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The impact of primary care physicians on follow-up care of underserved breast cancer survivors

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Abstract

Purpose—To investigate the impact of primary care physicians' (PCP) involvement in the receipt of follow-up cancer preventive care after a breast cancer (BC) diagnosis among a low-income population.

Methods—Multiple logistic regression analyses were performed to identify potential factors associated with receipt of cancer preventive care among 579 low-income women with breast cancer. The main outcome variables were receipt of annual mammography, Pap smear in the past 2 years, and ever had colonoscopy for those who were at least 50 years old, at 36 months after BC diagnosis. The main independent variable was provider visit type in the past 12 months.

Results—Women with a PCP visit only or both PCP and surgeon/cancer specialist visits in the past 12 months were more likely to have had annual mammography (AOR=2.67, P=0.109; AOR=2.20, P=0.0008, respectively), a Pap smear in the past 2 years (AOR=2.90, P=0.04; AOR=2.24, P=0.009, respectively) and colonoscopy (AOR=2.99, P=0.041; AOR=2.17, P=0.026, respectively) than those who only visited surgeons/cancer specialists. Indeed, women who only saw a PCP for their follow-up care had the highest odds ratio to receive each clinical care service.

Conclusions—PCP's involvement in the medical care of low-income BC survivors results in better follow-up cancer preventive care. Getting PCPs involved in cancer survivor care might be particularly pertinent for low-income populations because of lower costs and ease of access compared to cancer specialist-provided care.

INTRODUCTION

Early detection and improved treatment have dramatically increased the life expectancy of women with breast cancer, leading to an overall 5-year survival rate of 98% for local-stage disease and 84% for regional-stage disease,^{1,2} and women with breast cancer now represent the largest female cancer survivor group in the U.S.³ This is creating new challenges for the healthcare system, with medical concern shifting from initial treatment to survivorship, and the responsibility for care from oncologists to primary care providers.⁴

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Conflicts of Interest:

There is no conflict of interest declared.

Long-term breast cancer survivors are at an increased risk of developing a second primary cancer or recurrent disease in the affected breast, which makes follow up care an essential part of cancer survivorship.^{5,6,7} Traditionally, cancer patients tend to visit their oncologists for routine follow-up after completing cancer treatments.^{8,9,10} However, with the increased population of newly diagnosed breast cancer patient and cancer survivors, there is concern about the capacity for oncologists to provide appropriate care and meet the needs of cancer patients in the future.^{11,12} In addition, there is concern about possible deficiencies in non-cancer related care that cancer survivors receive from oncologists, as oncologists may be too focused on cancer-specific issues and overlook other primary care services.^{13,14,15}

In recognition of the importance of primary care physicians' (PCPs') involvement in ongoing cancer care, the American Society of Clinical Oncology published guidelines for breast cancer survivors, suggesting that PCPs take greater responsibility for survivorship care.¹⁶ This highlights the need for better information about participation of PCPs in breast cancer survivorship care. Yet research in this area is limited.

There are a handful of studies that compared the follow-up care provided by PCPs to oncologists for breast cancer survivors. Results from these studies showed no difference in recurrence detection outcomes or receipt of preventive care between survivors followed up by PCPs and survivors followed up by oncologists.^{10,17,18} Another study reported PCP-centered follow-up is superior to oncologist-centered follow up in terms of recommended preventive care.¹⁴ However, these studies have limitations that include sample populations that were either restricted to certain age groups,¹⁴ areas outside of the United States,¹⁷ or patients with Medicare.¹⁹ Importantly, none of these studies examined follow-up care among medically underserved, low-income and/or uninsured women.

The unequal distribution of the financial burden of breast cancer across socioeconomic groups has been well-documented^{19,20,21} and low income, less educated women may be at particular risk for poorer survivorship care due to financial hardship and poor access to medical care. An examination of PCPs' involvement in survivorship care among low-income women may assist in identifying effective and cost-efficient ways to deliver optimal care among vulnerable BC patient populations.

The objective of this study was to identify potential factors associated with receipt of appropriate follow-up care among low-income, medically underserved women with BC, in particular with regard to cancer preventive services. This is the first such study performed in a low income population of women with BC. Specifically, we were interested in investigating the impact of PCPs' involvement in receipt of follow-up care.

METHODS

Study sample

This is a longitudinal observational study. The details of the study design and sample have been described previously.²² This study used data compiled from longitudinal surveys of low-income women living in California, aged 18 years and older, newly diagnosed with BC and enrolled in the California Breast and Cervical Cancer Treatment Program (BCCTP) between February 2003, and September 2005. The BCCTP is funded in part by Medicaid and by the state of California to provide treatment for breast and cervical cancer for un- and under-insured, low-income women (< 200% Federal Poverty Level). The study was approved by the UCLA Human Subjects Protection Committee.

