

## RESEARCH ARTICLE

# Use of Complementary and Alternative Medicine among Breast Cancer Survivors

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### Abstract

Complementary and alternative medicine (CAM) use is prevalent among individuals with cancer, especially breast cancer survivors. This study was conducted among 394 breast cancer survivors in selected regions of Peninsular Malaysia to identify the pattern and factors associated with CAM use. About 51% of the respondents reported CAM use as complementary treatment. Vitamins (47.2%), spiritual activities (33.2%) and other dietary supplements (30.7%) were the most commonly used CAM therapies. Common reasons for CAM use were to increase the body's ability to perform daily activities (70.9%), enhance immune function (58.3%) and improve emotional well-being (31.7%). Users obtained CAM information mainly from friends and family members (62.5%), physicians (25.0%) and mass media (13.9%). Ethnicity and years of education were significantly associated with CAM use. Although no adverse effects of CAM were reported, breast cancer survivors should discuss their CAM use with health professionals to prevent potential adverse effects of these therapies.

**Keywords:** Breast cancer survivors - CAM - ethnicity - years of education - Malaysia

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### Introduction

Complementary and Alternative Medicine (CAM) is defined as "A broad domain of healing resources that encompasses all health system, modalities and practices and their accompanying theories and beliefs, other than intrinsic to the politically dominant health systems of a particular society or culture in a given historical period" (NCCAM, 2009). CAM is used as a complement to or substitution for conventional medical treatment to treat various diseases (Wu, 2010).

CAM use is prevalent among cancer patients compared to unaffected individuals in the general population (Mao et al., 2007; Velicer and Ulrich, 2008). Among cancer patients, CAM has been reported to be widely used by breast cancer patients than individuals diagnosed with other types of cancer (Velicer and Ulrich, 2008; Saquib et al., 2011). About 97% of breast cancer patients in urban Shanghai, China (N=5046) reported CAM use (Chen et al., 2008) and a recent survey among Malay breast cancer survivors recruited from Hospital Kuala Lumpur and Hospital Universiti Kebangsaan Malaysia (N=116) reported that about 61% of respondents were identified as CAM users (Soraya et al., 2011).

Vitamin, herbs and spiritual practices were the main types of CAM commonly used by breast cancer patients (Gulluoglu et al., 2008; Owens et al., 2009; Bright-Gbebu

et al., 2011; Soraya et al., 2011). The use of CAM by breast cancer patients is mainly motivated by its perceived beneficial effects on physical and psychosocial well-being and survival (Lengacher et al., 2006; Kremser et al., 2008; Soraya et al., 2011). However, breast cancer patients also reported side effects from CAM use which included pain, itchiness and depression (Molassiotis et al., 2005; Hann et al., 2006). CAM use has been found to be associated with multiple factors including age, education level, household income, cancer stage and lifestyle factors including physical activity and dietary intake (Chen et al., 2008; Myers et al., 2008; Ozlem et al., 2008; Owens et al., 2009).

With increasing breast cancer cases being diagnosed over the years in Malaysia (National Cancer Registry, 2006), CAM use could be prevalent in these cancer patients. This study was conducted to determine the patterns of CAM use among breast cancer survivors as well as to examine socio-demographic, clinical, physical activity, anthropometric and dietary factors associated with CAM use.

### Materials and Methods

#### *Study design and procedures*

A cross-sectional survey was carried out in eight general hospitals and four breast cancer support groups

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in seven states which represented the Northern, Central, Southern and East Coast regions of Peninsular Malaysia. This study was registered with The National Medical Research Register (NMRR) and approved by The Ethical Committee of Medical Research, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia and The Medical Research Ethics Committee (MREC), Ministry of Health Malaysia.

#### Study respondents

Purposive sampling was used in this study as the selection of respondents was based on several criteria i.e. women aged 20-75 years old, diagnosed with cancer of stages 0-III, undergoing or completed treatment, non-pregnant and non-lactating and did not have cancer recurrence at the time of data collection. Based on sample size calculation, (prevalence of CAM use among cancer survivors was 69% with 95% confidence level and error of 5%), a minimum of 329 breast cancer survivors were required as study respondents. Respondents were recruited from oncology or surgical out-patient clinics of general hospitals and breast cancer support groups over a period of 6 months. Out of 615 breast cancer survivors screened, 400 women met the selection criteria and were invited to participate in this study. A total of 394 interviews were completed, giving a response rate of 98.5%. All respondents were required to sign the consent form upon receipt of information on the study.

