



Original Article

Cancer survivorship care for post-treatment cancer survivors in Japan: A secondary analysis of a multinational study across Asia–Pacific countries



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ABSTRACT

Objective: The global understanding of cancer survivorship care leads to optimal care delivery for cancer survivors. This study aimed to assess the perceptions of Japanese oncology nurses regarding cancer survivorship care and explore the factors influencing the provision of survivorship care.

Methods: A questionnaire survey of oncology nurses was conducted as part of a multinational, cross-sectional survey. A 29-item measurement scale with four subscales regarding survivorship care was used to assess nurses' perceptions regarding responsibility, confidence, and frequency of practice for cancer survivors. Additionally, we investigated a list of 16 factors influencing the provision of survivorship care.

Results: Among 181 oncology nurses, the mean adjusted scores for survivorship care items were 65.6–84.7, 16.8–44.7, and 29.2–47.2 for responsibility, confidence, and frequency, respectively. Significant correlations were observed in the subscales for frequency of care with responsibility ($r = 0.315–0.385$, $P < 0.001$) and confidence ($r = 0.428–0.572$, $P < 0.001$). Participants with > 10 years of experience in cancer care reported more frequent performance on surveillance than those with ≤ 5 years of experience ($P = 0.03$). The major barriers for providing survivorship care by oncology nurses were lack of knowledge and skills (87.8%), lack of time (81.8%), and not seeing the value of survivorship care (79.6%).

Conclusions: Oncology nurses face many challenges regarding survivorship care, even though they recognize their responsibility. Educational support for oncology nurses is warranted to overcome impeding factors and improve confidence.

Introduction

Asia accounts for 49% of the total cancer cases globally in 2020.¹ The burden of cancer also applies to Japan. In 2018, there were 980,856 new cancer cases in Japan suggesting that 50% of women and 65% of men would be diagnosed with cancer in their lifetime.² Despite being a life-threatening disease, there has been a steady improvement in the survival rate in Japan. According to the population-based registry, the 5-year relative survival rate of patients diagnosed with cancer between 2009 and 2011 was $> 60\%$.^{3,4} Additionally, the population-based registry described the 10-year relative survival rates of patients who were followed for ≥ 5 years after diagnosis. The 10-year relative survival rate of patients with cancer who were followed-up from 2002 to 2006 reached 95% for patients having a good prognosis.⁵ These findings demonstrate the increasing population of cancer survivors, highlighting

the importance of cancer survivorship care.

Increasing interest in cancer survivorship care led to the development of cancer survivorship guidelines in Japan.⁶ Additionally, the Japanese version of the Cancer Survivors' Unmet Needs scale was developed to evaluate the unmet needs of cancer survivors.⁷ However, the delivery of optimal survivorship care remains a significant issue. An international service-mapping study on Survivorship care for patients with cancer after Treatment completion in the Asia–Pacific Region (ie., the STEP study) was carried out on patients and cancer health professionals from 10 Asia–Pacific countries.⁸ The STEP study's survey on healthcare professionals had the following aims: (1) to establish their perceptions of responsibility, confidence, and frequencies of survivorship care practices in relation to the post-treatment survivorship care of patients with cancer and (2) to examine their perspectives on factors that influence the provision of survivorship care. The study revealed different survivorship

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care practices among the participating countries and across the professional disciplines. Notably, compared to practitioners from other countries, Japanese oncology practitioners reported a lower frequency of survivorship care practice.⁸ Moreover, with respect to survivorship care, nurses were more likely to report lower confidence levels in delivering care and lower frequencies of intervention than physicians.⁸ Although oncology nurses significantly contribute to all survivorship aspects,⁹ they could face challenges related to survivorship care practice.

Accordingly, we conducted a secondary analysis of data derived from the Japanese oncology nurses who participated in the STEP study. The aim of this study aimed to (1) assess the perceptions of Japanese oncology nurses regarding their responsibility, confidence level, and frequency of practice regarding cancer survivorship care; (2) identify demographic and professional characteristics related to the frequency of survivorship care practice; and (3) to examine the factors limiting the provision of survivorship care. Elucidating the current patterns and practice-related elements among Japanese oncology nurses can help provide further insight to improve comprehensive provisions of survivorship patient care among Asia-Pacific region. This will ensure quality survivorship care in the context of the Japanese culture and health system.