Eligible women were interviewed by phone in English or Spanish at 6 months, 18 months, and 36 months after their diagnosis of BC. A total of 921 women were initially recruited for

the baseline interview at 6 months for a 61% response rate. Compared with survey responders, non-responders were older (52 vs. 50 years, $p<0.0001$), more likely to be Asian/Pacific Islander, and less likely to be Latina and White (11.6%, 37.6%, 26.5% vs 7.4%, 53.4%, 31.7%, respectively, $p<0.05$). Of the 921 women who participated in the first interview, response rates at 18 months and 36 months were 86% and 73%, respectively.

We also obtained and abstracted detailed clinical information from patients' medical records at 18 months after BC diagnosis including clinical information about tumor characteristics, staging, and details of treatment. Eight hundred (87%) patients consented to the medical record review and we were able to successfully retrieve and abstract medical records for 84% ($n=776$) of this group. The inter-rater reliability between abstractors for data on breast cancer characteristics and treatment data ranged from 0.68 to 1.00, indicating good to excellent agreement.

Women who were diagnosed with stage 0-III BC, had completed all of the 6-, 18- and 36-month surveys, and had visited the doctor's office at least once during the past 12 months as reported at the 36 month survey were identified for this study. A total of 579 subjects were included in the analyses. A subset of 371 subjects who were at least 50 years old was identified for the analysis for the receipt of colonoscopy.

Measures

The main outcome variables were receipt of follow-up care at 36 months after BC diagnosis including annual mammography, Pap smear in the past 2 years, and ever had colonoscopy for those who were at least 50 years old. All these variables were measured by patient self-report in the 36-month survey.

The main independent variable was type of health care provider visited in the 12 months prior to the 36-month point after BC diagnosis, including surgeons, cancer specialists, and primary care physicians. Only those participants who had visited a provider at least once in the past 12 months were included in the analyses. All these patients were categorized into three groups, either as having had a 'PCP visit only', a 'surgeon/cancer specialist visit only,' or 'both PCP and surgeon/cancer specialist visits'.

Other independent and potentially confounding variables were patient sociodemographic characteristics, comorbidities and financial adequacy measured at the 6-month baseline survey. The existence of major comorbidities was measured using the Katz et al. adaptation of the Charlson Comorbidity Index for patient self-report,²³ and was dichotomized into one or more comorbidities versus none. Potential life burden pertinent to low income women was measured by adequacy of financial resources by asking "Do you have enough money to cover your needs?" Competing life needs ("In the past year, have you ever had to go without needed medical care because you had to spend money for food, clothing, housing or transportation") and ease of access to medical care (somewhat easy/very easy vs. somewhat difficult/very difficult) were measured at the 36 month survey. We also included information on tumor stage from the medical records.

Language and acculturation can serve as significant barriers to optimal communication. Therefore among Latinas, language-based acculturation was determined by the five-item Marin Acculturation Scale.²⁴ The internal consistency reliability was 0.99 for this scale in the studied sample. A "more acculturated" Latina was defined as being equally or more comfortable or conversant with English than Spanish; "less acculturated" was defined as being less comfortable or conversant with English than Spanish.

Data Analysis

Summary statistics, including means and percentages, were calculated to describe participants' demographic/clinical characteristics and other independent variables. A multivariate logistic regression model was then fit to investigate the impact of PCP's involvement on the receipt of follow-up care at 36 months after BC diagnosis, controlling for potential confounders. Multicollinearity was examined for all independent variables and was found not to be a problem. The Hosmer-Lemeshow test indicated adequate fit of the multivariate logistic regression model.

All statistical analysis was conducted using SAS, version 9.1; two-sided alpha levels with p values less than 0.05 were considered statistically significant.

RESULTS

Descriptive Statistics

Overall, 80.8% of the sample had received annual mammography, this was higher than the breast cancer screening rate (72.4%) in the general population.²⁵ However, screening exam rates for cervical cancer and colorectal cancer in our sample were lower than the rates in the general population (79.3% vs. 83.0%, 49.6% vs. 58.6%, respectively).²⁴ Table 1 shows the descriptive statistics among the 579 women in the sample. At 36 months after BC diagnosis, most survivors were visiting both a PCP and surgeon/cancer specialist for their medical care (75.8%). About 2 of 10 women had only visited surgeon/cancer specialists (17.3%) in the past 12 months; and 7% of the women only saw a PCP. The sample was predominately less-acclulturated Latinas (47.5%), with whites accounting for approximately one third (33.9%). The average age was approximately 51 years and about 41% had not graduated from high school. Slightly over half were married or partnered.

