as a result of missing values. (B) Of 2,372 women, 290 were excluded from the model as a result of missing values. HS, high school; VA, Veterans Affairs.

screening for other cancers (Fig 3B), the odds that black women preferred that their oncologists handle this service, rather than their PCPs, were nearly twice the odds among white women (black OR, 1.96; 95% CI, 1.15 to 3.36). No significant differences in preferences for second cancer screenings were observed across age, education, or insurance (Fig 3B).

DISCUSSION

Results from this population-based study of patients with early-stage breast cancer suggest that women have clear preferences for which providers they want to handle their survivorship care after primary treatment. Of note, a substantial minority of women in this study preferred that their oncologists handle certain aspects of survivorship care that are typically delivered in a primary care setting. These results suggest that patients may benefit from better education regarding provider roles and, specifically, the potential benefits of greater involvement of the PCP in delivering care after primary breast cancer treatment. Differences by race and education in these preferences suggest additional challenges for those who seek to extend the model of PCP-led care to diverse populations of survivors of breast cancer.

Our findings that the majority of women preferred to see their oncologists for services that are typically considered related to the cancer—mammography and second cancer screenings—are not surprising, but suggest that there is an opportunity to educate patients about the ability of PCPs to manage these care needs. In addition, the findings that some women, particularly minority women and those with less education, prefer to see their oncologists for their general preventive and comorbidity care are notable, as PCPs typically direct this care. If women are reluctant to go to their PCPs for these services, they may be at greater risk of receiving fragmented survivorship care or not receiving the preventive care they need as they age. In addition, as survivorship care is complex and protracted and often includes competing care priorities with other conditions, the involvement of PCPs is important as they are often the providers who are most attuned to patients' preferences and may be best able to prioritize competing care needs.[10] PCPs are often already involved throughout the cancer care continuum,[2] and, of interest, our prior work in this cohort suggests that their involvement during treatment may be greatest among minority women and those with less education.[14] As such, it is important that clinicians discuss provider roles with patients and encourage them to continue their relationship with their PCPs throughout the continuum of their cancer. These discussions are particularly critical to have with patients early in the transition from primary treatment to survivorship when the goals of survivorship care are typically first discussed. In addition, targeting these subpopulations of women to understand their concerns and clarify provider roles and the potential benefits of PCP leadership may be particularly effective for interventions that are focused on improving the delivery and quality of team-based cancer care.

Most adult patients with cancer with favorable prognoses, such as those who have been included in this study, will now live long after their diagnosis and are more likely to die of causes other than their cancer.[18-21] This also argues for the increased involvement of PCPs—to ensure that comprehensive care that focuses on more than

