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# Primary care physicians' perceptions concerning engagement in cancer survivor care

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## Abstract

**Background:** Given the growing diversity among cancer survivors and the fact that oncologists typically do not perform long-term care, the expected role of primary care physicians (PCPs) in survivor care is expanding. However, communication and collaboration between oncologists and PCPs are lacking. Therefore, we assessed the perception of cancer survivor care among PCPs.

**Methods:** We sent a questionnaire to 767 Japanese Board-certified PCPs, regardless of facility type (clinics and hospitals), inquiring about PCPs' perceptions of their role in survivor care. Additionally, we included vignette-based scenarios focused on colorectal and prostate cancer survivors to explore factors associated with their clinical decisions.

**Results:** We obtained 91 replies (response rate: 11.9%). A total of 75% of PCPs had encountered at least 1 cancer patient in actual practice. Even for patients actively receiving cancer treatment, >70% of PCPs reported that they were willing to engage in comprehensive survivor care, except for the administration of anticancer drugs. Further, 49% of PCPs considered that both PCPs and oncologists were suited to performing regular screening for cancer recurrence in high-risk patients. Multivariable logistic regression analyses revealed that clinic PCPs were less inclined to conduct screening for recurrence than hospital PCPs in both colorectal (odds ratio, 3.85 [95% confidence interval 1.40–10.6]) and prostate (4.36 [95% confidence interval 1.51–12.6]) cancer scenarios.

**Conclusions:** Our findings suggest that Japanese PCPs are willing to engage in survivor care and encourage closer collaboration between oncologists and PCPs. However, oncologists might need to request cooperation, considering the facility type with which PCPs are affiliated.

## KEYWORDS

cancer survivor, collaboration, oncologist, primary care physician, survivor care

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## 1 | INTRODUCTION

With recent progress in the field of cancer therapy, the number of cancer survivors has been dramatically increasing.<sup>1,2</sup> “Cancer survivors” are all patients with a history of cancer, from the detection of cancer through the rest of their life after completing active cancer treatment, including surgery, radiation therapy, and chemotherapy. However, details concerning cancer survivor care have not yet been established. With the increasing diversity among cancer survivors, including with regard to their age, disease complications, and socioeconomic status, the issues facing these survivors have similarly diversified.<sup>3,4</sup> Patients might expect continuous follow-up care to be conducted by their oncologist, but providing comprehensive survivor care aside from active cancer treatment is difficult for oncologists.<sup>5,6</sup> Indeed, the number of visits to an oncologist tends to decline over the years following the completion of active cancer treatment.<sup>7,8</sup>

Several previous studies have suggested the need for a more complex and multifaceted approach by healthcare providers to the management of complications and comorbidities, psychological support, daily life, and participation in social activities, including returning to work (RTW), among cancer survivors.<sup>9,10</sup> Encouragement concerning RTW or continued employment after RTW among cancer survivors helps support their feelings regarding overcoming their diseases and boosts their confidence in living their life after completing active cancer treatment.<sup>11,12</sup> Oncologists therefore need to cooperate with other physicians, particularly primary care physicians (PCPs), to provide comprehensive cancer survivor care that suits survivors' interpersonal characteristics.<sup>13</sup>

However, the gap in perception concerning the division of roles between PCPs and oncologists has been reported to be substantial, even in some Western countries where PCPs oversee far more cancer survivors than in Japan, because of a lack of communication among physicians in these positions.<sup>14–17</sup> In Japan, these issues are more serious and have not been fully discussed.

Therefore, the present study clarified the perceptions of Japanese PCPs regarding cancer survivor care. Further, we investigated factors that might influence the practice patterns of PCPs using hypothetical scenarios related to cancer survivor care. We believe that this study will help facilitate communication between PCPs and oncologists in routine cancer survivor care.

