

# Follow-up care practices and barriers to breast cancer survivorship: perspectives from Asian oncology practitioners

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## Abstract

**Purpose** The aim of this study is to evaluate the perspectives of Asian oncology practitioners on the physical and psychosocial issues experienced by breast cancer survivors (BCS), current survivorship care practices, and the barriers to follow-up care.

**Methods** This was a cross-sectional survey study. Oncology practitioners were recruited from a major cancer center in Singapore and through two regional cancer meetings that took place in Singapore and Malaysia in 2013.

**Results** A total of 126 oncology practitioners from various Southeast Asian countries, mostly nurses (58.7 %) and physicians (37.3 %), were recruited. The majority of the respondents agreed that fatigue (78.4 %) and anxiety (69.1 %) were the most common physical and psychosocial problems experienced by BCS. Monitoring for physical and treatment-related adverse effects (80.7 %) and reviewing patients' noncancer medical history (65.3 %) were the most practiced aspects of follow-up care. Compared with the other practitioners, the physicians were more likely to communicate with other healthcare professionals (adjusted OR=4.24, 95 % CI 1.54 to 11.72;  $p=0.005$ ). Most of the respondents also agreed that patient-specific barriers were the main impediments to follow-up care.

**Conclusion** This study provides insights into the various aspects of breast cancer survivorship care from the perspectives of oncology practitioners and shows that survivorship care is relatively inadequate in Asia. There is a need for new survivorship care models to meet the needs of Asian BCS and to complement the unique healthcare systems of Asia.

**Keywords** Breast cancer · Survivorship · Oncology practitioner · Cancer · Oncology

## Introduction

With advancements in anticancer therapeutics and the early detection of malignancy, the number of breast cancer survivors (BCS) is predicted to increase over the next decade [1]. As such, improving the survivorship experience is increasingly important within breast cancer care. Anticancer therapies are associated with a wide range of undesirable chronic and late toxicities that may severely compromise patients' quality of life and daily functioning during the survivorship phase [2–4]. For example, the surgical removal of axillary lymph nodes may result in lymphedema and scarring, and the use of chemotherapy and radiotherapy may induce damage to the skeletal, cardiovascular, and nervous systems [5]. In addition to the toxicity associated with the cancer and its treatment, BCS may experience psychosocial problems, including sustained anxiety and depression, due to the substantial emotional and financial burden of the disease [6–8]. Survivors also tend to possess low self-esteem, associated in part with their altered body image [8]. Given the importance of enhancing the well-being and quality of life of BCS, it is essential to address their physical and psychosocial concerns during the survivorship phase.

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To meet the multifaceted needs of BCS, the Institute of Medicine (IOM) has recommended the implementation of a new survivorship care framework that embodies new elements such as the assessment and management of physical and psychosocial issues to improve the care of cancer survivors [9]. However, numerous patient-related and physician-related barriers have been identified that may hinder the implementation of survivorship programs [10, 11]. Physician-related barriers may include a lack of time and inadequate knowledge to manage survivorship issues, and patient-related barriers may include a lack of awareness, a reluctance to discuss sensitive psychosocial issues, and poor compliance with recommended treatment [12–14].

While much of what is known about the issues faced by BCS and their survivorship care comes from studies conducted in the west, there is emerging evidence to suggest that ethnocultural differences may contribute to the disparity in survivorship care that is experienced by Asian BCS [15, 16]. Follow-up care practices among Asian oncology practitioners may also vary due to differences in the healthcare infrastructure and cultural beliefs. In view of the limited literature on breast cancer survivorship care in an Asian context, this study thus aims to understand various aspects of breast cancer survivorship and to identify the current gaps in survivorship care in Southeast Asia. This study was designed to evaluate oncology practitioners' perspectives on the physical and psychosocial issues experienced by BCS, current survivorship care practices, and the barriers to follow-up care.