With respect to medical characteristics, about one third of the sample had at least one comorbidity and over half were diagnosed either with stage II or stage III breast cancer (62%). More than 70% of the participants reported receipt of adjuvant hormone therapy.

The majority of the population reported financial hardship (62%) and about 1 of 5 women had not been able to receive needed medical care due to competing life needs. Almost 40% of the participants reported somewhat/very difficult access to medical care.

Factors Associated with Receipt of Follow-up Care

In unadjusted analyses (Table 2), survivors who visited both a PCP and surgeon/cancer specialist were most likely to receive annual mammography (83%) ($P=0.015$), and survivors who only visited a PCP were most likely to have had a colonoscopy performed (63.3%) ($P=0.0007$). Survivors who only visited a surgeon/cancer specialist for follow up care were least likely to receive each medical service.

Table 3 presents the result of the multivariate logistic regression models. After adjusting for potential confounders, women with a PCP visit only or both PCP and surgeon/cancer specialists visits in the past 12 months were more likely to have had annual mammography, a Pap smear in the past 2 years and colonoscopy than those who only visited surgeon/cancer specialists. Indeed, women who only saw a PCP for their follow-up care had the highest odds of receiving each clinical care service among the three doctors visit groups, even though the difference for annual mammography was non-significant.

Receiving adjuvant hormone therapy was also positively associated with annual mammography and having a Pap smear done in the past 2 years. In addition, both less-acclulturated and more-acclulturated Latinas were more likely to have had a PAP smear done

in the preceding 2 years compared to their white counterparts. However, older women were less likely to have had a Pap smear during the past 2 years. Women with greater ease of access to medical care were more likely to receive a colonoscopy.

DISCUSSION

Identifying responsibilities of different providers in the coordination of care for cancer survivors has received much discussion in recent years.^{17,26,27,28} Traditionally, cancer survivors in United States receive most of their cancer follow-up care from cancer specialists.^{29,30} However, the growing number of cancer patients and survivors along with the shortage of the oncologist workforce^{11,12} has highlighted the need to engage PCPs' participation in follow-up cancer care. In this study, we examined the role of PCPs in breast cancer survivors' follow-up care. It is the first such study performed in a low income population of women with BC. Our findings indicate that, at 36 months after BC diagnosis, survivors were more likely to see their PCPs than visit cancer specialists exclusively. In addition, we found that survivors who had a PCP involved in their follow up care appear to have received more appropriate care in terms of cancer preventive services than those who only visited cancer specialists for their follow up care.

Previous randomized trials have shown similar recurrence detection rates and health-related quality of life between BC survivors who were followed up by PCPs and those who were followed up by cancer specialists.^{10,17} Other studies indicate that, compared with follow-up by specialists, follow-up by PCPs results in better patient satisfaction and higher quality of non-cancer health care.^{15,31,32} Our study builds on previous research by demonstrating that PCP-provided follow-up care results in higher quality of both breast cancer-related and other cancer screening related care.

In current practice, patients with breast cancer are typically seen by oncologists for routine follow-up during the first 5 years after completing cancer treatment. This study at 3 years after BC diagnosis demonstrates that PCPs are capable of providing high quality cancer preventive care at an earlier stage of follow up for BC cancer survivors. In fact, active and early involvement of PCPs in cancer care might be particularly beneficial to those who have chronic diseases, given the potential of interaction effects between cancer treatment and comorbid conditions.^{33,34} In a recent study exploring PCPs' views of routine follow-up care of cancer survivors, the majority of the PCPs felt that they are better placed to provide psychosocial support to their patients than oncologists and were willing to assume exclusive follow-up cancer care within 2.5 to 3.5 years after treatment completion.³⁵ Our study adds evidence to demonstrate that PCPs involvement at an earlier stage leads to better follow up cancer preventive care for cancer survivors.