## 2 | MATERIALS AND METHODS

### 2.1 | Study setting and design

We sent a questionnaire to 767 all Japanese Board-certified PCPs in Japan, regardless of facility type (clinics and hospitals), using an email distribution list obtained from the Japan Primary Care Association (JPCA) in December 2019. PCPs responded to the questionnaires online within a month of receipt. No exclusion criteria were established for the 767 PCPs. We informed the participants about this study's aim and the publication of their data using a cover letter in

the introduction section of the questionnaire. We regarded the return of the questionnaire as their consent to participate in this study. In addition, we did not include any personally identifiable information in our manuscript or Electronic Supplementary Materials. We provided a financial incentive of a chance to receive a 2,000-yen Amazon.co.jp gift card, which would be given to 50 randomly selected respondents.

The study's conduct was approved by the Kyoto University Graduate School and Faculty of Medicine Ethics Committee (Approval Numbers R1618) and complied with the Declaration of Helsinki.

### 2.2 | Characteristics of PCPs and their perceptions of cancer survivor care

We surveyed the characteristics of PCPs using a self-reported questionnaire. Questionnaires related to PCPs inquired about gender, years of experience as a physician, facility type, implementation of home medical care, distance to the nearest cooperative cancer institution, and the number of cancer survivors they encountered in their actual practices. Further, we assessed perceptions concerning whether PCPs or oncologists should engage in certain aspects of cancer survivor care, separated by the following three periods (File S1):

1. During cancer therapy: the period in which a cancer survivor actively receives cancer treatment;
2. High risk: the period after completing cancer treatment in which a cancer survivor is in a stable general condition but has a high risk of recurrence; and
3. Low risk: the period after completing cancer treatment in which a cancer survivor has a low risk of recurrence.

We also assessed the actual feasibility of such engagement in respondents' facilities in the event that the PCPs receive a request from an oncologist. Cancer treatment was considered to include surgery, radiation therapy, and chemotherapy. In addition, we asked PCPs what kind of information about cancer survivors they wished to receive from oncologists when they conducted survivor care.

### 2.3 | Vignette-based scenarios

We asked PCPs about their preferences and typical clinical decision they might make for the following hypothetical circumstances using vignette-based scenarios (File S2).<sup>18–20</sup>

1. Screening strategy for cancer recurrence and referral behavior of a cancer survivor with a history of colorectal cancer (Scenario A) or prostate cancer (Scenario B) to an oncologist.
2. Psychosocial support for a cancer survivor with anxiety about cancer recurrence (Scenario C) or with difficulty continuing to work after RTW (Scenario D).

We assessed the association between the patient or PCPs' characteristics and the PCPs' behavioral pattern adopted on encountering survivors under the given scenarios.

In the scenarios regarding cancer screening (Scenarios A and B), we assessed practice patterns, including the implementation of screening and kinds of examinations performed by the PCPs themselves, referral timing to oncologists, and expectations concerning the frequency of examination by an oncologist. We varied the patient characteristics of age (60 or 80 years) and activities of daily living (ADL; able to walk without assistance, or able to walk with assistance or while using a walking stick or other assistive device). Four (2 × 2) patterns each were thus created for Scenarios A and B. In the scenarios concerning psychosocial support (Scenarios C and D), we assessed the practice patterns of engagement in care for survivors with psychosocial issues by PCPs. We varied the patient characteristics of age (45 or 65 years), gender, and living situation (living with a spouse or living alone). Eight (2 × 2 × 2) patterns each were thus created for Scenarios C and D.

A total of 1024 pattern combinations (4 × 4 × 8 × 8) from Scenarios A to D were created, and responders were randomly provided four types of scenarios. Experts in oncology, general internal medicine, and physical therapy developed the vignette story, and external PCPs and oncologists evaluated the scenarios. We revised the questionnaire, including the vignette-based scenarios, in accordance with the suggestion of external experts.

## 2.4 | Statistical analyses

With regard to the characteristics of PCPs, continuous data with normal distribution were summarized as mean values with standard deviation (SD), continuous variables with skewed data as median values with interquartile range (IQR), and dichotomous or categorical data as proportions.