## Methods

### Study design

This was a cross-sectional survey study conducted between March and December 2013. Oncology practitioners were recruited from the National Cancer Centre Singapore and two regional cancer meetings: the 2nd Asia-Pacific Breast Cancer Summit 2013 and Best of American Society of Clinical Oncology (ASCO) Southeast Asia 2013 Conference, which took place in Malaysia and Singapore in April and September 2013, respectively. In this study, a convenience sampling method was used where all oncology practitioners were invited to participate in this study [17, 18]. The study was approved by the Singhealth Centralized Institutional Review Board. Respondents were recruited into the study if they fulfilled the following inclusion criteria: (1) a practicing physician, pharmacist, or nurse; (2) practicing in a cancer center or oncology department of a medical institution located in Southeast Asia; and (3) actively providing clinical care to and interacting with breast cancer patients.

### Survey design and data collection

The questionnaire was designed by the study investigators, based on the existing literature, to evaluate the following: (1) the frequency and severity of physical and psychosocial problems experienced by BCS (must have completed surgery, radiotherapy, and/or chemotherapy but not including hormonal therapy), (2) current follow-up practices, and (3) barriers to follow-up care [19–21]. The questionnaire consisted of three main sections. The first section solicited the respondent's demographic details and clinical experience, including age, gender, profession, primary specialty, country of practice, practice setting, years of healthcare experience in oncology, and percentage of time spent in caring for BCS. The second section included a series of questions to gather information on the frequency and severity of the physical, treatment-related, and psychosocial concerns experienced by BCS from the perspectives of oncology practitioners. The respondents were asked to rate frequency on a five-point Likert scale (Never, Rarely, Occasionally, Usually, and Always) and severity on a three-point Likert scale (Mild, Moderate, and Severe) in their responses. The third section consists of two questions designed to understand current follow-up care practices and the respondents' perceptions of the barriers to follow-up care. The respondents were asked to identify the practitioner-related barriers and patient-related barriers to follow-up care using a five-point Likert scale (Strongly disagree, Disagree, Neutral, Agree, and Strongly agree) and to evaluate current follow-up care practices using a five-point Likert scale (Never, Rarely, Occasionally, Usually, and Always). The survey was formulated in English and required approximately 15 minutes for self-administration.

### Data analysis

Descriptive statistics were used to summarize the respondents' perspectives on patient physical, treatment-related, and psychosocial issues; practitioner- and patient-specific barriers to follow-up; and practitioner's current practices in follow-up care. The respondents' demographic and practice information were presented as frequencies and percentages. These items were initially analyzed using their original category responses then dichotomized for bivariate analyses. The response categories of "Usually" and "Always" were classified as "frequent," while "Never," "Rarely," and "Occasionally" were classified as "infrequent." In terms of level of agreement, the response categories "Strongly agree" and "Agree" were classified as "agree," while "Strongly disagree," "Disagree," and "Neutral" were classified as "disagree." For degree of severity, "Mild" and "Moderate" were classified as "nonsevere." Bivariate analyses of profession (physician and

other practitioners) and perspectives on the various aspects of breast cancer survivorship were performed using the chi-square test or Fisher's exact test. To facilitate the analysis, "other practitioners" included the nurses, pharmacists, and radiation therapists. Multivariate logistic regression was then performed to adjust for potential confounding effects (such as age, country of practice, gender, healthcare experience in oncology, percentage of time spent caring for breast cancer patients, practice setting, and primary specialty) [19, 22, 23]. Multicollinearity was assessed using the variance inflation factor (VIF). In the final multivariate logistic regression model, three variables (primary specialty, country of practice, and practice setting) were excluded due to the small number of study participants in more than one of the subcategories for each of the three variables and the presence of multicollinearity ( $VIF > 3$ ). Hence, all bivariate associations were adjusted for the following potential confounding factors: age, gender, healthcare experience in oncology, and percentage of time spent caring for breast cancer patients. The effect size of the bivariate associations was represented as crude and adjusted odds ratio (OR). The statistical analysis was performed using the Statistics Package for Social Science version 22.0.

## Results

### Demographic characteristics

A total of 350 questionnaires were distributed, and 153 were returned, giving a response rate of 43.7%. Of these, responses to 27 questionnaires were considered as incomplete (over 10% missing data) and were removed from the analysis. A total of 126 healthcare professionals from various professions, mostly nurses (58.7%) and physicians (37.3%), and oncology specialties, mainly medical oncology (59.5%), were included in the data analysis. Over half of the respondents practice in Singapore (61.6%), within a hospital setting (56.3%). Eighty respondents possessed more than 5 years of experience in oncology. Overall, 22.2% of the respondents spent most (>60%) of their time in clinical practice caring for breast cancer patients, comprising 29.8% of the physicians and 17.6% of the nurses. The demographic characteristics of the respondents are summarized in Table 1.