Similar to previous research,¹⁵ BC survivors in our study who were followed exclusively by cancer specialists were less likely to receive cervical and colon cancer screening. These results indicated that specialists might be too focused on the follow-up of the previously diagnosed cancer and overlook other necessary preventive cancer screenings. It is also reported that oncologists generally do not want to function in a primary care-like role and are reluctant to provide preventive services.³⁶

Although some studies have reported PCPs may tend to provide less cancerspecific surveillance than oncologists do,^{15,37} our data shows that PCP's involvement in follow up results in better breast cancer-specific care – in this case, surveillance mammography. Previous studies have shown that with proper guidelines, PCPs are more confident in taking a lead in cancer follow up care.^{38,39} Many PCPs report a desire for more training and guidelines to provide care for long-term cancer survivors.⁴⁰ However, few evidence-based

guidelines on follow-up care for cancer survivors exist today and non-cancer related health concerns are rarely mentioned in these guidelines. Additionally, patients and providers of different specialties have varying expectations about which providers provide care after multimodality treatment is complete.⁴¹

Despite studies that have shown PCPs-provided follow up leads to similar or even superior results than oncology specialists-provided follow up,^{10,14,17, 19} findings suggest that many breast cancer survivors have concerns about transfer of care to PCPs.^{17,29,42} Cheung et al reported that 91% of cancer survivors favored oncologist-centered follow up whereas only 33% of cancer survivors favored PCP-centered follow up.²⁹ Communication between oncologists and PCPs has been identified as a major weakness from the survivors' perspectives.³¹

Limited communication between oncologists and PCPs can contribute to inefficiency and may expose survivors to suboptimal preventive health services. A recent study showed that more than half of PCPs rated the transfer of care from oncologist to PCP as poor.⁴³ Many PCPs indicated they would be willing to provide follow-up care if given specific guidelines from the cancer specialist.^{29,43} A survivorship plan including treatment summary and long-term expectation and recommendation for the patient and PCP may be an efficient way to facilitate the transition.^{44,45} Other tools such as improved access to patient records with electronic medical record systems might also help to ease the transition.

We found that women of Latina ethnicity had a significantly higher odds of receiving a Pap smear than their white counterparts. This is in contrast to previous findings showing that Hispanic women were less likely to receive cervical cancer screening.^{46,47} However, our study mirrors several other studies' findings of Latinas' higher odds of receiving Pap smears than non-Latina whites after controlling for confounders.^{48,49, 50,51} Since it is well known that Latinas have a higher prevalence of cervical cancer than whites,⁵² many programs targeting Latinas have sought to educate women about the importance of Pap smears.^{53,54,55} Latinas thus may benefit from public health efforts tailored to improve utilization of cervical cancer screening.

Consistent with previous research,^{56,57} our finding indicated that women over 50 years old were less likely to undergo cervical cancer screening with a Pap smear. We also found that hormone therapy was associated with increased likelihood of receipt of mammography and Pap smear. It is more likely that these women may have received more medical attention due to their concurrent hormone treatment. However, further studies are needed to investigate the mechanism behind these findings.

Several limitations exist in this study. First, the study was conducted in a sample of low-income, medically underserved women in a specific Medicaid BC treatment program in California, external generalizability of the findings to other low-income populations such as other states in the U.S. or with other cancers may be limited. However, because all survivors had benefits covered by the BCCTP program, it removed reimbursement disparities as a potential confounder of the findings. Second, the outcome measure "ever had colonoscopy" might not truly reflect the follow up care after BC diagnosis as it might include health care completed before diagnosis. Third, the quality of our data depends on the accuracy of patient self-report, thus recall bias may be an issue. However, a recently published paper on this study population reported that self-reporting of key treatment and prognostic information is relatively accurate among these low-income women with BC.⁵⁸

This study is the first such study performed in a low-income underserved population of BC patients. Our findings demonstrate that PCP's involvement in the medical care of low-income BC survivors results in better follow-up care, particularly with regard to cancer

preventive services. Getting PCPs involved in cancer survivor care might be particularly pertinent for low-income populations because of lower costs and ease of access compared to cancer specialist-provided care. With the projected shortage in the oncology workforce^{11,12} and growing number of cancer survivors, PCP involvement in cancer follow up care should be promoted as a cost-efficient way to deliver optimal care, especially among vulnerable populations.