#### Measurements

Respondents were individually interviewed by trained enumerators using a questionnaire which comprised items on demographic and socio-economic characteristics, clinical information, CAM practices, dietary intakes and physical activity. The items on CAM practices among breast cancer patients were adapted from Molassiotis et al. (2005) and Howell et al. (2006). Some of the items were modified and new items were added to meet the requirement of this study. Respondents were asked on previous (CAM use only after breast cancer diagnosis) or current use of CAM. Those reporting CAM use were further requested to provide information on patterns of CAM use such as types, reasons, sources of information and perceived effects (positive and negative) of CAM use. Reasons for CAM use gave information on motivation to use CAM (before CAM use) while perceived effects (benefits or adverse) from CAM use considered the experience of CAM use (after CAM use). Respondents with no current or previous use of CAM were requested to state reasons for not using CAM.

Information on dietary intake of respondents was obtained using 1 day 24-hour diet recall method. Food intake data were analyzed using Nutritionist Pro 2.5 (First Data Bank, 2005) and compared to the Malaysian Recommended Nutrient Intake (RNI) (Ministry of Health, 2005) to assess energy adequacy. The Global Physical Activity Questionnaire (GPAQ) (WHO, 2001) version 2 was used to identify the physical activity level of respondents. MET values were calculated to determine total physical activity of respondents which is then categorized as low, moderate or high physical activity

level.

All respondents were measured for weight, height and waist circumference using TANITA weighing scale, SECA body meter and SECA tape measurement, respectively. Weight and height measurements were transformed into Body Mass Index (BMI) and cut-offs used for underweight and overweight were BMI <18.5 kg/m<sup>2</sup> and BMI >25.0 kg/m<sup>2</sup>. The cut-off used for waist circumferences was ≥80 cm for increased risk of obesity-associated metabolic complications (WHO, 2008).

Prior to data collection, the questionnaire was pre-tested with 10 breast cancer survivors with similar characteristics as study respondents. Revisions were made to the questionnaire based on the feedback from the women. These women were not included in the actual study.

#### Data analysis

Data were analyzed using Statistical Package for Social Sciences version 17.0 (SPSS Inc, Illinois). Descriptive statistics (frequencies, mean, standard deviations and range) were used to present socio-demographic information and patterns of CAM use among cancer patients. T-test and Chi-square tests were carried out to compare factors between CAM and non CAM users. Univariate logistic regression analysis was then performed to identify individual factors associated with the use of CAM by breast cancer survivors. Multivariate logistic regression was then performed to identify combination of factors significantly associated with CAM use. Statistical significance was set at  $p < 0.05$ .

## Results

CAM and non-CAM users were similar in demographic and socioeconomic factors except for ethnicity, years of education and marital status (Table 1). CAM users tend to be significantly more Malays ( $\chi^2=12.50$ ,  $p < 0.05$ ), have higher education level ( $t=2.54$ ,  $p < 0.05$ ) and have no spouse (single/divorced/widowed) ( $\chi^2=8.75$ ,  $p < 0.05$ ). There was no significant difference in nutritional status and physical activity between CAM and non CAM users.

About 51% ( $n=199$ ) of respondents reported use of CAM as complementary rather than alternative therapy (Table 2). Vitamins were reported to be commonly used among CAM users (47.2%) followed by spiritual activities (33.2%) and other dietary supplements (30.7%). Respondents were using CAM mainly to increase their body's ability to perform daily activities (70.9%), to enhance immune functions (58.3%) and to improve physical and emotional well-being (31.7%) (Table 3). Recommendation by physicians (8.5%), prevention of cancer recurrence (6.5%) and relief of symptoms and stress associated with side effects of conventional treatments (4.5%) were other reasons reported by respondents. About 98% ( $n=387$ ) of breast cancer survivors were satisfied with their CAM use. They perceived that CAM increased their body's ability to perform daily activities (78.4%), improved their physical and emotional well-being (57.8%) and reduced side effects of conventional treatment (30.2%). None of the CAM users, however,

reported adverse effects of CAM use.