### Perspectives on the issues faced by BCS (Table 2)

The most commonly reported physical and treatment-related adverse effects were fatigue (78.4%) and neuropathy (59.7%). In terms of the severity of physical and treatment-related adverse effects, the majority was deemed to be nonsevere in nature, with fatigue (17.4%) and neuropathy (16.2%) being reported as the most severe problems

**Table 1** Demographic and practice information of the oncology practitioners ( $n=126$ )

Demographic/practice information	Number of practitioners (%)
Age (years)	
20–29	26 (20.6)
30–39	49 (38.9)
40–49	29 (23.0)
50–59	17 (13.5)
≥60	5 (4.0)
Gender	
Male	17 (13.5)
Female	109 (86.5)
Profession	
Nurse	74 (58.7)
Physician	47 (37.3)
Pharmacist	3 (2.4)
Radiation therapist	2 (1.6)
Primary specialty	
Gynecological oncology	3 (2.4)
Medical oncology	75 (59.5)
Radiation oncology	7 (5.6)
Surgical oncology	23 (18.3)
Others	14 (11.1)
Not specified	4 (3.2)
Country of practice	
Singapore	77 (61.1)
Malaysia	17 (13.5)
Vietnam	5 (4.0)
Philippines	7 (5.6)
Burma	1 (0.8)
Australia	2 (1.6)
Indonesia	3 (2.4)
Not specified	14 (11.1)
Practice setting	
Community/government hospital	71 (56.3)
Private practice	15 (11.9)
Academic center	6 (4.8)
Community/government clinic	30 (23.8)
Others	2 (1.6)
Not specified	2 (1.6)
Healthcare experience in oncology (years)	
<5	46 (36.5)
5–10	32 (25.4)
11–20	25 (19.8)
21–30	17 (13.5)
>30	6 (4.8)
Percentage of time spent caring for breast cancer patients (%)	
<20	36 (28.6)
21–40	33 (26.2)
41–60	29 (23.0)
61–80	20 (15.9)
>80	8 (6.3)

**Table 2** Practitioners' perspectives on the issues faced by BCS ( $n=126$ )

	Frequency, $n$ (%)				
	Never	Rarely	Occasionally	Usually	Always
<b>Physical and treatment-related issues<sup>a</sup></b>					
Cognitive impairment	14 (11.3)	42 (33.9)	42 (33.9)	21 (16.9)	5 (4.0)
Cardiovascular complications	11 (8.8)	60 (48.0)	45 (36.0)	8 (6.4)	1 (0.8)
Fatigue	3 (2.4)	4 (3.2)	20 (16.0)	56 (44.8)	42 (33.6)
Functional limitations	4 (3.2)	19 (15.1)	49 (38.9)	46 (36.5)	8 (6.3)
Insomnia	2 (1.6)	21 (16.7)	43 (34.1)	46 (36.5)	14 (11.1)
Lymphedema	5 (4.0)	23 (18.3)	58 (46.0)	37 (29.4)	3 (2.4)
Menopausal symptoms	10 (7.9)	13 (10.3)	49 (38.9)	46 (36.5)	8 (6.3)
Neuropathy	6 (4.8)	10 (8.1)	34 (27.4)	49 (39.5)	25 (20.2)
Osteoporosis	12 (9.5)	19 (15.1)	51 (40.5)	38 (30.2)	6 (4.8)
Pain	3 (2.4)	19 (15.1)	52 (41.3)	31 (24.6)	21 (16.7)
Sexual and fertility	15 (11.9)	31 (24.6)	48 (38.1)	26 (20.6)	6 (4.8)
Weight gain	5 (4.0)	25 (19.8)	51 (40.5)	36 (28.6)	9 (7.1)
<b>Psychosocial issues<sup>a</sup></b>					
Anxiety	1 (0.8)	8 (6.3)	30 (23.8)	54 (42.9)	33 (26.2)
Body image	2 (1.6)	16 (12.7)	40 (31.7)	51 (40.5)	17 (13.5)
Depression	2 (1.6)	22 (17.5)	46 (36.5)	46 (36.5)	10 (7.9)
Financial burden	2 (1.6)	9 (7.1)	30 (23.8)	55 (43.7)	30 (23.8)
Lack of social support	5 (4.0)	33 (26.2)	58 (46.0)	26 (20.6)	4 (3.2)
Low self-esteem	2 (1.6)	26 (20.6)	54 (42.9)	36 (28.6)	8 (6.3)
Stress	2 (1.6)	7 (5.6)	30 (23.8)	59 (46.8)	28 (22.2)

