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Perspectives of cancer survivors on the role of different healthcare providers in an integrated delivery system

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Abstract
Purpose The purpose of this paper is to describe patient perspectives on survivorship care 1 year after cancer diagnosis.
Methods The study was conducted at an integrated healthcare delivery system in western Washington State. Participants were patients with breast, colorectal, and lung cancer who had enrolled in a randomized control trial (RCT) of oncology nurse navigation to improve early cancer care. Those alive and enrolled in the healthcare system 1 year after diagnosis were eligible for this analysis. Participants completed surveys by phone. Questions focused on receipt of treatment summaries and care plans; discussions with different providers; patient opinions on who does and should provide their care; and patient perspectives primary care providers' (PCP) knowledge and skills related to caring for cancer survivors
Results Of the 251 participants in the RCT, 230 (91.6 %) responded to the 12-month phone survey and were included in this analysis; most ($n=183$, 79.6 %) had breast cancer. The majority (84.8 %) considered their cancer specialist (e.g., medical, radiation, surgical or gynecological oncologist) to be their main provider for cancer follow-up and most (69.4 %) had discussed follow-up care with that provider. Approximately half of patients were uncertain how well their PCP communicated with the oncologist and how knowledgeable s/he was in caring for cancer survivors.
Conclusions One year after diagnosis, cancer survivors continue to view cancer specialists as their main providers and are uncertain about their PCP's skills and knowledge in managing their care. Our findings present an opportunity to help patients understand what their PCPs can and cannot provide in the way of cancer follow-up care.
Implications for cancer survivors Additional research on care coordination and delivery is necessary to help cancer survivors manage their care between primary care and specialty providers.

Keywords Cancer survivorship · Shared care · Navigation · Primary care

Introduction

The Institute of Medicine's 2007 report *Lost in Transition* [1] has significantly shaped cancer survivorship research and practice, but many research questions and implementation challenges remain [2–7]. There has been little comparative effectiveness research on different models of cancer survivorship care, and the optimal roles for different providers (e.g., primary care, oncology, gastroenterology, general surgery, etc.) in delivering ongoing care to cancer survivors remain uncertain. However, research suggests that patients who see both oncologists and primary care providers (PCPs) are more likely to receive evidence-based care specified by guidelines for follow-up, cancer screening, and general prevention [8–10]. Given these data and the shortage of oncologists relative to the growing number of cancer survivors, studies on the role of PCPs in cancer survivorship care are increasingly important.

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One of the main models suggested for cancer survivorship care is shared care, which occurs when patient care is "shared by two or more clinicians of different specialties (or systems that are separated by some boundaries)" [11]. Previous research suggests shared care between primary care and oncology is the prevailing model in integrated healthcare delivery systems [12]. Healthcare leaders within integrated delivery systems favor shared care arrangements, but report that transitions between oncology and primary care are often informal [12]. A survey of a nationally representative sample of PCPs showed that nearly one third of these providers co-managed care for breast and colon cancer survivors and another 11 % reported being the main providers for both kinds of cancer survivors [13]. However, only 40 % of PCPs and 17 % of oncologists preferred a shared care model, while 26 % of PCPs and 59 % of oncologists, respectively, preferred oncologist-led care [14].

The goal of the present study was to describe patient experiences and perspectives on the coordination between and the role of different providers 1 year after cancer diagnosis. We included questions about survivorship follow-up care plans and treatment summaries, as these were recommended in the IOM report [1] and have received considerable attention in the literature and from professional societies and organizations. Ultimately, results from this study will inform development of delivery interventions and practice changes to assist cancer survivors during follow-up care.

Methods

Setting

The study was conducted at Group Health, an integrated healthcare insurance and delivery system in the Pacific Northwest with a focus on primary care and the patient-centered medical home [15]. Group Health is part of the Cancer Research Network [16] and has previously participated in research on the organization of care for cancer survivors [12]. The population for this study consisted of Group Health enrollees with breast, lung, or colorectal cancer who were enrolled in a randomized controlled trial (RCT) of a nurse navigator intervention to improve support, communication and coordination of care around the time of diagnosis and through treatment. The control group received enhanced usual care. The 4-month intervention is described in detail elsewhere [17, 18]. The present analysis includes all clinical trial participants who remained enrolled at Group Health and responded to a 12-month follow-up questionnaire.