Methods

Design

We conducted a secondary analysis of Japanese oncology nurses who participated in the STEP study.⁸ The STEP study involved a multinational, cross-sectional survey of oncology practitioners across 10 Asia-Pacific countries.

Setting and sample

Data on Japanese participants were collected from four hospitals that provide systemic anti-cancer therapy or radiation therapy in Osaka and Tokyo, Japan. The sampling frame of the STEP study comprised convenience samples of hospital-based oncology practitioners who provided care to patients with cancer. The inclusion criteria were age > 20 years and spending more than half of the work time providing care to patients with cancer.

Procedure

The STEP study in Japan was ethically approved by the institutional review boards of the Faculty of Nursing and Medical Care, Keio University (No. 239), Keio University School of Medicine (No. 20150219), and Osaka University Hospital (No. 15161). The research team or nominated clinical nurses invited potential participants via email or face-to-face interaction in clinical settings. For the email recruitment, interested individuals received questionnaires by post and directed to send back the completed questionnaires. For the face-to-face recruitment, questionnaires were distributed by hand, and upon completion, they were collected in a collection box. All participants received a participant information sheet. For this study, we extracted the data obtained from oncology nurses.

Measures

The STEP study collected data using a self-administered questionnaire, which comprised the following three major sections: (1) demographic and professional characteristics, (2) survivorship care components, and (3) factors limiting the optimal survivorship care. The scale's reliability has been confirmed previously.⁸

Demographic and professional characteristics

Demographic and professional characteristics were collected,

including age, sex, highest education level, years of experience in cancer care, work status, primary work setting, primary patient setting, and geographical location of the workplace.

Survivorship care items

A 29-item measurement scale regarding survivorship care was developed for the STEP study based on the Institute of Medicine's seminal report (which provides an outline for survivorship care¹⁰), a literature review on survivorship care practices, and two pilot studies on Australian oncology nurses.^{11,12} These items were used to assess the perceptions of healthcare professionals regarding responsibility (whether care provision is part of their role), confidence (their confidence in care delivery), and frequency of practice (how often they provide care).⁸ Perceptions regarding responsibility were rated using a five-point Likert scale (1 = totally disagree, 2 = somewhat disagree, 3 = do not know, 4 = somewhat agree, and 5 = totally agree). Confidence levels were rated on a numeric analog scale from 0 (cannot do at all) to 10 (highly certain can do). The frequency of practice was assessed on a five-point Likert scale (1 = never, 2 = occasionally, 3 = often, 4 = very often, and 5 = all the time). The 29 items were divided into four subscales; namely, "prevention of recurrent and new cancers as well as other late effects" (prevention, two items); "interventions for the physical and psychosocial consequences of cancer and its treatment" (intervention, 14 items); "surveillance for cancer recurrence" (surveillance, four items); "coordination of care for ensuring that all the survivor's health needs are met" (coordination, nine items).

Factors limiting the provision of optimal survivorship care

A list of 16 factors that impeded the provision of survivorship care, including individual, organizational, and professional factors, was used for assessment.¹³ Here, the participants rated their agreement levels on a four-point Likert scale (1 = not at all, 2 = somewhat, 3 = quite a lot, and 4 = a great deal).

Translation and content validity

The translation procedure was standardized in the STEP study according to the World Health Organization.¹⁴ Specifically, one professional translator independently translated the original scale from English into Japanese. Subsequently, a bilingual physician checked the initial Japanese version, followed by back translation by another professional translator. Next, an expert panel comprising six nursing researchers and one physician identified and resolved discrepancies between the original and translated scales. We conducted a pilot test using a convenience sample of ten health professionals to assess face validity. The participants were asked if anything was unclear and to provide suggestions for further amendment.