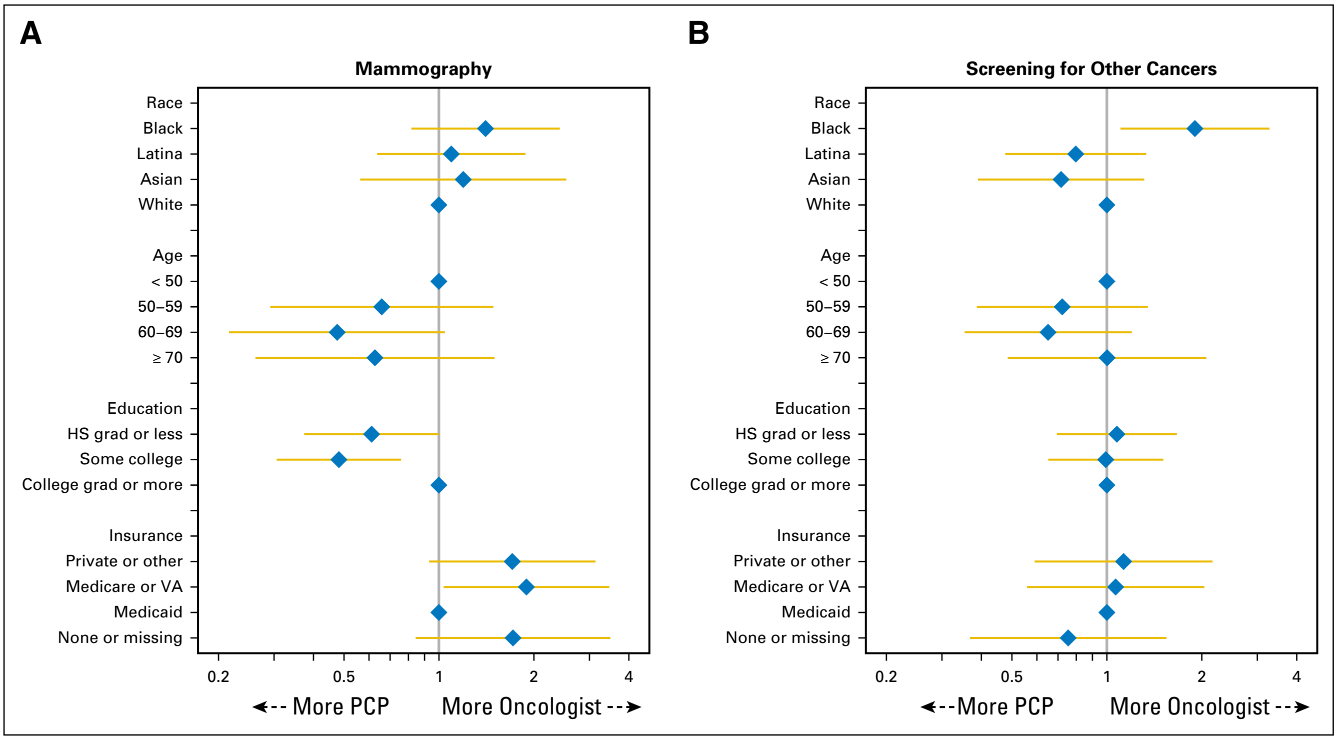

Fig 3. (A and B) Covariate-adjusted odds ratios (ORs) and 95% CIs comparing patient preferences for provider roles in mammography (A) and second cancer screenings (B). ORs were obtained from the logistic regression, which includes the following covariates: age, race, education, insurance, comorbidities, treatment, time from diagnosis to survey, radiation treatment, chemotherapy treatment, endocrine therapy, primary care provider (PCP) frequency, PCP continuity, worry about recurrence, and site. (A) Of 2,372 women, 290 were excluded from the model as a result of missing values. (B) Of 2,372 women, 290 were excluded from the model as a result of missing values. HS, high school; VA, Veterans Affairs.

just the cancer is delivered; however, prior studies, which are mostly qualitative, suggest that some patients with cancer may be hesitant and uncertain about the role of the PCP in delivering this care.[22-25] As a result, many survivors report that they continue to receive care and reassurance from their cancer specialists rather than their PCPs.[22] Further compounding this issue, current survivorship guidelines do not specify how roles should be shared among primary care and oncology care teams[5,6]; therefore, uncertainty remains among PCPs and oncologists with regard to who should be handling the different aspects of survivorship care.[7,26] Future versions of survivorship guidelines and care plans should therefore consider including additional clarification about provider roles in delivering the various aspects of survivorship care. In addition, ensuring that PCPs have the training and resources they need to effectively care for patients with cancer is increasingly important.

Although this study has a number of strengths, including the use of a large, diverse, population-based sample of women and being one of the first studies to provide insight into patients' preferences for which provider manages the specific aspects of their follow-up care, there are potential limitations. The ascertainment of preferences for follow-up care occurred, on average, 8 months after diagnosis when many women have not yet fully started to focus on their survivorship care; therefore, it is possible that the timing relative to the completion of treatment may have influenced women's preferences for provider roles and it remains unknown whether these preferences change as time from diagnosis increases. We did, however, adjust for the timing of survey completion in our models to account for the influence of any variation in time from diagnosis to survey completion on our results, and found that the results did not change. As our population only includes patients with breast cancer in Los Angeles County and Georgia, the generalizability of our results to other populations may be limited. Finally, we did not have information on which provider ultimately handled each aspect of care and, therefore, future research should assess how these preferences align with the actual utilization of these services in survivorship.

In conclusion, most women with early-stage breast cancer reported clear preferences regarding which providers should handle the various aspects of their continuing care after breast cancer treatment. Whereas many women preferred that PCPs handle their general preventive care, many did not identify PCPs as their preferred providers for cancer screening and surveillance, which suggests a need for both patient and provider education about the ability of PCPs to deliver this care. Efforts to clarify provider roles to patients and, in particular, the roles of PCPs in cancer survivorship care may improve team-based cancer care, satisfaction, and outcomes.

AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

Disclosures provided by the authors are available with this article at jco.org.

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Patient Preferences for Primary Care Provider Roles in Breast Cancer Survivorship Care

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Appendix

Table A1. Multivariable-Adjusted ORs and 95% CIs Estimating the Odds of Patient Preference for Oncology-Directed Care for Each of the Four Aspects of Follow-Up Care