Data collection

Participants in this study were surveyed at three time-points: a baseline assessment shortly after diagnosis, a 4 months assessment near the end of the intervention period, and a 12-month assessment to capture longer-term outcomes. Outcomes of interest in this paper were collected 12-months after cancer diagnosis. We called RCT participants who were still alive and enrolled at Group Health to administer a 107-question follow-up survey by phone. We made up to 12 separate attempts to reach participants by phone and left up to three messages. We administered previously used questions related to cancer survivorship from: the Primary Care Delivery of Survivorship Care Scale [19]; the National Cancer Institute's FOCUS study [20]; and studies by Cheung, Earle, and colleagues [21, 22]. Specifically, we asked about: receipt of treatment summaries and care plans; discussions patients had with different providers; patient opinions on who does and should provide their care; and perceptions of primary care providers' (PCP) knowledge and skills related to caring for cancer survivors. In addition to data from the 12-month survey, we also collected patient characteristics at study entry, including cancer site and stage from the Surveillance, Epidemiology and End Result (SEER) tumor registry and demographics, comorbidities, cancer treatment, and insurance type from administrative databases.

Analysis

We compared demographic characteristics of the study population according to cancer type. For categorical variables we used the Chi-square test and for age as a continuous variable we used ANOVA.

For each question related to cancer survivorship on the 12-month survey, we computed frequencies of response categories. The primary goal of this analysis was to describe perspectives overall rather than to compare them across any specific groups. However, in exploratory analyses, we also examined survey results according to: cancer type, age at diagnosis (<65, 65+years), comorbidity in the year before baseline (Charlson=0, Charlson=1, Charlson=2+), and intervention group. We compared distributions in responses across categories of these variables using the Chi-square test. We also compared patients' views on PCP knowledge and skills according to whom they indicated as their ideal provider for follow-up care. This analysis excluded the 10 people who reported "other" or "unsure." We also examined the association between whom patients indicated as their ideal provider for follow-up care and what they discussed with different providers. In exploratory analyses, we limited our analyses to patients who completed treatment at least 6 months before the survey.

Results

Of the 251 participants enrolled in the RCT, 3 disenrolled from the study, 3 refused the 12-month interview, and 10 died within 12 months of diagnosis. Of the 235 remaining people, 230 responded to the 12-month phone survey (Fig. 1). The majority of patients had breast cancer ($N=183$, 79.6 %), were non-Hispanic, Caucasian, and had attended at least some college (Table 1). Patients in the intervention group were slightly younger than controls (mean 59.7 vs. 69.4), and had higher levels of educational attainment, and fewer comorbidities (9.1 % vs. 21.4 % with Charlson comorbidity score $\geq$2). The majority of patients ($N=195$, 84.8 %) completed treatment at least 6 months before the survey. However, there were differences by cancer site: lung cancer patients were more likely to not have received treatment or to have undergone treatment longer (Table 1).

Most patients reported discussing late or long-term side effects with a doctor or healthcare provider (80.9 %) and receiving a written follow-up plan at the end of treatment (76.8 %) (Table 2). The majority considered their cancer specialist (such as medical, radiation, surgical, or gynecological oncologist) to be their main provider for cancer follow-up; however responses differed by cancer type (Table 2). While most patients had discussed with their cancer specialist who would provide cancer follow-up care, 27.9 % had not and 2.6 % were unsure. Only 12.6 % thought the PCP was their ideal provider for their cancer-related follow-up care. Participants who considered their PCP to be their ideal provider of cancer follow-up care were more likely to report confidence in the PCP's skills, knowledge, and communication (Table 3). Approximately half of patients were uncertain how well their PCP communicated with the oncologist and how knowledgeable s/he was in caring for cancer survivors, with breast cancer patients expressing greater uncertainty (Table 2). Patients in the intervention group were more likely than control participants to have discussed follow-up care with both their cancer provider and other non-PCP providers (results not shown). Approximately half of participants had discussed who would provide their noncancer care. In general, responses did not vary according to randomization group, gender, age, or comorbidities (results not shown). However, patients who