Data analysis

All measures were analyzed with descriptive statistics. Additionally, we conducted bivariate analyses and determined correlation coefficients to explore the relationships between the perception of responsibility, confidence levels, and frequency of survivorship care practice. Additionally, t-tests and analyses of variance were performed to explore the relationship between the frequency of survivorship care with demographic and professional characteristics. Statistical significance was set at $P < 0.05$. All analyses were performed using IBM SPSS statistics, version 22.0 (IBM Japan Ltd., Tokyo, Japan).

Results

From 255 oncology healthcare workers, 209 (82.0%) respondents, including 181 oncology nurses, 20 doctors, and eight other professionals, completed the questionnaire. All responses from the oncology nurses were analyzed. Table 1 summarizes the demographic and professional characteristics of the participants. Most participants were aged < 40 years (66.9%) and female (96.1%). Moreover, most participants had > 5

Table 1
Demographic and professional characteristics of the participants (n = 181).

Characteristics	n	%
Age (years)		
18–29	61	33.7
30–39	60	33.1
40–49	48	26.5
50–59	12	6.6
Gender		
Female	174	96.1
Male	7	3.9
Highest education level		
Hospital certificate	4	2.2
Diploma	89	49.2
Bachelor's degree	79	43.6
Master's degree	7	3.9
Years of experience in cancer care		
< 1	4	2.2
1–5	55	30.4
6–10	45	24.9
11–20	58	32.0
> 20	19	10.5
Work status		
Full-time	179	98.9
Part time	2	1.1
Primary work setting		
Outpatient	40	22.1
Inpatient	135	74.6
Mixed	6	3.3
Primary patient setting		
Adults	179	98.9
Mixed (including pediatrics)	1	0.6
Geographical location of workplace		
Metropolitan	161	89.0
Regional	6	3.3
Rural	5	2.8
Mixed	5	2.8

*Several total percentages do not equal 100% because of missing data.

years of experience in cancer care (67.4%), full-time employees (98.9%) and were working in inpatient (74.6%) and adult (98.9%) care settings at a metropolitan location (89.0%). Further, 49.2% of the participants had a diploma as the highest education level.

Perceptions of responsibility, confidence levels, and frequency of survivorship care practice

Table 2 shows the participants' perception on responsibility, confidence, and the frequency of survivorship care practice in the context of

Table 2
Descriptive statistics regarding perceptions of responsibility, confidence levels, and frequency of survivorship care practice (n = 181).

	n	Possible range	Unadjusted score		Adjusted score ^a	
			Mean	SD	Mean	SD
Perceptions of responsibility						
Prevention	181	2–10	6.6	1.8	65.6	17.8
Intervention	175	14–70	59.3	6.5	84.7	9.3
Surveillance	178	4–20	16.2	2.9	80.7	14.5
Coordination	177	9–45	35.5	6.0	78.9	13.2
Confidence levels						
Prevention	180	0–20	3.4	3.5	16.8	17.4
Intervention	181	0–140	62.6	23.7	44.7	16.9
Surveillance	180	0–40	16.2	8.7	40.5	21.8
Coordination	180	0–90	33.4	20.1	37.1	22.3
Frequency						
Prevention	180	2–10	2.9	1.2	29.2	11.6
Intervention	176	14–70	33.1	10.1	47.2	14.4
Surveillance	180	4–20	8.5	3.3	42.4	16.7
Coordination	178	9–45	18.1	7.0	40.3	15.6

SD, standard deviation.

^a Scores are rescaled to the range from 0 to 100 for ease of comparison.

the four subscales. Although participants generally acknowledged their responsibilities regarding care delivery in these subscales, the confidence levels and frequency of providing care were lower than the perception of responsibility. For all three elements, the intervention and prevention subscales showed the highest and lowest agreement levels, respectively.

All four subscales showed significant correlation between the frequency of providing survivorship care with other elements, especially confidence levels (all $P < 0.001$, Table 3). Survivorship care practice showed a moderate positive correlation with confidence levels.