<sup>a</sup> The numbers may not add up to the total number of respondents due to missing data

recognized by the practitioners. Anxiety (69.1 %), stress (69.0 %), and financial burden (67.5 %) were the three most common psychosocial problems reported by the majority of the practitioners. These same psychosocial concerns were also considered by the oncology practitioners to be the most serious problems faced by their patients. Bivariate analysis revealed that the physicians had a higher likelihood of reporting issues of menopausal symptoms (adjusted OR=4.79, 95 % CI 1.72 to 13.32;  $p=0.003$ ) compared with the other types of practitioners (Table 3).

#### Perspectives on current practices in follow-up care (Table 4)

Among the oncology practitioners, monitoring for physical and treatment-related adverse effects (80.7 %) and reviewing patients' noncancer medical history (65.3 %) were the most prevalent follow-up care practices. Monitoring for psychosocial issues (48.8 %) and communicating with other healthcare professionals on patient follow-up (34.7 %) were the least practiced forms of follow-up care. Comparing the

**Table 3** Evaluation of the association between professions and the frequency of reporting of survivorship issues ( $n=126$ )

Physical and psychosocial issues faced by patients	Number of "usually" or "always" responses (%)		Crude odds ratio (95 % CI)	$p$ value <sup>b</sup>	Adjusted odd ratio (95 % CI)	$p$ value <sup>c</sup>
	Physician	Other practitioners <sup>a</sup>				
Menopausal	29 (61.7)	25 (31.6)	3.48 (1.64 to 7.41)	0.001	4.79 (1.72 to 13.32)	0.003
Weight gain	23 (48.9)	22 (27.8)	2.48(1.17 to 5.28)	0.017	1.72 (0.61 to 4.89)	0.31
Sexuality and fertility	17 (36.2)	15 (19.0)	2.48 (1.07 to 5.48)	0.032	2.14 (0.74 to 6.18)	0.16
Financial burden	37 (78.7)	48 (60.8)	2.39(1.04 to 5.49)	0.037	2.19 (0.71 to 6.79)	0.17

<sup>a</sup> Used as a reference group for calculating the crude odds ratio

<sup>b</sup> The  $p$  value was calculated using the chi-square test

<sup>c</sup> Adjusted for age, gender, healthcare experience in oncology, and percentage of time spent caring for breast cancer patients

**Table 4** Practitioners' perspectives on current practices in follow-up care for breast cancer survivors ( $n=126$ )

Form of follow-up care administered <sup>a</sup>	Number of practitioners (%)				
	Never	Rarely	Occasionally	Usually	Always
Review patients' noncancer medical history	2 (1.6)	15 (12.1)	26 (21.0)	53 (42.7)	28 (22.6)
Monitor for physical and treatment-related issues	2 (1.6)	8 (6.5)	14 (11.3)	61 (49.2)	39 (31.5)
Monitor for psychosocial issues	2 (1.6)	16 (13.0)	45 (36.6)	48 (39.0)	12 (9.8)
Discuss recommendations for managing these issues with patients	3 (2.4)	17 (13.7)	42 (33.9)	45 (36.3)	17 (13.7)
Communicate with other nononcology healthcare professionals on follow-up care	10 (8.1)	26 (21.0)	45 (36.3)	33 (26.6)	10 (8.1)
Refer patients to appropriate medical services for these issues	2 (1.6)	14 (11.4)	44 (35.8)	42 (34.1)	21 (17.1)

<sup>a</sup> The numbers may not add up to the total number of respondents due to missing data

physicians and other practitioners, it was observed that the physicians routinely communicated with other nononcology healthcare professionals such as medical social workers, psychiatrists, and physiotherapists (55.6 vs 22.8 %, adjusted OR = 4.24, 95 % CI 1.54 to 11.72,  $p=0.005$ ) (Table 5).