Fig. 1 CONSORT flow diagram

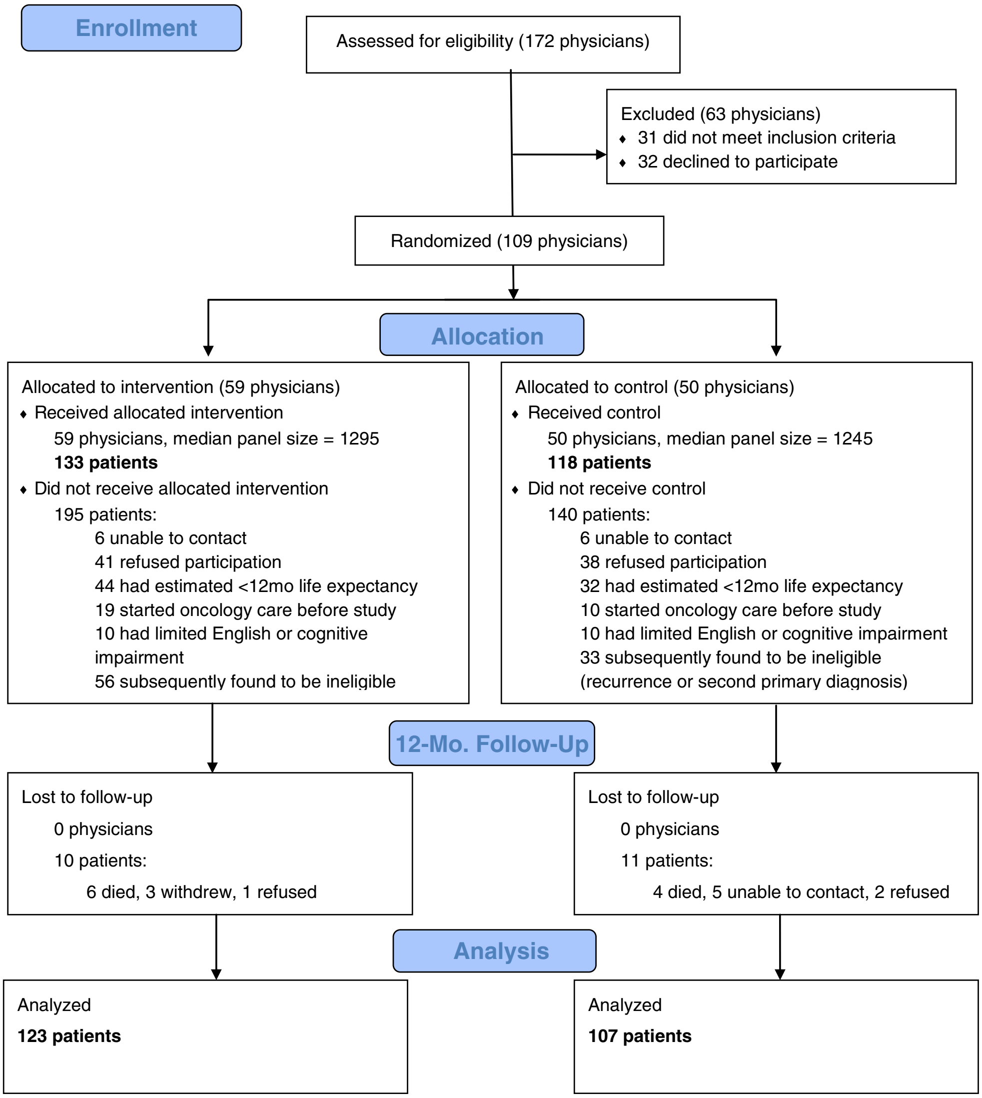

Table 1 Demographic characteristics of participants in 12-month survey and comparison of characteristics by cancer type