Survivorship care practice for patients with cancer

Table 4 shows the frequency of survivorship care practice for each item. The delivery status was determined based on the responses from either being often to all the time. The most frequently performed care practices were discussing and managing patient pain (75.7%) and long-term physical side effects/late effects (57.5%) in the intervention subscale. The remaining items did not reach a 50% delivery status. The care practices with the least frequent delivery status included discussing and managing fertility issues (3.9%) in the intervention subscale. This was followed by discussing information on genetic counseling and testing to identify high-risk individuals (6.1%) as well as discussing information on known effective chemoprevention strategies for secondary prevention as appropriate (9.4%) in the prevention subscale.

Comparison of survivorship care practice with different characteristics

The surveillance subscale scores significantly differed according to the years of experience in cancer care ($P = 0.02$). Based on the post-hoc Games–Howell test, participants with > 10 years of experience in cancer care had significantly higher surveillance scores than those with ≤ 5 years of experience (9.0 ± 3.8 vs. 7.5 ± 2.7 , $P = 0.03$). The other subscale scores did not differ based on the years of experience in cancer care. There were no other significant differences with respect to age, highest education level, and primary work setting (Table 5).

Factors that limit the provision of survivorship care

Table 6 shows the factors impeding the provision of survivorship care. The limiting status was calculated as the sum of responses regarding limiting factors from quite a lot to a great deal. The limiting status of all individual, organizational, and professional factors was > 50%. Furthermore, 11 out of the 16 factors showed a limiting status of > 70%. The top factors that limited the provision of survivorship care were lack knowledge and skills (87.8%), lack time (81.8%), not seeing the value of survivorship care (79.6%), lack of dedicated educational resources for patients (79.0%), and not knowing what survivorship care is (78.5%).

Table 3
Correlations among perceptions of responsibility, confidence levels, and frequency of survivorship care practice (n = 181).

	Frequency			
	Prevention	Intervention	Surveillance	Coordination
Correlation coefficient (r)				
Perceptions of responsibility				
Prevention	0.352***			
Intervention		0.366***		
Surveillance			0.315***	
Coordination				0.385***
Levels of confidence				
Prevention	0.538***			
Intervention		0.428***		
Surveillance			0.565***	
Coordination				0.572***

*** $P < 0.001$.

Table 4
Frequency of survivorship care practice of each item (n = 181).