More than half of non-CAM users (56.3%) indicated that they were concerned with the potential side effects of CAM. About 38% did not see the need to use CAM as they were fully satisfied with the conventional treatment. Other reasons included non-CAM users did not believe in CAM (27.5%), discouragement from their physicians (11.2%) and expensive cost of CAM treatment (10.4%).

Different sources of CAM information are shown in Table 4. About 37% of CAM users sought information

**Table 1. Background Characteristics of CAM and Non CAM Users (N=394)**

	CAM users (n=199) n(%)	Non CAM users (n=195) n(%)	t/ $\chi^2$ test	p-value
<b>Socioeconomic and demographic characteristics</b>				
Age (years)*	52.7 (9.52)	53.5 (9.1)	-1.12	0.26
Ethnicity			12.5	0.00*
Malay	131.0 (65.8)	102.0 (52.3)		
Chinese	58.0 (29.1)	65.0 (33.3)		
Indian	10.0 (5.0)	28.0 (14.4)		
Years of education (years)*	9.5 (3.64)	8.5 (3.95)	2.54	0.01*
Marital status			8.75	0.03*
Married	159.0 (79.9)	162.0 (83.1)		
Single/ divorced/ Widowed	40.0 (20.1)	33.0 (16.9)		
Employment status			2.59	0.1
Employed	69.0 (34.7)	53.0 (27.2)		
Unemployed	130.0 (65.3)	142.0 (72.8)		
Individual income (RM)*	741.3 (1366.9)	533.3 (1206.33)	1.6	0.11
Household income (RM)*	2202.5 (2478.7)	2120.4 (2709.60)	0.31	0.75
<b>Clinical characteristics</b>				
Years of survival (years)*	4.6 (3.37)	4.7 (3.5)	-0.24	0.81
Stage of cancer (n=352)			8.74	0.12
Stage I	56.0 (30.3)	62.0 (37.1)		
Stage II	100.0 (54.1)	79.0 (47.3)		
Stage III	29.0 (16.6)	26.0 (15.6)		
<b>Nutritional status</b>				
Weight (kg)*	62.5 (12.68)	61.9 (13.8)	1.19	0.24
Height (m)*	1.2 (0.59)	1.5 (0.5)	1.11	0.27
Body mass index (kg/m <sup>2</sup> )		0.73	0.87	
<18.5	11.0 (5.5)	11.0 (5.6)		
18.5-24.9	84.0 (42.2)	76.0 (39.0)		
25.0-29.9	72.0 (36.2)	71.0 (36.4)		
>30	32.0 (16.1)	37.0 (19.0)		
Waist circumference (cm)			2.33	0.13
<80 cm	61.0 (30.7)	74.0 (37.9)		
≥80 cm	138.0 (69.3)	121.0 (62.1)		
Energy intake (Kcal)*	1343.0 (417)	1355.0 (413.0)	0.08	0.99
Protein (g)*	56.5 (25.92)	54.2 (22.9)	1	0.32
Energy from protein (%)*	16.6 (4.70)	16.2 (4.7)	0.92	0.52
Carbohydrate (g)*	183.8(56.47)	187.1 (61.7)	-0.6	0.55
Energy from CHO (%)*	55.9 (10.70)	56.3 (10.0)	-0.36	0.72
Fat (g)*	43.3 (21.65)	41.6 (20.7)	0.85	0.4
Energy from fat (%)*	28.2 (8.77)	27.3 (8.5)	1.08	0.28
Physical activity level			0.97	0.61
Low	37.0 (18.6)	44.0 (22.6)		
Moderate	84.0 (42.2)	77.0 (39.5)		
High	78.0 (39.2)	74.0 (37.9)		
Total physical activity (MET minutes/week)*	3574.4 (4490.38)	3198.4 (3615.2)	1.38	0.30