	All[a] (*N*=230)	Cancer type			*P* values
	n (col %)	Breast[a] (*N*=183) *n* (col %)	Colorectal[a] (*N*=28) *n* (col %)	Lung[a] (*N*=19) *n* (col %)	
Age (mean, sd)	62.2 (11.8)	60.7 (11.3)	68.8 (12.8)	66.7 (10.7)	<0.001
Female	210 (91.3)	182 (99.5)	17 (60.7)	11 (57.9)	<0.001
Race					
Caucasian	180 (80.7)	147 (83.1)	19 (67.9)	14 (77.8)	0.164
African American	8 (3.6)	4 (2.3)	2 (7.1)	1 (5.6)	
Asian	12 (5.4)	8 (4.5)	3 (10.7)	1 (5.6)	
American Indian/Alaska Native	8 (3.6)	4 (2.3)	3 (10.7)	1 (5.6)	
Native Hawaiian/Other Pacific Islander	1 (0.4)	1 (0.6)	0	0	
Other	14 (6.3)	13 (7.3)	1 (3.6)	0	
Hispanic	9 (3.9)	9 (5.0)	0	0	0.296
Married or living with partner	156 (68.1)	125 (68.6)	18 (64.3)	13 (68.4)	0.946
Education					0.331
High school or less	37 (16.1)	29 (15.9)	5 (17.9)	3 (15.8)	
At least some college	69 (30.1)	60 (33.0)	5 (17.9)	4 (21.1)	
College graduate	72 (31.4)	54 (29.7)	13 (46.4)	5 (26.3)	
Postgraduate degree	51 (22.3)	39 (21.4)	5 (17.9)	7 (36.8)	
Insurance type					0.821
High deductible plan	29 (12.7)	24 (13.2)	3 (10.7)	2 (10.5)	
Options/Alliant plan	38 (16.6)	33 (18.1)	2 (7.1)	3 (15.8)	
Traditional HMO	76 (33.2)	58 (31.9)	10 (35.7)	8 (42.1)	
Medicare	53 (23.1)	38 (20.9)	10 (35.7)	5 (26.3)	
Self-funded	16 (7.0)	15 (8.2)	1 (3.6)	0	
Safety net	16 (7.0)	13 (7.1)	2 (7.1)	1 (5.3)	
Not enrolled	1 (0.4)	1 (0.5)	0	0	
Charlson comorbidity score					0.007
0	153 (73.6)	129 (79.1)	15 (55.6)	9 (50.0)	
1	24 (11.5)	15 (9.2)	4 (14.8)	5 (27.8)	
2+	31 (14.9	19 (11.7)	8 (29.6)	4 (22.2)	
Randomization group					0.692
Control	107 (46.5)	84 (45.9)	15 (53.6)	8 (42.1)	
Intervention	123 (53.5)	99 (54.1)	13 (46.4)	11 (57.9)	
Time between last treatment and survey					<0.001
No treatment received	9 (3.9)	4 (2.2)	1 (3.6)	4 (21.1)	
<30 days	2 (0.9)	1 (0.5)	0	1 (5.3)	
30 to <90 days	5 (2.2)	3 (1.6)	0	2 (10.5)	
90 to <180 days	19 (8.3)	17 (9.3)	1 (3.6)	1 (5.3)	
180+days	195 (84.8)	158 (86.3)	26 (92.9)	11 (57.9)	

HMO Health Maintenance Organization

[a] *N*'s may not add to totals due to missing data

indicated their PCP was their ideal doctor for cancer-related follow-up were more likely to report discussions with their oncologist about who would provide their noncancer care (Table 4). There was some suggestion that they were also more likely to have discussed both cancer and noncancer care with their cancer doctor and PCP; however these results were not significant. Discussion of late or long-term effects and receipt of treatment summary or follow-up plan did not differ according to reported ideal doctor for follow-up care (Table 4). None of our results in any of the analyses differed meaningfully when restricted to patients with at least 6 months between their last treatment and their survey (data not shown).