For the vignette scenario, we calculated the odds ratio (OR) with the 95% confidence interval (CI) to assess the association between patient or PCP characteristics and behavioral patterns adopted by PCPs on encountering survivors under the given scenarios, using multivariable logistic regression models. With regard to the screening strategy for the detection of cancer recurrence in Scenarios A and B, we assessed PCPs' behavioral patterns concerning whether to perform certain examinations before referring the patient to an oncologist or leave all examinations to the oncologist. We adjusted for the hypothetical patient characteristics of age and ADL in the “minimally adjusted model” and then added physician characteristics of gender, years of physician experience, and facility type (clinic or other) to the “fully adjusted model.” Further, with regard to the psychosocial support referenced in Scenarios C and D, we assessed PCPs' behavioral patterns concerning whether to cooperate with or leave matters entirely to other physician, including oncologists, psychiatrists, and occupational health physicians (OHPs). We adjusted for the patient characteristics of age, gender, and living situation in the “minimally

adjusted model” and then added physician characteristics of gender, years of physician experience, and facility type (clinic or other) to the “fully adjusted model.” We did not calculate the sample size because the description of PCPs' perception was the primary purpose, and vignette-based study analyses were the exploratory and secondary purposes of our study.

All statistical analyses were performed using STATA 16.0 (version 16.0; Stata Corp.).

## 3 | RESULTS

### 3.1 | Baseline characteristics and PCPs' perceptions of their role in cancer survivor care

We obtained 91 replies (response rate: 11.9%). As shown in Table 1, the median number of years of healthcare experience was 13 (IQR: 10 to 15), and almost half of the participants worked in clinics. A total of 77.0% of PCPs reported that the nearest cooperative oncologist was located within 10 km of their facility, and 75% of PCPs had at least 1 cancer patient in their actual practice.

TABLE 1 Baseline characteristics of respondents and their facilities

Characteristics	Total (n = 91)
Male, n (%)	57 (62.6)
Years of healthcare experience, years	13 [10 to 15]
Types of facilities, %	
Academic medical centers	12 (13.2)
General hospitals (national or public hospitals)	18 (19.8)
Private hospitals	17 (18.7)
Clinics	42 (46.2)
Other	2 (2.2)
Implementation of home healthcare, %	70 (76.9)
Distance to the nearest cooperative institution, %	
Within own facility	28 (30.8)
<1-km radius	8 (8.8)
1- to <10-km radius	34 (37.4)
10- to <50-km radius	18 (19.8)
≥50-km radius	3 (3.3)
Number of cancer patients overseen, % (n)	
None	23 (25.3)
1-3	32 (35.2)
4-6	20 (22.0)
7-9	6 (6.6)
≥10	10 (11.0)

Note: Continuous data with a normal distribution were summarized as the mean (standard deviation), continuous variables with skewed data were summarized as the median (interquartile range), and dichotomous or categorical data were summarized as the proportion.

TABLE 2 PCPs' perceptions regarding whether PCPs or oncologists should perform cancer survivor care during or after cancer therapy (n = 87)