#### Perspectives on the barriers to follow-up care (Table 6)

Among the practitioner-related barriers to follow-up care, lack of time (61.6 %) and lack of communication with other healthcare professionals (54.4 %) were identified as the most commonly encountered barriers.

Regarding the patient-related barriers to follow-up care, patients' lack of awareness (75.8 %), unwillingness to discuss sensitive issues (71.8 %), preference for using alternative medicines (71.8 %), and financial constraints (72.3 %) were among the most frequently reported barriers across all professions. Compared with the nonphysicians, the physicians were more likely to report limited referral resources as a barrier to follow-up care (adjusted OR=22.3, 95 % CI 5.55–89.77;  $p<0.0005$ ).

#### Discussion

To the best of our knowledge, this is the first survey study conducted within Asia to evaluate the survivorship issues faced by BCS, follow-up care practices, and the barriers to follow-up care from the practitioner's perspective. To summarize, anxiety and fatigue were identified by practitioners as the most common and severe psychosocial and physical problems experienced by BCS. Monitoring for physical and treatment-related adverse effects and reviewing patients' noncancer medical history were the most practiced forms of follow-up care. However, monitoring for psychosocial problems and communicating with other nononcology practitioners during follow-up were the least practiced aspects of follow-up care. There were also several reported barriers to follow-up care, with lack of time and lack of patients' awareness being the most frequently encountered practitioner- and patient-specific barriers, respectively. Notably, over 60 % of the respondents agreed that patient-specific barriers were the main impediments to successful follow-up care.

Through the transition to survivorship, breast cancer patients may experience a wide array of physical and psychosocial issues

**Table 5** Evaluation of the association between professions and follow-up care practices ( $n=126$ )

Follow-up care practices	Number of "usually" or "always" responses (%)		Crude odds ratio (95 % CI)	$p$ value <sup>b</sup>	Adjusted odd ratio (95 % CI)	$p$ value <sup>c</sup>
	Physician	Other practitioners <sup>a</sup>				
Review patients' noncancer medical history	37 (82.2)	44 (55.7)	3.68 (1.52 to 8.90)	0.003	2.84 (0.96 to 8.44)	0.06
Monitor for physical and treatment-related issues	41 (91.1)	59 (74.7)	3.48 (1.11 to 10.92)	0.026	1.42 (0.37 to 5.46)	0.61
Communicate with other nononcology healthcare professionals on follow-up care	25 (55.6)	18 (22.8)	4.24 (1.93 to 9.32)	<0.0005	4.24 (1.54 to 11.72)	0.005
Discuss recommendations for managing these issues with patients	28 (65.2)	34 (43.0)	2.18 (1.03 to 4.61)	0.04	1.95 (0.75 to 5.11)	0.17

<sup>a</sup> Used as a reference group for calculating the crude odds ratio

<sup>b</sup> The  $p$  value was calculated using the chi-square test

<sup>c</sup> Adjusted for age, gender, healthcare experience in oncology, and percentage of time spent caring for breast cancer patients

**Table 6** Practitioners' perspectives on barriers to the management of physical, treatment-related, and psychosocial issues ( $n=126$ )