Table 2 Perceptions of planning for survivorship care at 12-month survey, overall and by cancer type

	All (*N*=230) *n* (col%)	Breast (*N*=183) *n* (col %)	Colorectal (*N*=28) *n* (col %)	Lung (*N*=19) *n* (col %)	*P* value
Discussed late or long-term side effects					0.530
Yes, discussed in detail	85 (37.0)	66 (36.1)	12 (42.9)	7 (36.8)	
Yes, discussed somewhat	101 (43.9)	82 (44.8)	12 (42.9)	7 (36.8)	
No, did not discuss at all	37 (16.1)	31 (16.9)	3 (10.7)	3 (15.8)	
Don't know	7 (3.0)	4 (2.2)	1 (3.6)	2 (10.5)	
Received treatment summary					0.178
No	79 (35.0)	69 (38.1)	7 (25.0)	3 (17.6)	
If no, would like to have received written summary					0.456
Yes	59 (74.7)	52 (75.4)	4 (57.1)	3 (100.0)	
No	17 (21.5)	15 (21.7)	2 (28.6)	0	
Not sure	3 (3.8)	2 (2.9)	1 (14.3)	0	
Yes	100 (44.2)	73 (40.3)	16 (57.1)	11 (64.7)	
If yes, can find it easily					0.483
Yes	90 (90.0)	65 (89.0)	16 (100.0)	9 (81.8)	
No	7 (7.0)	6 (8.2)	0	1 (9.1)	
Not sure	3 (3.0)	2 (2.7)	0	1 (9.1)	
Not sure	47 (20.8)	69 (38.1)	7 (25.0)	3 (17.6)	
Received written follow-up plan at end of treatment					0.737
Yes	175 (76.8)	142 (77.6)	21 (75.0)	12 (70.6)	
No	37 (16.2)	27 (14.8)	6 (21.4)	4 (23.5)	
Not sure	16 (7.0)	14 (7.7)	1 (3.6)	1 (5.9)	
Discussion with cancer doctor about who would provide follow-up					0.516
Yes	159 (69.4)	129 (70.9)	18 (64.3)	12 (63.2)	
No	64 (27.9)	47 (25.8)	10 (35.7)	7 (36.8)	
Not sure	6 (2.6)	6 (3.3)	0	0	
Discussion with primary care doctor about who would provide follow-up					0.422
Yes	72 (31.3)	53 (29.0)	11 (39.3)	8 (42.1)	
No	155 (67.4)	128 (69.9)	16 (57.1)	11 (57.9)	
Not sure	3 (1.3)	2 (1.1)	1 (3.6)	0	
Discussion with any other doctor about who would provide follow-up					0.870
Yes	72 (31.4)	57 (31.3)	10 (35.7)	5 (26.3)	
No	154 (67.2)	122 (67.0)	18 (64.3)	14 (73.7)	
Not sure	3 (1.3)	3 (1.6)	0	0	
Discussion with cancer doctor about who would handle care besides cancer					0.007
Yes	62 (27.1)	49 (26.9)	9 (32.1)	4 (21.1)	
No	164 (71.6)	132 (72.5)	19 (67.9)	13 (68.4)	
Not sure	3 (1.3)	1 (0.5)	0	2 (10.5)	
Discussion with primary care doctor about who would handle care besides cancer					0.537
Yes	93 (40.6)	71 (39.0)	15 (53.6)	7 (36.8)	
No	132 (57.6)	107 (58.8)	13 (46.4)	12 (63.2)	
Not sure	4 (1.7)	4 (2.2)	0	0	
Discussion with any other doctor about who would handle care besides cancer					0.171
Yes	32 (13.9)	23 (12.6)	6 (21.4)	3 (15.8)	
No	196 (85.2)	159 (86.9)	22 (78.6)	15 (78.9)	

Table 2 (continued)