Items ^a	Never		Occasionally		Often		Very often		All of the time		Delivery status ^b	
	n	% ^c	n	% ^c	n	% ^c	n	% ^c	n	% ^c	n	%
Prevention												
As appropriate, discussing information on known effective chemoprevention strategies for secondary prevention	85	47.0	78	43.1	12	6.6	2	1.1	3	1.7	17	9.4
Discuss information on genetic counseling and testing to identify high-risk individuals who could benefit from more comprehensive cancer surveillance, chemoprevention, or other risk-reducing treatment	147	81.2	23	12.7	8	4.4	2	1.1	1	0.6	11	6.1
Intervention												
Discussing and managing pain	12	6.6	31	17.1	53	29.3	36	19.9	48	26.5	137	75.7
Discussing and managing long-term physical side effects/late effects	17	9.4	59	32.6	55	30.4	21	11.6	28	15.5	104	57.5
Discussing psychological side effects	18	9.9	74	40.9	45	24.9	30	16.6	14	7.7	89	49.2
Discussing and encouraging appropriate exercise and physical activity	18	9.9	74	40.9	54	29.8	25	13.8	10	5.5	89	49.2
Encouraging health behaviors including sunscreen use, smoking and alcohol consumption	20	11.0	78	43.1	49	27.1	17	9.4	17	9.4	83	45.9
Providing healthy diet recommendations including alcohol consumption	19	10.5	79	43.6	56	30.9	15	8.3	11	6.1	82	45.3
Providing health education to survivors regarding their diagnoses, treatment exposures, and potential late and long-term effects	31	17.1	75	41.4	44	24.3	14	7.7	16	8.8	74	40.9
Conducting distress screening for psychological risks	44	24.3	64	35.4	38	21.0	12	6.6	23	12.7	73	40.3
Discussing and managing parenting and other help at home	29	16.0	97	53.6	37	20.4	15	8.3	3	1.7	55	30.4
Providing resources to assist with financial and insurance issues	59	32.6	87	48.1	24	13.3	6	3.3	5	2.8	35	19.3
Discussing and managing employment and financial consequences of cancer	63	34.8	91	50.3	19	10.5	6	3.3	2	1.1	27	14.9
Discussing patient/family peer support groups	67	37.0	86	47.5	15	8.3	8	4.4	3	1.7	26	14.4
Discussing and managing intimacy and sexuality issues	73	40.3	85	47.0	15	8.3	6	3.3	2	1.1	23	12.7
Discussing and managing fertility issues	108	59.7	66	36.5	4	2.2	3	1.7	0	0.0	7	3.9
Surveillance												
Addressing psychological impacts from their fear of cancer recurrence/relapse	21	11.6	85	47.0	39	21.5	20	11.0	16	8.8	75	41.4
Carrying out medical check-ups at follow-up, including taking history	66	36.5	64	35.4	21	11.6	13	7.2	17	9.4	51	28.2
Providing screening recommendations for second cancers; periodic testing and examination, and the schedule on which they should be performed	78	43.1	72	39.8	19	10.5	6	3.3	5	2.8	30	16.6
Providing information about how to identify signs of cancer spreading or recurrence	62	34.3	90	49.7	20	11.0	4	2.2	5	2.8	29	16.0
Coordination												
Empowering survivors to advocate for their own healthcare needs	36	19.9	76	42.0	39	21.5	20	11.0	10	5.5	69	38.1
Providing information on who to contact with questions and problems	34	18.8	88	48.6	37	20.4	9	5.0	13	7.2	59	32.6
Communicating the survivorship care provided with the rest of the healthcare team	47	26.0	76	42.0	31	17.1	18	9.9	9	5.0	58	32.0
Using treatment summaries and/or care plans	73	40.3	52	28.7	33	18.2	12	6.6	11	6.1	56	30.9
Ensuring linkage with appropriate external supportive services	65	35.9	73	40.3	24	13.3	12	6.6	6	3.3	42	23.2
Organizing/ensuring the patient has a schedule of follow-up appointments with the cancer care doctors	84	46.4	60	33.1	20	11.0	8	4.4	8	4.4	36	19.9
Communicating the survivorship care provided with the patient's primary healthcare providers	74	40.9	73	40.3	22	12.2	7	3.9	5	2.8	34	18.8
Providing referrals to specialists and resources as indicated	97	53.6	59	32.6	11	6.1	9	5.0	5	2.8	25	13.8
Ensuring the patient has a schedule of follow-up appointments with primary healthcare providers	92	50.8	66	36.5	12	6.6	6	3.3	4	2.2	22	12.2

^a Items on each subscale were ranked in descending order according to the delivery status.

^b Delivery status were the extent of responses from often to all of the time.

^c The total numbers do not equal 181 because of missing data.

Discussion

To our knowledge, this is the first study to investigate the perspectives of oncology nurses on cancer survivorship care in Japan. The main findings were as follows: (1) survivorship care practice in oncology nursing did not match the perceived responsibility, (2) confidence levels in delivering survivorship care showed a significant positive correlation with the frequency of practice, and (3) individual and professional factors were the top limiting factors for optimal survivorship care provisions.

Notably, we identified the primary factors that impeded the provisions of survivorship care. Most participants considered individual factors such as having knowledge and skills, knowing what survivorship care is, and seeing the value of survivorship care as relevant to survivorship care provision. The finding that most primary barriers were individual factors is a distinctive to Japan compared with other Asia-Pacific regions⁸; moreover, it demonstrates the need for educational support among Japanese oncology nurses. Appropriate education could enhance the professional confidence of nurses in delivering survivorship care. Further, we observed a positive correlation between the confidence levels in delivering survivorship care and the frequency of care provision. There was also a significant correlation between the perception of

responsibility and practice of survivorship care; however, there were discrepancies between the perception of responsibility and care frequency, which is consistent with previous findings.¹⁵ Accordingly, although the perception of one's role is an important preparation, it may be insufficient for care delivery. A Japanese study reported that actively seeking to maintain self-confidence is a coping strategy for oncology nurses.¹⁶ Therefore, educational support for oncology nurses to increase confidence in delivering survivorship care could help them adhere to their perceived responsibility.