	Number of practitioners (%)				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
<b>Practitioner-specific barriers<sup>a</sup></b>					
Lack of communication with patients	2 (1.6)	34 (27.2)	29 (23.2)	50 (40.0)	10 (8.0)
Lack of communication with other healthcare professionals	0 (0)	27 (21.6)	30 (24.0)	56 (44.8)	12 (9.6)
Lack of time	0 (0)	26 (20.8)	22 (17.6)	60 (48.0)	17 (13.6)
Lack of adequate knowledge or training in identifying these issues	4 (3.2)	27 (21.6)	44 (35.2)	36 (28.8)	14 (11.2)
Lack of adequate knowledge or training in managing these issues	2 (1.6)	28 (22.6)	37 (29.8)	43 (34.7)	14 (11.3)
Limited referral resources	1 (0.8)	23 (18.7)	41 (33.3)	47 (38.2)	11 (8.9)
<b>Patient-specific barriers<sup>a</sup></b>					
Financial constraints	0 (0)	7 (5.7)	27 (21.9)	63 (51.2)	26 (21.1)
Failure to return for follow-up consultations	0 (0)	16 (12.9)	33 (26.6)	64 (51.6)	11 (8.9)
Unwillingness to discuss sensitive issues	0 (0)	8 (6.5)	27 (21.8)	65 (52.4)	24 (19.4)
Use of herbal supplement or traditional Chinese medicines	2 (1.6)	4 (3.2)	29 (23.4)	63 (50.8)	26 (21.0)
Lack of awareness	0 (0)	8 (6.5)	22 (17.7)	77 (62.1)	17 (13.7)
Poor compliance	1 (0.8)	12 (9.7)	31 (25.0)	58 (46.8)	22 (17.7)

<sup>a</sup> The numbers may not add up to the total number of respondents due to missing data

that can compromise their quality of life and impair their ability to fully resume their social roles. As such, survivorship follow-up care is integral to clinical oncology practice to address these pertinent issues. In this study, fatigue and neuropathy were identified by practitioners as the most prevalent physical and treatment-related adverse effects among BCS. This finding is in agreement with existing studies that report that BCS experience persistent fatigue and neuropathy even after the completion of therapy [2, 24–27]. Menopausal symptoms are a group of common adverse effects often associated with the use of anti-hormonal therapies (tamoxifen and aromatase inhibitors). It was observed that the physicians had a higher tendency to report issues of menopausal symptoms than the nonphysicians. Although the exact reason for this difference is unclear, it may be because physicians are more involved during the survivorship phase of BCS than other practitioners, particularly when follow-up visits are less frequent than in the treatment phase, and might routinely encounter this complaint among their patients. As regards the psychosocial burden, both anxiety and emotional distress have been identified as being prevalent among BCS, partly due to their fear of disease recurrence, concerns with body image, and persistent physical health problems such as fatigue and sexual dysfunction [27–30]. Studies have also established that BCS often have tremendous unmet psychosocial needs, particularly financial needs [31–33]. This is supported by another study that found that Asian BCS were concerned with financial issues during their survivorship period [34]. In short, the physical and psychosocial issues faced by BCS that were delineated from our Asian oncology practitioners are congruent with the patient-reported findings in the existing literature.

A number of inadequacies in current follow-up care practices were identified. While Asian oncology practitioners frequently monitor for physical and treatment-related adverse effects, it can be observed that they have a lower tendency to monitor for psychosocial burden. This is consistent with the findings of other studies that report that the importance of psychosocial problems is often underestimated by practitioners during standard follow-up [19, 35]. The lack of monitoring for psychosocial issues can be ascribed to practitioners' perception that patients are unwilling to discuss sensitive issues with them. Furthermore, a study has shown that cancer patients have an inclination to discuss their psychosocial concerns only on the initiative of their oncology practitioners [36]. Evidently, there is a need for a holistic and structured survivorship program to extensively cover all aspects of follow-up care.

Communication with other nononcology healthcare practitioners is another aspect of follow-up care that is infrequently practiced by Asian oncology practitioners. The inability to communicate with other nononcology healthcare practitioners may also be hindered by barriers such as lack of time and limited referral resources [14, 37, 38]. Lack of communication with various healthcare professionals can likewise be perceived as a barrier to follow-up care, where insufficient communication could lead to errors of omission and commission and impede patients from receiving proper follow-up care [39, 40]. A team effort involving multidisciplinary healthcare professionals such as medical social workers and psychiatrists is required to facilitate adequate survivorship care, and limited referral resources could stymie the delivery of comprehensive, integrated survivorship care [13, 40, 41]. For instance, mental

health issues are often not areas of expertise for the oncology practitioner, thus requiring appropriate referrals to psychiatrists [37]. Without appropriate referral resources, the mental issues of patients will not be resolved promptly, and this can eventually complicate treatment outcomes. In spite of the importance of appropriate referral, most of the Asian oncology practitioners in this study indicated that they are still facing problems associated with limited resources. To circumvent similar practitioner-related barriers, the Lance Armstrong Foundation (USA) has established seven survivorship centers to facilitate comprehensive, well-coordinated care involving medical oncologists, nurse practitioners, and mental health specialists [40]. These centers can readily access institutional resources to provide patients with prompt referrals for psychosocial distress and general health issues. Such multidisciplinary models may prove useful in Asia's cancer centers to improve the quality and efficiency of survivorship care.