Not sure	2 (0.9)	1 (0.5)	0	1 (5.3)	
Doctor considered main doctor for cancer follow-up care					0.896
None considered main doctor	34 (14.8)	29 (15.8)	3 (10.7)	2 (10.5)	
Yes	195 (84.8)	153 (83.6)	25 (89.3)	17 (89.5)	
Primary care	10 (5.1)	3 (2.0)	4 (16.0)	3 (17.6)	0.005
Cancer specialist	175 (89.7)	142 (92.8)	21 (84.0)	12 (70.6)	
Ob/Gyn	3 (1.5)	2 (1.3)	0	1 (5.9)	
Urologist	0	0	0	0	
Gastroenterologist	0	0	0	0	
Other	7 (3.6)	6 (3.9)	0	1 (5.9)	
Not sure	1 (0.4)	1 (0.5)	0	0	
Ideal doctor for cancer-related follow-up					0.472
Cancer specialist	191 (83.0)	154 (84.2)	21 (75.0)	16 (84.2)	
Primary care	29 (12.6)	21 (11.5)	6 (21.4)	2 (10.5)	
Other	3 (1.3)	2 (1.1)	0	1 (5.3)	
Not sure	7 (3.0)	6 (3.3)	1 (3.6)	0	
Reasons for ideal doctor selection[a]	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Importance of provider's knowledge or expertise	4.9 (0.3)	4.9 (0.3)	4.9 (0.3)	5 (0)	0.564
Importance of provider's caring attitude	4.6 (0.7)	4.6 (0.7)	4.6 (0.7)	4.7 (0.6)	0.557
Importance of provider's communication skills	4.8 (0.5)	4.8 (0.5)	4.7 (0.5)	4.9 (0.3)	0.376
Importance in ease of making appointments	4.3 (0.8)	4.2 (0.9)	4.6 (0.6)	4.4 (0.8)	0.048
Importance of provider's convenient location	4.1 (1.0)	4.0 (1.0)	4.4 (0.8)	3.8 (1.2)	0.074
Primary Care Delivery of Survivorship Care Scale (modified)	*n* (col %)	*n* (col %)	*n* (col %)	*n* (col %)	*P* value
PCP communicates well with oncologist					0.003
Strongly disagree	5 (2.2)	3 (1.7)	1 (3.7)	1 (5.3)	
Disagree	9 (4.0)	4 (2.2)	1 (3.7)	4 (21.1)	
Not sure	129 (57.3)	112 (62.6)	12 (44.4)	5 (26.3)	
Agree	37 (16.4)	28 (15.6)	5 (18.5)	4 (21.1)	
Strongly agree	45 (20.0)	32 (17.9)	8 (29.6)	5 (26.3)	
PCP is knowledgeable about follow-up care for cancer survivors					0.019
Strongly disagree	2 (0.9)	0	1 (3.7)	1 (5.3)	
Disagree	3 (1.3)	2 (1.1)	0	1 (5.3)	
Not sure	102 (44.9)	88 (48.6)	9 (33.3)	5 (26.3)	
Agree	72 (31.7)	57 (21.5)	7 (25.9)	8 (42.1)	
Strongly agree	48 (21.1)	34 (18.8)	10 (37.0)	4 (21.1)	
PCP aware of long-term side effects of cancer treatment					0.256
Strongly disagree	1 (0.4)	1 (0.6)	0	0	
Disagree	2 (0.9)	1 (0.6)	0	1 (5.3)	
Not sure	101 (44.5)	85 (47.0)	10 (37.0)	6 (31.6)	
Agree	73 (32.2)	59 (32.6)	7 (25.9)	7 (36.8)	
Strongly agree	50 (22.0)	35 (19.3)	10 (37.0)	5 (26.3)	
PCP skilled at diagnosing and treating symptoms associated with cancer or cancer therapy					0.028
Strongly disagree	6 (2.7)	3 (1.7)	2 (7.4)	1 (5.3)	
Disagree	6 (2.7)	4 (2.2)	2 (7.4)	0	
Not sure	127 (56.2)	109 (60.6)	11 (40.7)	7 (36.8)	
Agree	59 (26.1)	47 (26.1)	5 (18.5)	7 (36.8)	
Strongly agree	28 (12.4)	17 (9.4)	7 (25.9)	4 (21.1)	

PCP primary care provider

[a] Scale of 1 to 5, where 0 is "not at all important" and 5 is "very important"

Discussion

We observed that even in an integrated healthcare system centered around primary care, cancer survivors are unsure how well their PCP can care for their cancer. Our results do not suggest that patients lack confidence in their PCP in general, but rather that there is considerable uncertainty about their PCP's knowledge and skills in follow-up cancer care. In a single site, cross-sectional study of 300 breast cancer patients at an academic breast cancer center in 2007, Mao et al. observed a similar distribution of patient confidence in PCP skills and knowledge related to caring for cancer survivors.