\*M(SD), Significantly different at p <0.05

**Table 2. CAM use among Breast Cancer Survivors**

Type of CAM	n	(%)
CAM use: Yes	199	(50.5)
No	195	(49.5)
CAM users (n=199)		
Vitamins	94	(47.2)
Multivitamins	46	(48.9)
Vitamin C	38	(40.4)
Vitamin B-complex	25	(26.6)
Vitamin E	12	(12.8)
Vitamin A	2	(2.1)
Vitamin B1	1	(1.1)
Vitamin D	1	(1.1)
Spiritual activities (prayer and meditation)	66	(33.2)
Other dietary supplements	61	(30.7)
Sea cucumber (gamat)	19	(31.2)
Spirulina	18	(29.5)
Honey	10	(16.4)
EPO	9	(14.8)
Fish oil	4	(6.6)
Omega-3	2	(3.3)
Habatussaudah	2	(3.3)
Fiber	2	(3.3)
Herbs and herbal products	33	(16.6)
Chinese herbs	22	(66.7)
Herbal products (e.g. Herbal life and CNI)	5	(15.2)
Dukong anak (Phyllanthus niruri)	3	(9.1)
Misai kucing (Orthosiphon stamineus)	2	(6.1)
Mas cotek (Ficus deltoidea)	1	(3.0)
Ginseng	1	(3.0)
Pegaga (Hydrocotyle asiatica)	1	(3.0)
Minerals	21	(10.6)
Calcium	20	(95.2)
Ferum	3	(14.3)
Healing water (air penawar)	14	(7.0)
Qi Gong	8	(4.0)
Tai Chi	4	(2.0)
Homeopathy	3	(1.5)
Reflexology	2	(1.0)
Massage	1	(0.5)
Yoga	2	(1.0)

**Table 3. Reasons for CAM use and Perceived Effects of CAM**

	Reasons for CAM use n(%)	Perceived Benefits of CAM n(%)
To increase body's ability to perform daily activities	141(70.9)	156 (78.4)
To enhance immune function	116(58.3)	48 (24.1)
To improve physical and emotional well-being	63(31.7)	115 (57.8)
Recommended by physicians	17 (8.5)	-
To prevent cancer recurrence	13 (6.5)	8 (4.0)
To counteract side effects of conventional treatments	9 (4.5)	60 (30.2)

**Table 4. Sources of Information on CAM Therapies (N=144)**

Source of information	n	(%)
Friends and family members	90	(62.5)
Physicians	36	(25.0)
Mass media (television and radio)	20	(13.9)
Books and magazines	18	(12.5)
Other CAM users	17	(11.8)
CAM practitioners	14	(9.7)
Internet	13	(9.0)

**Table 5. Associations between CAM use and Demographic, Socioeconomic, Nutritional and Clinical Factors**

Factor	Crude Odd ratio (95% Confidence Interval)	p-value	Adjusted Odd ratio (95% Confidence Interval)	p-value
Demographic and socioeconomic factors				
Ethnicity (reference-Malays)	0.52 (0.37, 0.76)	0.00*	0.58 (0.39, 0.86)	0.00*
Age (years)	1.00 (0.98, 1.02)	0.75	1.00 (0.98, 1.03)	0.65
Years of education (years)	1.34 (1.02, 1.54)	0.01*	1.37 (1.00, 1.59)	0.04*
Marital status (reference-married)	1.69 (0.98, 2.42)	0.56	1.45 (0.87, 2.42)	0.15
Employment status (reference-employed)	0.69 (0.47, 0.98)	0.03*	0.68 (0.41, 1.11)	0.12
Individual income (RM)	1.00 (1.00, 1.00)	0.07	1.00 (0.99, 1.00)	0.1
Household income (RM)	1.00 (1.00, 1.00)	0.02*	1.00 (1.00, 1.00)	0.3
Nutrition and physical activity				
Body mass Index (kg/m <sup>2</sup> )	0.93 (0.90, 1.05)	0.37	0.91 (0.87, 1.04)	0.56
Waist circumference (cm)	1.02 (0.99, 1.05)	0.21	1.02 (0.99, 1.05)	0.2
Energy intake (kcal)	1.00 (0.99, 1.00)	0.54	1.00 (0.99, 1.00)	0.62
Physical activity level (MET minutes/week)	1.00 (1.00, 1.00)	0.36	1.00 (1.00, 1.00)	0.29
Clinical factors				
Stage of cancer (reference- stage I)	0.96 (0.43, 1.21)	0.16	0.95 (0.44, 1.23)	0.23

on CAM primarily from friends and family members (62.5%), physicians (25.0%) and mass media (13.9%). Other sources included books and magazines (12.5%), other CAM users (11.8%), CAM practitioners (9.7%) and the internet (9.0%).