Cancer survivor care	During cancer therapy			High risk			Low risk		
	PCP	Both	Oncologist	PCP	Both	Oncologist	PCP	Both	Oncologist
Prescription of oral anticancer agents	1 (1.2)	36 (41.4)	50 (57.5)	—	—	—	—	—	—
Prescription of intravenous anticancer agents	0 (0)	13 (14.9)	74 (85.1)	—	—	—	—	—	—
Therapy for side effects of anticancer agents	3 (3.5)	61 (70.1)	23 (26.4)	—	—	—	—	—	—
Prescription of opioid analgesic medications	17 (19.5)	65 (74.7)	5 (5.8)	—	—	—	—	—	—
Prescription of analgesic medications other than opioid	16 (18.4)	67 (77.0)	4 (4.6)	—	—	—	—	—	—
Prescription of regular medications other than anticancer agents	53 (60.9)	33 (37.9)	1 (1.2)	60 (69.0)	27 (31.0)	0 (0)	75 (86.2)	10 (11.5)	2 (2.3)
Management in case of infection	15 (17.2)	63 (72.4)	9 (10.3)	47 (54.0)	39 (44.8)	1 (1.2)	74 (85.1)	13 (14.9)	0 (0)
Nutritional education	27 (31.0)	56 (64.4)	4 (4.6)	51 (58.6)	35 (40.2)	1 (1.2)	71 (81.6)	16 (18.4)	0 (0)
Stoma care	15 (17.2)	66 (75.9)	6 (6.9)	42 (48.3)	42 (48.3)	3 (3.5)	62 (71.3)	23 (26.4)	2 (2.3)
Maintenance or recovery support of patient's ADL	34 (39.1)	52 (59.8)	1 (1.2)	54 (62.8)	31 (36.1)	1 (1.2)	74 (86.1)	12 (14.0)	0 (0)
Support for the patient's social reintegration or return to work	34 (39.1)	50 (57.5)	3 (3.5)	48 (55.8)	36 (41.9)	2 (2.3)	73 (83.9)	13 (14.9)	1 (1.2)
Psychological support	17 (19.5)	69 (79.3)	1 (1.2)	38 (43.7)	49 (56.3)	0 (0)	67 (77.0)	19 (21.8)	1 (1.2)
Regular screening for cancer recurrence	—	—	—	4 (4.6)	39 (44.8)	44 (50.6)	33 (37.9)	38 (43.7)	16 (18.4)
Regular screening for other cancers	—	—	—	48 (55.2)	31 (35.6)	8 (9.2)	65 (74.7)	16 (18.4)	6 (6.9)

Note: Values are summarized as n (%). The follow-up stage was as follows: (1) During cancer therapy: the period in which a cancer survivor actively receives cancer treatment; (2) High risk: the period after completing cancer treatment in which a cancer survivor is in a stable general condition but has a high risk of recurrence; and (3) Low risk: the period after completing cancer treatment in which a cancer survivor has a low risk of recurrence. Roles in cancer survivor care were as follows: (1) PCP: "PCP should engage in survivor care"; (2) Both: "Both PCP and oncologist should be able to engage in survivor care"; (3) Oncologist: "PCP should not engage in any care; only oncologists should engage in survivor care."

Abbreviations: ADL, activities of daily living; PCP, primary care physician.

As shown in Table 2, 85.1% of PCPs thought PCPs should not prescribe intravenous anticancer agents, while 57.5% felt that PCPs also should not prescribe oral anticancer agents. However, over 70% of PCPs reported that PCPs should—or both PCPs and oncologists should—be able to engage in all aspects of survivor care except for the administration of anticancer drugs during active cancer treatment. Further, more than 90% of PCPs reported that PCPs should—or both PCPs and oncologists should—be able to engage in almost all aspects of cancer survivor care, including the prescription of regular medications, treatment of cancer complications, nutritional education, and provision of psychosocial support (including RTW), regardless of the degree of recurrence risk after completing active cancer treatment. In addition, PCPs responded that their facilities were equipped with adequate resources to perform such survivor care (see Table S1). However, almost half reported feeling that PCPs should not engage in the regular cancer screening of survivors with a high risk of cancer recurrence.

As shown in Table 3, PCPs reported needing important information from oncologists concerning cancer survivors, including the status of their cancer and details of the active cancer treatment being given, complications that occurred in the course of cancer treatment or might occur in the future, plans for active cancer treatment, status of chronic diseases other than cancer, and survivor's psychological status. Few PCPs expected to be provided information about the survivor's family history of cancer and the results of genetic tests conducted on survivors and their families.

### 3.2 | Screening strategy for cancer survivors

We examined the screening strategy using scenarios concerning a patient with a history of colorectal or prostate cancer (File S2). The scenario is a hypothetical story about an outpatient with diabetes mellitus and hypertension who underwent surgery for Stage II colorectal cancer (T3N0M0) (Scenario A) or Stage II prostate cancer (T2bN0M0) (Scenario B) 2 years earlier.