Table 3 Patient perceptions of primary care provider skill and knowledge stratified by their reported ideal doctor for follow-up care

	Ideal doctor for cancer-related follow-up				
	Cancer specialist		Primary care		*P* value
	N=191	Col %	*N*=29	Col %	
PCP communicates well with oncologist					0.002
Strongly disagree	4	(2.1)	0	(0.0)	
Disagree	9	(4.8)	0	(0.0)	
Not sure	113	(60.4)	13	(44.8)	
Agree	29	(15.5)	4	(13.8)	
Strongly agree	32	(17.1)	12	(41.4)	
PCP is knowledgeable about follow-up care for cancer survivors					<0.001
Strongly disagree	1	(0.5)	0	(0.0)	
Disagree	3	(1.6)	0	(0.0)	
Not sure	88	(46.8)	10	(34.5)	
Agree	64	(34.0)	6	(20.7)	
Strongly agree	32	(17.0)	13	(44.8)	
PCP aware of long-term side effects of cancer treatment					<0.001
Strongly disagree	0	(0.0)	0	(0.0)	
Disagree	1	(0.5)	0	(0.0)	
Not sure	86	(45.7)	10	(34.5)	
Agree	63	(33.5)	8	(27.6)	
Strongly agree	38	(20.2)	11	(37.9)	
PCP skilled at diagnosing and treating symptoms associated with cancer or cancer therapy					0.001
Strongly disagree	4	(2.1)	0	(0.0)	
Disagree	3	(1.6)	2	(7.1)	
Not sure	113	(60.1)	9	(32.1)	
Agree	49	(26.1)	9	(32.1)	
Strongly agree	19	(10.1)	8	(28.6)	

PCP primary care provider

Patients in the Mao study were even less confident in their providers than in our study. These findings might explain why in our study and other studies patients prefer seeing cancer specialists for cancer-related follow-up [23, 24].

Our findings are also similar to other studies with respect to reported discussions about who would provide survivorship care. In 2007, Cheung et al. surveyed 535 cancer survivors who were two or more years from diagnosis and who had received at least some of their care at a single academic cancer center [22]. Our observation that approximately 70 % discussed cancer follow-up care with their cancer specialist is consistent with the 65 % who reported a discussion with their oncologist in Cheung et al. These results suggest that nearly one third of patients do not discuss cancer follow-up care with their oncology providers. An even smaller percent discuss their other healthcare needs with their PCPs. The proportion of participants in our study who discussed noncancer-related care with their PCP (39 %) was nearly identical to the proportion in the Cheung study who discussed general care with their PCP (43 %).

Most of the survivorship studies to date, including those described above, have been conducted at academic medical centers or among patients who received at least part of their cancer at an academic medical center. Many US cancer patients do not receive treatment in such settings, so it is important to understand care patterns and needs in community practice. The major strength of the present study is that it was conducted in an integrated healthcare system with a strong primary care focus. Yet, this organizational structure may also limit the generalizability of our findings. It is not clear whether patients receiving traditional fee-for-service care would have similar experiences. Patients in our study were primarily breast cancer survivors participating in a randomized trial and may differ in their perspectives and expectations from members of the general population who choose not to participate in studies. However, given the consistency of our

Table 4 Survivorship care discussions stratified by reported ideal doctor for follow-up care