Factors related to the CAM use among breast cancer survivors are shown in Table 5. Based on univariate logistic regression analysis, ethnicity (OR:0.52, 95% CI:0.37-0.76), employment status (OR:0.69, 95% CI:0.47-0.98), years of education (OR:1.34, 95% CI:1.02-1.54) and household income (OR:1.00, 95% CI:1.00-1.00) were significantly associated with the use of CAM. However, after adjusting for potential confounding factors, only ethnicity (OR: 0.58, 95% CI: 0.39-0.86) and years of education (OR: 1.37, 95% CI: 1.00-1.59) remained significantly associated with CAM use. While other ethnic groups (Chinese and Indian) were less likely to use CAM compared to the Malays, breast cancer survivors with more years of education were more likely to use CAM.

## Discussion

Our findings showed that about 51% of breast cancer survivors were using at least one type of CAM as complementary to the conventional treatment. Other studies also showed that more than 50% of breast cancer population depended on CAM for better survival (Matthews et al., 2007; Soraya et al., 2011). This reflects that there is a growing of interest of CAM use among breast cancer patients or survivors in many countries.

Previous studies reported that dietary supplements, herbs, spiritual therapies and massage were commonly used by breast cancer patients (Chen et al., 2008; Gulluoglu et al., 2008; Owens et al., 2009; Bright-Ghebry et al., 2011; Soraya et al., 2011). The present study showed that breast cancer survivors were more likely to use dietary supplements (vitamin) and spiritual activities. It is worthwhile to note that our finding was similar to a study of 116 breast cancer survivors in Malaysia which also found that multivitamin and spiritual activities were the most common types of CAM used by these cancer survivors (Soraya et al., 2011). The higher prevalence of

dietary supplements and spiritual activities used by breast cancer patients could be motivated by their beliefs that dietary supplements may increase the body's ability to perform daily activities and prevent recurrence and prayers may help patients to attain peace within them, especially when their perceptions of morbidity and mortality related to illness increased (Hsiao et al., 2008; Bright-Ghebry et al., 2011).

Many breast cancer patients were attracted to use CAM therapies as they believed that CAM could boost the immune system, reduce pain, relieve stress, prevent cancer recurrence and cope with side effects of conventional treatment (Chen et al., 2008; Gulluoglu et al., 2008; Kremser et al., 2008). Dissatisfaction with conventional treatment and poor doctor-patient relationship were also found to motivate breast cancer patients to use CAM (Lengacher et al., 2006; Mao et al., 2007; Sirois, 2008). In addition, a greater public access to health information (e.g. internet) and popular media attention to CAM may also increase the use of these therapies (Tascilar et al., 2006).

We showed that breast cancer survivors perceived that CAM might enhance the body's ability to perform daily activities, improve physical and emotional well being as well as reduce the side effects of conventional treatment. This finding was supported by other studies which found that most CAM users among breast cancer patients reported benefits of CAM. CAM users reported less anxiety and depression as compared to non CAM users and were less likely to believe they will die of their breast cancer (Montazeri et al., 2005). Other perceived benefits reported by cancer patients included feeling healthier and more relaxed as well as having more energy or fitness (Kremser et al., 2008). While the respondents in the present study did not report any adverse effect of CAM, there have been reported adverse effects of taking dietary supplements such as stomachaches, gastric upset and nausea, itching, headaches and migraine, diarrhea and renal problems (Molassiotis et al., 2005; Hann et al., 2006).

Breast cancer patients may seek or received information on CAM from various sources that included family members, friends, health care providers, media, health

food stores and nutritional supplement industry (Gulluoglu et al., 2008; Kremser et al., 2008). They commonly received information from family members or friends who are usually involved in the decisions to make dietary changes or use CAM (Moschen et al., 2011). However, not all partners or other family members of cancer patients preferred an active role in treatment decisions for cancer patients due to the belief that important decisions, such as choosing a cancer treatment, should be made only by the individual whose life would be most affected (Ohlen et al., 2006).

In the present study, only 25% of breast cancer survivors received information on CAM from physicians. Similarly, Ozlem et al. (2008) reported that only 23% of cancer patients obtained information on CAM from health professionals. This finding suggests that breast cancer survivors were more likely to seek information on CAM from unscientific sources. Reliance on these sources could put cancer patients at risk of toxic effects and allergic reactions related to CAM use (Velanovich et al., 2006). Breast cancer patients may also access reliable information on CAM from scientific journals published on the internet. However, the use of internet to obtain information on CAM may be more common among those with a higher income and education level (Schmidt and Ernst, 2004).