	Mammography	Second Cancer Screening	Preventive Care	Comorbidity Care
Characteristic	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
Age, years				
< 50	Ref	Ref	Ref	Ref
50-59	0.66 (0.29 to 1.49)	0.72 (0.39 to 1.35)	0.83 (0.56 to 1.24)	0.80 (0.52 to 1.23)
60-69	0.48 (0.22 to 1.05)	0.65 (0.35 to 1.20)	1.06 (0.71 to 1.56)	0.77 (0.50 to 1.17)
≥ 70	0.63 (0.26 to 1.50)	1.00 (0.49 to 2.07)	1.12 90.70 to 1.79)	0.81 (0.49 to 1.33)
Race				
White	Ref	Ref	Ref	Ref
Black	1.41 (0.82 to 2.42)	1.90 (1.10 to 3.28)	2.01 (1.43 to 2.82)	1.91 (1.32 to 2.76)
Latina	1.10 (0.64 to 1.88)	0.80 (0.49 to 1.33)	1.31 (0.89 to 1.94)	1.22 (0.81 to 1.86)
Asian	1.20 (0.56 to 2.54)	0.72 (0.39 to 1.31)	1.74 (1.13 to 2.69)	1.43 (0.86 to 2.36)
Other	0.54 (0.15 to 1.88)	0.39 (0.14 to 1.11)	0.87 (0.29 to 2.62)	0.89 (0.33 to 2.38)
Education				
High school or less	0.61 (0.37 to 1.00)	1.08 (0.69 to 1.67)	1.51 (1.10 to 2.08)	1.48 (1.04 to 2.10)
Some college	0.48 (0.31 to 0.76)	0.99 (0.65 to 1.51)	0.98 (0.72 to 1.33)	0.98 (0.70 to 1.38)
College or more	Ref	Ref	Ref	Ref
Insurance				
Medicaid	Ref	Ref	Ref	Ref
Medicare or VA	1.90 (1.04 to 3.47)	1.07 (0.56 to 2.04)	0.69 (0.45 to 1.06)	0.77 (0.49 to 1.23)
Private or other	1.71 (0.93 to 3.14)	1.13 (0.59 to 2.16)	0.78 (0.52 to 1.16)	0.56 (0.36 to 0.85)
None	1.72 (0.84 to 3.50)	0.75 90.37 to 1.55)	0.79 (0.51 to 1.23)	0.61 (0.37 to 1.00)
Comorbidity				
0	1.13 (0.55 to 2.34)	1.57 (0.79 to 3.11)	0.83 (0.51 to 1.33)	0.85 (0.50 to 1.46)
1	1.20 (0.57 to 2.53)	2.64 (1.27 to 5.47)	0.79 (0.47 to 1.32)	0.73 (0.41 to 1.30)
> 1	Ref	Ref	Ref	Ref
Surgical treatment				
Lumpectomy	Ref	Ref	Ref	Ref
Unilateral mastectomy	0.87 (0.50 to 1.53)	1.04 (0.60 to 1.82)	1.27 (0.86 to 1.88)	1.57 (1.02 to 2.40)
Bilateral mastectomy	1.32 (0.68 to 2.55)	1.38 (0.75 to 2.54)	1.05 (0.67 to 1.64)	1.12 (0.69 to 1.83)
Radiation				
No	Ref	Ref	Ref	Ref
Yes	1.57 (0.94 to 2.64)	1.77 (1.08 to 2.90)	0.97 (0.68 to 1.38)	1.15 (0.77 to 1.71)
Chemotherapy				
No	Ref	Ref	Ref	Ref
Yes	1.27 (0.80 to 2.02)	1.97 (1.27 to 3.07)	1.24 (0.94 to 1.62)	1.35 (1.00 to 1.82)
Endocrine therapy				
No	Ref	Ref	Ref	Ref
Yes	1.55 (1.04 to 2.29)	1.71 (1.20 to 2.44)	1.00 (0.76 to 1.32)	1.16 (0.85 to 1.58)
PCP frequency	1.01 (1.00 to 1.01)	1.00 (1.00 to 1.01)	1.00 (1.00 to 1.01)	1.00 (1.00 to 1.01)
PCP continuity	0.77 (0.62 to 0.96)	0.74 (0.59 to 0.93)	0.82 (0.73 to 0.92)	0.88 (0.78 to 1.00)
Worry about recurrence				
Less worry	Ref	Ref	Ref	Ref
Frequent worry	1.86 (1.23 to 2.79)	1.56 (1.07 to 2.28)	1.59 (1.24 to 2.05)	1.68 (1.28 to 2.20)
Time from diagnosis to survey	0.99 (0.93 to 1.06)	0.99 (0.93 to 1.05)	1.02 (0.97 to 1.06)	1.06 (1.01 to 1.11)
Study site				
Georgia	Ref	Ref	Ref	Ref
Los Angeles	1.03 (0.67 to 1.57)	1.30 (0.83 to 2.05)	1.30 (0.93 to 1.82)	1.33 (0.92 to 1.92)

Abbreviations: OR, odds ratio; PCP, primary care provider; Ref, reference; VA, Veterans Affairs.