As seen in Table S2, around 50% PCPs expected an oncologist to examine survivors of both colorectal and prostate cancers once every 6 months. Table S3 shows the “additional” examination types that PCPs are willing to perform by themselves when any abnormal results are obtained by a fecal occult blood test (Scenario A) or a PSA evaluation (Scenario B) as a regular screening test, including findings for tumor marker evaluations (CEA and CA19-9), abdominal CT, and colonoscopy for the colorectal cancer scenario and a urinalysis, blood tests other than PSA measurement, and abdominal ultrasound for the prostate cancer scenario.

As shown in Table 4, a multivariable logistic regression analysis revealed that PCPs in clinics were less willing to screen for cancer recurrence than PCPs in academic medical centers or hospitals for both colorectal and prostate cancer scenarios. Further, PCPs were significantly more willing to screen before referring the patient to

**TABLE 3** Relevant information about survivors that PCPs wished to receive from oncologists when they conducted survivor care ( $n = 87$ )

	Number of respondents requesting information, $n$ (%)
Type of cancer (e.g., lung cancer, colon cancer)	87 (100)
Stage of cancer	85 (97.7)
Histological findings of cancer	55 (63.2)
Surgical procedures	73 (83.9)
Intraoperative process	19 (21.8)
Irradiated portion of radiotherapy	77 (88.5)
Irradiance level of radiotherapy	39 (44.8)
Types of anticancer agents	77 (88.5)
Dose of anticancer agents	32 (36.8)
Complications associated with cancer therapy	81 (93.1)
Side effects that have not appeared yet but might in the future	76 (87.4)
Plans for subsequent cancer therapy	83 (95.4)
Management in case of infection	65 (74.7)
Condition of chronic diseases (e.g., hypertension) during cancer therapy	61 (70.1)
Changes in regular medications during cancer therapy	75 (86.2)
Family history of cancer	24 (27.6)
Results of patient's genetic tests	35 (40.2)
Results of family's genetic tests	25 (28.7)
Patient's psychological status	73 (83.9)

Abbreviations: CA19-9, carbohydrate antigen 19-9; CEA, carcinoembryonic antigen; CT, computed tomography; PSA, prostate-specific antigen.

an oncologist for cancer survivors with a low ADL in Scenario A, although no significant differences were noted for those in Scenario B. We confirmed the consistency of the findings between the “minimally adjusted model” and the “fully adjusted model,” but we noted no significant association between the hypothetical survivor characteristics in the scenario and the referral behavior among PCPs, except for with regard to types of facilities.

### 3.3 | Psychosocial support for cancer survivors with anxiety concerning cancer recurrence and difficulty continuing to work after RTW

Scenario C is a hypothetical story concerning an outpatient with hypertension who had no recurrence findings after cancer treatment but was suffering from sleep disturbance because of anxiety about

	Scenario A (n = 86)		Scenario B (n = 80)	
	Odds ratio (95% CI)	p-Value	Odds ratio (95% CI)	p-Value
<b>Minimally adjusted model</b>				
Older patient age	0.99 (0.94 to 1.03)	0.61	0.98 (0.93 to 1.02)	0.30
Poor ADL	0.34 (0.14 to 0.86)	0.022	0.78 (0.31 to 1.96)	0.60
<b>Fully adjusted model</b>				
Older patient age	0.97 (0.92 to 1.02)	0.23	1.00 (0.95 to 1.05)	0.97
Poor ADL	0.41 (0.16 to 1.10)	0.077	1.13 (0.41 to 3.11)	0.81
Physicians' gender (female)	0.72 (0.26 to 2.03)	0.54	1.17 (0.42 to 3.26)	0.76
Years of physician experience	0.98 (0.89 to 1.08)	0.67	0.97 (0.88 to 1.07)	0.57
Type of facility (clinics or others)	3.85 (1.40 to 10.6)	0.009	4.36 (1.51 to 12.6)	0.006

Note: Scenario A, colorectal cancer scenario; Scenario B, prostate cancer scenario. We assessed PCPs' behavioral patterns concerning whether to perform certain examinations before referring the patient to an oncologist on encountering survivors under the given scenarios. We compared the selection of "leave all routine screening tests for cancer recurrence to an oncologist" and the selection of "perform some screening tests before referral to an oncologist" as a reference. Abbreviations: ADL, activities of daily living; CI, confidence interval; PCP, primary care physician.