This study also investigated the frequency of survivorship care practice. Compared with care practices in other subscales, interventions for physical and psychosocial consequences of cancer and its treatment were the most frequently performed. Specifically, the practitioners frequently discussed and managed pain, long-term physical side effects, and late effects. Our findings suggest that oncology nurses tend to concentrate their efforts on physical care. This could be attributed to time restrictions, which is a typical barrier to the provision of survivorship care, and the high rates of physical symptoms among cancer survivors. Compared with western countries, the Asia-Pacific region has a higher prevalence of physical symptoms, with more than half of cancer survivors across the Asia-Pacific region showing physical symptoms.¹⁷ However, during the

Table 5
Frequency of survivorship care practice stratified according to the demographic and professional characteristics ($n = 181$).

Demographic and professional characteristics	Frequency							
	Prevention		Intervention		Surveillance		Coordination	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age (years)								
18–29	2.9	1.2	33.3	8.5	8.2	2.8	18.5	6.1
30–39	2.8	1.1	33.4	10.1	8.4	3.1	18.0	6.8
40+	3.0	1.3	32.4	11.6	8.9	4.1	17.9	8.1
<i>P</i> (One-way ANOVA)	0.69		0.87		0.52		0.89	
Highest education level								
Hospital certificate/diploma	3.0	1.1	32.9	10.9	8.4	3.3	17.6	7.5
Bachelor's degree/master's degree	2.9	1.2	33.2	9.3	8.6	3.5	18.7	6.4
<i>P</i> (Independent <i>t</i> test)	0.77		0.83		0.74		0.30	
Years of experience in cancer care								
≤ 5	2.8	1.0	31.7	8.7	7.5	2.7	17.2	6.3
> 5–10	3.0	1.3	33.4	9.6	8.8	3.2	18.9	6.5
> 10	3.0	1.2	33.9	11.3	9.0	3.8	18.4	7.7
<i>P</i> (One-way ANOVA)	0.52		0.44		0.02*		0.44	
Primary work setting								
Outpatient/mixed	3.2	1.3	32.6	11.6	8.7	3.6	17.1	7.0
Inpatient	2.8	1.1	33.2	9.5	8.4	3.3	18.5	7.0
<i>P</i> (Independent <i>t</i> test)	0.12		0.72		0.67		0.24	

ANOVA, analysis of variance; SD, standard deviation.

* $P < 0.05$.

Table 6
Perceived factors limiting the provision of survivorship care for patients with cancer ($n = 181$).

Factors ^a	Not at all		Somewhat		Quite a lot		A great deal		Limiting status ^b	
	<i>n</i>	% ^c	<i>n</i>	% ^c	<i>n</i>	% ^c	<i>n</i>	% ^c	<i>n</i>	%
	Individual									
Lack knowledge and skills	2	1.1	15	8.3	55	30.4	104	57.5	159	87.8
Lack time	2	1.1	28	15.5	81	44.8	67	37.0	148	81.8
Do not see the value of survivorship care	7	3.9	29	16.0	70	38.7	74	40.9	144	79.6
Do not know what survivorship care is	7	3.9	31	17.1	67	37.0	75	41.4	142	78.5
Do not know where the patient is at in their disease trajectory	10	5.5	30	16.6	61	33.7	79	43.6	140	77.3
Communication barriers between you and the patient	10	5.5	32	17.7	56	30.9	82	45.3	138	76.2
Communication barriers between you and the family members	10	5.5	36	19.9	66	36.5	68	37.6	134	74.0
Do not know when patients are completing their treatment	11	6.1	46	25.4	66	36.5	57	31.5	123	68.0
Organizational										
Survivorship care is not a priority for my organization	15	8.3	36	19.9	87	48.1	42	23.2	129	71.3
No end of treatment consultation dedicated to survivorship care in my organization	9	5.0	44	24.3	78	43.1	44	24.3	122	67.4
Lack an appropriate physical location (e.g., a quiet room)	24	13.3	60	33.1	65	35.9	31	17.1	96	53.0
Professional										
Lack of dedicated educational resources for patients	4	2.2	33	18.2	85	47.0	58	32.0	143	79.0
Lack of dedicated educational resources for family members	4	2.2	36	19.9	83	45.9	57	31.5	140	77.3
Lack of evidence-based practice guidelines informing survivorship care	3	1.7	47	26.0	78	43.1	51	28.2	129	71.3
Patients' lack of interest	14	7.7	42	23.2	59	32.6	65	35.9	124	68.5
Family members lack of interest	13	7.2	48	26.5	59	32.6	60	33.1	119	65.7