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Table 1

Descriptive Statistics of the Study Sample (N=579)

	Value
Age (years)	
Mean (SD)*	51.2 (9.1)
Range	25.0–85.0
Ethnicity, N (%)	
White	196 (33.9)
Less-acculturated Latina	275 (47.5)
More-acculturated Latina	33 (5.7)
African-American	25 (4.3)
Asian/Pacific Islander	50 (8.6)
High school graduate, N (%)	
No	235 (40.6)
Yes	344 (59.4)
Married/Partnered, N (%)	
No	284 (49.1)
Yes	295 (51.0)
Comorbidity, N (%)	
None	409 (70.6)
Any	170 (29.4)
Stage, N (%)	
0	67 (11.6)
I	152 (26.3)
II	267 (46.1)
III	93 (16.1)
Hormone therapy, N (%)	
No	168 (29.0)
Yes	411 (71.0)
Financial adequacy, N (%)	
No	358 (61.8)
Yes	221 (38.2)
Did not get medical care due to competing life needs, N (%)	
No	451 (77.9)
Yes	128 (22.1)
Doctor visit group	
PCP [†] only	40 (7.0)

	Value
Surgeon/cancer specialist only	100 (17.3)
Both PCP and surgeon/cancer specialist	439 (75.8)
Access to medical care	
Very easy/Somewhat easy	358 (61.8)
Very difficult/Somewhat difficult	221 (38.2)

* SD: standard deviation

† PCP: primary care provider

Table 2

Unadjusted Analysis -- Preventive Care by Provider Visit Groups (N=579)

	PCP* only	Surgeon/cancer specialist only	Both PCP and surgeon/cancer specialist	P-value†
Annual mammography	77.5%	71.0%	83.0%	0.015
PAP in the last 2 years	77.5%	73.0%	80.9%	0.207
Colonoscopy	63.3%	27.6%	52.3%	0.0007

* PCP: primary care physician

† P-value from Chi-square test

Table 3
Multivariate Logistic Regress Analysis -- Preventive Care by Provider Visit Groups (N=579)

	Annual mammography		PAP in the last 2 years		Colonoscopy (N=371)	
	AOR [‡] (95% C.I.) [§]	P-value	AOR [‡] (95% C.I.) [§]	P-value	AOR [‡] (95% C.I.) [§]	P-value
Age (>50)	1.34 (0.86, 2.11)	0.200	0.29 (0.18, 0.47)	<.0001	1.03 (0.99, 1.07)	0.095
Comorbidity (Any) [*]	1.49 (0.89, 2.47)	0.127	0.71 (0.45, 1.12)	0.148	1.30 (0.82, 2.05)	0.269
Married/Partnered (Yes)	1.42 (0.89, 2.27)	0.140	1.35 (0.85, 2.15)	0.208	0.96 (0.61, 1.53)	0.870
High school graduate (Yes)	0.77 (0.44, 1.36)	0.369	0.87 (0.49, 1.55)	0.639	1.21 (0.69, 2.11)	0.503
Ethnicity (RG [†] White)						
African American	0.99 (0.36, 2.74)	0.985	1.71 (0.60, 4.89)	0.315	1.38 (0.42, 4.53)	0.593
Less-aculturated Latina	1.73 (0.94, 3.18)	0.077	2.76 (1.50, 5.08)	0.001	0.72 (0.40, 1.30)	0.273
More-aculturated Latina	0.76 (0.32, 1.81)	0.536	3.44 (1.10, 10.75)	0.034	1.48 (0.55, 3.97)	0.438
Other	1.43 (0.62, 3.31)	0.409	1.56 (0.71, 3.46)	0.269	0.95 (0.42, 2.18)	0.903
Stage (III)	0.63 (0.36, 1.10)	0.106	0.88 (0.49, 1.58)	0.658	1.09 (0.58, 2.02)	0.794
Hormone therapy (Yes)	1.65 (1.04, 2.62)	0.033	1.98 (1.23, 3.18)	0.0047	1.30 (0.80, 2.13)	0.296
Doctor visit group (RG [†] Surgeon/cancer specialist only)						
PCP only	2.67 (0.84, 5.74)	0.109	2.90 (1.05, 8.04)	0.040	2.99 (1.5, 8.51)	0.041
Both PCP and cancer specialist	2.20 (1.51, 4.72)	0.0008	2.24 (1.22, 4.10)	0.009	2.17 (1.10, 4.30)	0.026
Financial adequacy (Yes)	0.89 (0.55, 1.42)	0.612	1.28 (0.79, 2.09)	0.321	0.78 (0.48, 1.25)	0.296
Competing life needs (Yes)	0.81 (0.48, 1.38)	0.443	0.91 (0.52, 1.58)	0.741	1.61 (0.92, 2.82)	0.099
Access to medical care (RG [†] Very difficult/ Somewhat difficult)	0.66 (0.41, 1.09)	0.104	0.95 (0.58, 1.55)	0.826	1.73 (1.06, 2.83)	0.029

* One or more major comorbidity versus none

[†] RG: reference group

[‡] AOR: adjusted odds ratio

[§] 95% C. I.: 95% confidence interval