	Ideal doctor for cancer follow-up				
	Cancer specialist		Primary care		*P* value
	N=191	Col %	*N*=29	Col %	
Discussed late or long-term side effects					0.963
Yes, discussed in detail	72	(37.7)	10	(34.5)	
Yes, discussed somewhat	81	(42.4)	14	(48.3)	
No, did not discuss at all	31	(16.2)	5	(17.2)	
Don't know	7	(3.7)	0	0.0	
Received treatment summary					0.483
No	64	(34.2)	11	(37.9)	
If no, would like to have received written summary					0.718
Yes	47	(73.4)	8	(72.7)	
No	14	(21.9)	3	(27.3)	
Not sure	3	(4.7)	0	0.0	
Yes	83	(44.4)	12	(41.4)	
If yes, can find it easily					0.23
Yes	75	(90.4)	11	(91.7)	
No	6	(7.2)	0	0.0	
Not sure	2	(2.4)	1	(8.3)	
Not sure	40	(21.4)	6	(20.7)	
Received written follow-up plan at end of treatment					0.922
Yes	145	(76.7)	21	(72.4)	
No	30	(15.9)	6	(20.7)	
Not sure	14	(7.4)	2	(6.9)	
Discussion with cancer doctor about who would provide follow-up					0.096
Yes	136	(71.6)	18	(62.1)	
No	48	(25.3)	11	(37.9)	
Not sure	6	(3.2)	0	0.0	
Discussion with primary care doctor about who would provide follow-up					0.092
Yes	54	(28.3)	15	(51.7)	
No	135	(70.7)	13	(44.8)	
Not sure	2	(1.0)	1	(3.4)	
Discussion with any other doctor about who would provide follow-up					0.212
Yes	58	(30.5)	8	(27.6)	
No	130	(68.4)	20	(69.0)	
Not sure	2	(1.1)	1	(3.4)	
Discussion with cancer doctor about who would handle care besides cancer					0.039
Yes	46	(24.2)	15	(51.7)	
No	142	(74.7)	13	(44.8)	
Not sure	2	(1.1)	1	(3.4)	
Discussion with primary care doctor about who would handle care besides cancer					0.256
Yes	73	(38.4)	17	(58.6)	
No	113	(59.5)	12	(41.4)	
Not sure	4	(2.1)	0	0.0	
Discussion with any other doctor about who would handle care besides cancer					0.277
Yes	23	(12.0)	8	(27.6)	
No	166	(86.9)	21	(72.4)	
Not sure	2	(1.0)	0	0.0	

PCP primary care provider

results with other studies, our results may be applicable to other settings.

Overall, our findings suggest that patients prefer receiving cancer follow-up care from a specialist and are unsure of their PCPs' knowledge and skills in this area. The nurse navigator intervention did not significantly improve patient confidence in PCPs to provide cancer follow-up care. Existing evidence for cancer survivors is limited, but a few trials suggest that outcomes are similar for patients whose follow-up is managed by different providers [25], and observational studies show that patients who see both primary care and oncology providers receive better care [9, 10, 26, 27]; many studies demonstrate the importance of care coordination in chronic disease management [28]. Patient lack of confidence in PCPs may be related to provider attitudes and beliefs. Previous research suggests many PCPs lack confidence in their ability to care for cancer patients, and oncologists also lack confidence in PCPs [14, 29–31]. In a recent, nationally representative survey of providers, only one in three PCPs were confident in their ability to follow breast and colon cancer survivors for recurrence and even fewer (1 in 5) were confident in managing long-term and late effects of cancer [14]. PCPs report playing an active role in cancer-related follow-up [13], but almost half report low knowledge on cancer-related follow-up for breast and colon cancer survivors, compared to 12 % of oncologists [31]. However, other studies have shown PCPs want to be involved in survivorship care [32–34].

One of the study limitations is that we did not ask patients for their opinions on the shared care model or their preference for who would provide noncancer-related care. Nevertheless, the present study highlights an opportunity for future research on interventions to improve survivorship care and coordination or hand-offs between PCPs and cancer specialists. There also is an important opportunity to help patients better understand what their PCPs can and cannot provide in the way of cancer follow-up care and how these providers will communicate with cancer specialists to deliver coordinated care.

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