^a Factors were ranked in descending order according to the limiting status.

^b Limiting status were the extent of factors impeding from quite a lot to a great deal.

^c The total numbers do not equal 181 because of missing data.

post-treatment phase, survivors usually visit hospitals for follow-up medical consultations only once every several months. Oncology nurses might prioritize the management of physical symptoms since they need to provide targeted approaches for survivorship care with limited time available. However, cancer survivors have other needs related to a wider range of domains, including information and comprehensive cancer care.¹⁷ Our findings demonstrate the importance of establishing a feasible model that covers multidimensional aspects of survivorship care.

Regarding demographic and professional characteristics, participants with > 10 years of experience in cancer care performed surveillance for cancer recurrence more frequently than those with ≤ 5 years of experience. This is inconsistent with previous reports from China and Hong Kong,^{15,18} which indicated no significant relationship between the length of experience in cancer care and survivorship care practice. Although professional experience in cancer care could promote survivorship care practice, multifaceted assessments, rather than just lengthy assessments,

are required to achieve an impact. Regarding other perspectives, a previous study observed that specialist training in cancer care was not a significant factor for increased survivorship care practice.¹⁸ Another previous study on oncologists reported that detailed training regarding the late and long-term effects of cancer was significantly associated with the provision and discussion of cancer survivorship care plans.¹⁹ There is a need for further studies to examine the utility of experience in survivorship care.

This study had several methodological limitations. First, our sample was not representative due to its small size and the fact that it was constituted through convenience sampling. Accordingly, our findings have limited generalization. One possibility is that our results may reflect the views of oncology nurses concerned with survivorship care. Additionally, biased demographic and professional characteristics could have influenced our findings, with most participants working full-time for adult inpatients in metropolitan regions. Second, our findings are based

on the nurses' self-reports. Therefore, we cannot confirm whether the reported frequency of practice corresponded to the actual frequency of practice. Further, the possibility of underestimation must be considered. Third, given the cross-sectional design, we could not identify causal relationships. Although we assumed that perception of responsibility and confidence levels influenced the frequency of survivorship care practice, we need to interpret the relationships among them carefully. Nonetheless, the high response rate in our study yielded findings that could help elucidate the current status and issues of cancer survivorship care in Japan.

Conclusions

This study indicated discrepancies between the perceptions of responsibility for survivorship care and care frequency. Oncology nurses in Japan face challenges in providing survivorship care contrary to their high levels of responsibility perception. Although there were multiple factors that limited optimal survivorship care provisions, most of them were individual factors. Our findings demonstrated the importance of developing and evaluating educational support specific to survivorship care in order to increase confidence levels among nurses in delivering survivorship care.

Declaration of competing interest

None declared.

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Author contributions

Sena Yamamoto: Formal analysis, Writing - Original Draft. **Harue Arao:** Conceptualization, Methodology, Investigation, Writing - Review & Editing, Supervision. **Kaori Yagasaki:** Conceptualization, Methodology, Investigation, Writing - Review & Editing, Supervision. **Hiroko Komatsu:** Conceptualization, Methodology, Writing - Review & Editing, Supervision, Project administration.

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