Studies have shown that CAM use among breast cancer patients is influenced by a variety of demographic, lifestyle and clinical factors (Lengacher et al., 2006; Myers et al., 2008; Ozlem et al., 2008). CAM use appears to be more common among breast cancer patients with higher income, higher education level and younger age (Balneaves et al., 2006; Kremser et al., 2008). This present study found that only ethnicity and years of education were associated with CAM use among breast cancer survivors. A study on cancer survivors in Malaysia also found that Malays were more likely than Chinese or Indians to perform religious activities such as prayers to increase their strength and hope to survive (Mirnalini and Lim, 2006). CAM use is prevalent among educated breast cancer respondents due to they have more awareness, knowledge and tend to search for reliable alternative methods to improve their medical conditions (Ozlem et al., 2008).

Studies have reported that breast cancer CAM users were more likely to engage in healthy behaviors such as increased regular exercise, decreased alcohol intake to less than 1 drink per day, increased daily intake of fruits and vegetables in diet, decreased red meat and fat intake in diet (Myers et al., 2008; Ozlem et al., 2008). In addition, body mass index (BMI) is also associated with CAM use. Saquib et al. (2011) found that breast cancer patients consuming CAM had significantly lower BMI. In this study, however we found no significant association between dietary intake, physical activity and body mass index with CAM use among breast cancer survivors. The prevalence of overweight and obesity in this breast cancer sample was 53.8% and the percentage of overweight and obese women using CAM was almost similar to that of women who did not use CAM. High percentage of under-reporting for energy intake (55.2%) as well as respondents might not report their physical activity accurately due to

being women and many were overweight and obese could explain the lack of significant association with CAM use (Scagliusi et al., 2008).

CAM use appears to be more prevalent among women with advanced stage of breast cancer than those with early-stage cancer (Ozlem et al., 2008). They may believe that this kind of treatment can increase their hope to survive especially when conventional treatment was unable to help them anymore. In addition, Hlubocky et al. (2007) reported that patients with advanced cancer may have higher stress and low immunity compared to those at early stage of cancer. Thus, they were more likely to use CAM for stress reduction and for increasing the immune system to fight the disease. However, the present study did not find significant association between cancer stage and CAM use among breast cancer patients.

The findings from this study should be interpreted in the context of four limitations. First, as data were obtained from a non probability sample, there could be selection bias in that those with greater interest in CAM would participate in the study. Second, breast cancer survivors could be reluctant to disclose their CAM use due to low perceived efficacy of CAM use or they might believe that as CAM therapies are natural, they are completely safe and not within the scope of health professional's practice. Third, breast cancer survivors might have misclassified the use of CAM as a routine practice or part of usual dietary intake which could contribute to under-reporting of CAM use. Finally, breast cancer survivors might under or over report their dietary intake and physical activity. They might have difficulty to recall their dietary intakes accurately or under reported their intake of foods that were considered unhealthy. On the other hand, these data could actually reflect their actual consumption and activity patterns. There could be respondents who had just completed chemotherapy and had no appetite to eat or vegetarians who excluded all animal products in their diets which could then contribute to the low intake of energy. The moderate to high physical activity level achieved by many respondents in this present study could be explained by the high percentage of housewives (69.0%) in this sample who could be responsible for moderate-intensity household chores such as sweeping, washing clothes, mopping the floor or gardening. Despite these limitations, this present study was able to provide a general overview on prevalence and patterns of CAM use as well as factors associated with CAM use among breast cancer survivors in Malaysia.

In conclusion, this study showed that breast cancer survivors used CAM together with conventional medicine. Although only beneficial effects of CAM were reported, breast cancer survivors should discuss their CAM use with health professionals or obtain CAM information from reliable sources as CAM may have potential to be directly or indirectly harmful to the users. As cancer patients are more likely to use CAM, health professionals should be knowledgeable of patterns of CAM use as well as characteristics of cancer CAM users. There is also a need to provide health professionals and the general public particularly cancer patients with guidelines on safe use of CAM.

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