The success of survivorship care also depends greatly on the cooperation and participation of the patients. In this study, it was observed that more than 60 % of Asian oncology practitioners agreed that patient-specific barriers are the main barriers to follow-up care. In 2005, the IOM and National Research Council made several key recommendations on the components of a cancer survivorship program, and one of the main areas focused heavily on empowering cancer survivors with knowledge of survivorship issues and the ability to identify signs of cancer recurrence [9]. Through appropriate education, cancer survivors are able to better appreciate the importance of follow-up care, which will help to address patient-specific barriers such as poor compliance and failure to return for follow-up care. Although survivors generally may wish to receive follow-up care, they may be disinclined to do so due to financial difficulties. The majority of practitioners agreed that financial constraints are a barrier to follow-up care, and this is consistent with the perspectives of patients, who have identified the financial burden as a major limiting factor to follow-up care [12, 31–34]. Burdened by costly medical and consultation fees, patients may be deterred from attending follow-up appointments or complying with recommended diagnostic procedures and medication regimens. In addition, the healthcare financing system in Southeast Asian countries like Singapore is very different to that of Western countries, where health insurance schemes are often the mainstay of financing for healthcare services. In Singapore, the financing system relies heavily on individual responsibility and government subsidies, achieved through a compulsory individual medical savings account scheme, known as Medisave, to assist individuals to finance their healthcare costs [42]. However, the maximum outpatient coverage of Medisave is capped at a certain amount. As such, patients are still required to pay out of their own pocket for the remaining costs of their outpatient cancer care, and this will inevitably impose a greater financial burden. Hence, it is important for policymakers to recognize

the economic burden associated with cancer survivorship and to offer appropriate subsidies to ensure the affordability of follow-up care services.

This study has a number of limitations. The low response rate of 43.7 % may indicate the presence of potential nonresponse bias; thus, readers need to interpret the findings with caution. While the survey was conducted at two regional conferences in Southeast Asia, more than half of the surveyed oncology practitioners were from Singapore, as we have taken the convenience sampling approach to conduct this survey. Hence, the external validity of the study findings could be questioned. Another area of concern is the comprehensiveness of the survey. The survey may not have been sufficiently extensive to cover all aspects of follow-up care practices, barriers to follow-up, and survivorship issues. Nevertheless, we attempted to include all of the important elements according to the existing literature without compromising either the length or quality of the survey. In addition, BCS represent a heterogeneous group of patients. As such, the perspectives of the oncology practitioners on the survivorship issues faced by BCS may not be representative for all BCS. However, in this study, we have defined BCS as individuals who completed surgery, radiotherapy, and/or chemotherapy but not including hormonal therapy. Furthermore, only a small number of oncology pharmacists were captured in this study. Pharmacists have a role to play in the survivorship care of BCS, particularly in the management of medications and their associated side effects. Future studies could look into the roles of pharmacists in cancer survivorship.

Survivorship care is now integral to the practice of oncology in the USA, and this achievement is attributed to the vast cancer survivorship research that has increased policymaker awareness and accelerated the implementation of survivorship policies. Our results drawn from the perspectives of Asian oncology practitioners highlight the survivorship issues experienced by BCS in Southeast Asia. In addition, the study also offers greater insight into existing follow-up care practices and the barriers to follow-up care and shows that cancer survivorship care is relatively inadequate in Southeast Asia. In all, the knowledge of breast cancer survivorship gleaned from this study provides clinicians and policymakers with important insights into the current gaps in survivorship care for Asian BCS. This knowledge will help to provide a platform for future research to develop new survivorship care models that cater to the needs of Asian BCS and at the same time fit the distinct healthcare system in Asia.

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**Conflict of interest** The authors have declared no conflict of interest.

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