	Scenario C	Scenario D
Set aside time to counsel patients	80 (92.0)	77 (88.5)
Prescribe sleep agents	38 (43.7)	—
Prescribe anxiolytics or antidepressants	42 (48.3)	21 (24.1)
Refer the survivor to a psychiatrist or psychosomatic physician	24 (27.6)	28 (32.2)
Advise the survivor to consult an oncologist	30 (34.5)	34 (39.1)
Encourage the survivor to join a PAG	44 (50.6)	22 (25.3)
Advise the survivor to consult a superior at work	—	52 (59.8)
Advise the survivor to consult an OHP or the occupational health center at their workplace	—	66 (75.9)
Advise the survivor to check their work rules regarding changes in work shift or contents	—	39 (44.8)
Advise the survivor to take leave from work	—	46 (52.9)
Contact the survivor's OHP to explain their medical condition	—	3 (3.5)

Note: Values are summarized as n (%).

Abbreviations: OHP, occupational health physician; PAG, patient advocacy group; RTW, return to work.

cancer recurrence. As shown in Table 5, most PCPs responded that they would set aside time to counsel the survivor in this scenario. In addition, over 40% responded that they would prescribe medications, such as sleep aids, anxiolytics, or antidepressant agents, and around 30% would propose a referral to a psychiatrist or a psychosomatic physician, as well as an oncologist. Further, more than half

of PCPs said they would recommend the patient join a patient advocacy group (PAG).

Scenario D is another hypothetical story concerning a patient with a similar chronic condition to the one in Scenario C; this patient was experiencing difficulty continuing to perform their work as expected after RTW because of feeling tired during the day. Most

TABLE 4 Association between survivor and physician characteristics and referral behavior to an oncologist in vignette-based scenarios regarding screening for cancer recurrence

TABLE 5 Primary care physicians' usual attitude toward cancer survivors with anxiety about cancer recurrence (Scenario C) or with difficulty continuing to work after RTW (Scenario D) (n = 87)

PCPs responded that they would set aside time to counsel the survivor in this scenario. In addition, over half responded that they would suggest the patient bring up the matter at their workplace, such as through a consultation with their superior or with an OHP at their workplace, as well as recommend taking a leave of absence from work (see Table 5).

We were unable to perform multivariable analyses to explore the risk factors that influenced the PCPs' perceptions concerning whether to cooperate with or leave matters entirely to other physicians with regard to providing psychosocial support, as most PCPs responded that they would be willing to engage in such support if they were to encounter survivors under the given scenarios.

## 4 | DISCUSSION

The present study suggested that Japanese PCPs were willing to engage in comprehensive cancer survivor care, regardless of the duration since receiving active cancer treatment. Findings from the vignette-based scenario indicated that PCPs working in clinics were less inclined to conduct screening for recurrence than those working in academic medical centers or hospitals, although we were unable to determine which survivor characteristics more significantly influenced the referral behavior to oncologists. Further, most PCPs were willing to engage in psychosocial support concerning survivors' anxiety and work-related issues.

Several previous studies have reported that oncologists did not expect cancer survivor care to be performed by PCPs, as PCPs' skills and knowledge concerning survivor care were unclear, even when PCPs showed a willingness to engage in such care.<sup>14,21</sup> Such controversy is considered to reflect poor communication between oncologists and PCPs. Oncologists might be able to leave various tasks of cancer survivor care to PCPs under expert advice and close cooperation.<sup>22,23</sup> Indeed, the PCPs in the present study mentioned the need for certain important bits of information for the initiation of survivor care, as has also been reported in previous studies.<sup>14</sup>

Vignette-based studies using hypothetical scenarios representing a particular circumstance are useful for assessing preferences, beliefs, and attitudes of subjects.<sup>18-20,24</sup> Unfortunately, PCPs in Japan have fewer opportunities to engage in collaboration with oncologists than those in other countries. However, using vignettes, we can assess the variations in practice patterns among cancer survivors even if PCPs do not perform such care in their actual clinical practice. Regarding the screening strategy scenarios, PCPs in clinics showed a greater tendency to leave screening tests to oncologists than PCPs in academic medical centers or hospitals. Oncologists might therefore need to consider the resources available to PCPs. Further, an appropriate recommendation or guideline describing the roles that can be performed by PCPs among different types of facilities should be established. Regarding the psychosocial support scenarios, previous studies showed that cancer survivors expected PCPs (rather than oncologists) to provide emotional support.<sup>10,25,26</sup> In particular, encouragement for the improvement in self-efficacy

contributed to a higher rate of RTW or continued employment after RTW and a better subsequent quality of life among cancer survivors.<sup>11,12,27-29</sup> The finding from the vignette-based scenario indicated that PCPs were willing to provide psychosocial care to survivors. However, previous studies have recommended the collaboration between PCPs and other healthcare providers, including oncologists, psychiatrists, and OHPs, as PCPs' skills and knowledge in this area are unclear.<sup>26,30</sup> A future study should explore the perceptions of other healthcare providers concerning the expected role of PCPs.

Several limitations to the present study warrant mention. First, given the markedly low response rate despite our efforts to entice participation, such as by providing a financial incentive and sending reminders, our findings may have been affected by volunteer bias. The response rate for Internet-based questionnaires is reportedly lower than that with other methods, such as a postal questionnaire, but superior with regard to the completeness of response, response burden, management of collected data, and cost.<sup>31,32</sup> We selected an Internet-based questionnaire method based on those advantages, considering the substantial questionnaire volume in the present study.<sup>33</sup> Second, we were unable to investigate which factors influence the practice patterns of PCPs in the scenario studies sufficiently. In addition, our study had some discrepancy in interpretations based on statistical significance regarding the patient ADL between Scenario A and Scenario B, possibly because of the small sample size and differences in primary cancer lesions. Third, we were unable to validate the information of the 767 PCPs, as we lacked personal access information, such as facility type. Further, our study allowed anonymous responses in order to reduce the response burden and prevent the influence of social desirability on responses.<sup>34,35</sup> In this manner, we intended to increase the rate of responses from inactive PCPs who were rarely involved in cancer survivor care or might consider survivor care an oncologist's responsibility. However, we need to consider nominal responses in order to validate the quality of responses in future research. Fourth, in the vignette-based scenarios, we only examined two types of cancer that are relatively common in Japan, which might reduce the generalizability. However, we feel that the results of this study are representative of all cancer survivors and can be applied to patients with other cancer types, except for cancer screening, as patients with colorectal or prostate cancer tend to have a relatively high survival rate and a long remainder of life.<sup>36,37</sup> Fifth, the factors related to the patient characteristics included in the scenario were limited: age and ADL for Scenarios A and B and age, gender, and living style for Scenarios C and D. Sixth, the responses given to vignette-based scenario are not always identical to respondents' actual practice patterns. However, the findings from this study might highlight the need for further clarification of roles and the establishment of a cooperative framework between PCPs and oncologists for cancer survivor care. Finally, as this study was limited to the 767 Japanese Board-certified PCPs, our findings may not be applicable to the larger number of general internists serving in private clinics in Japan, who often fill roles



similar to those of a PCP and have the potential to engage in cancer survivor care.<sup>38</sup> Further validation studies including a wider range of general internists are thus warranted.

## 5 | CONCLUSIONS

Primary care physicians in Japan are willing to engage in comprehensive cancer survivor care, except for the prescription of anticancer drugs, but they have few opportunities to collaborate with oncologists. Oncologists and PCPs need to engage in more communication and conduct cancer survivor care using PCPs' willingness and capabilities. A future study should evaluate the perceptions of oncologists concerning how much survivor care they feel can be left to PCPs.

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## CONFLICT OF INTEREST

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

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#### SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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