

## RESEARCH ARTICLE

# Complementary Alternative Medicine Use Amongst Breast Cancer Patients in the Northern Region of Peninsular Malaysia

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## Abstract

**Background:** Breast cancer is a common cancer affecting women in Malaysia and the use of complementary/alternative medicine (CAM) has been associated with delays in getting treatment. The aim of the study was to explore the use of CAM and the influencing factors in the Northern region of Peninsular Malaysia. **Materials and Methods:** This was a cross-sectional descriptive study on a convenience sample of 100 Malaysian breast cancer survivors. **Findings:** The reported use of CAM among the breast cancer survivors was lower than in other studies but the types of CAM used had a similar pattern with nutrition supplements/vitamins being the most common. The factors that positively influenced the use of complimentary/traditional therapy were income and getting information from television or radio. Survivors with access to internet/blogs appear to have lower odds of using complimentary/traditional therapy compared to the respondents who reported no such access. **Conclusions:** Information transmitted via television and radio appears to have a positive influence on CAM use by breast cancer patients compared to other information sources and it is important to ensure that such information is accurate and impartial.

**Keywords:** Complimentary/alternative medicine use - breast cancer patients - Malaysia

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## Introduction

Complementary/Alternative medicine [CAM] has been reported to be commonly used but not always disclosed to healthcare providers and can lead to delays in getting conventional treatment (Cheung et al., 2007; Hasan et al., 2009; Ayers and Kronenfeld, 2012). Among cancer patients, CAM utilization has been reported to be a factor that contributes to delays in seeking conventional medical care (Malik and Gopalan, 2003). As with all types of diseases but particularly so with cancer, delays in getting treatment can not only lead to an increased burden of the disease on the patient but also increased costs.

Preventing premature death due to non-communicable disease [NCD] causes is a task that many countries have agreed to commit to during the World Health Assembly Meeting in 2012, member states have agreed to adopt the global target to of "a reduction of 25% in premature mortality from NCDs by 2025" (Hermann, 2012). Although cardiovascular and endocrine diseases outnumber cancer in many countries, cancer deaths is a significant contributor to premature mortality. Breast cancer is a leading cause of cancer death among Malaysian women of all three major ethnic groups and the survival rate appears to have deteriorated (Ibrahim et al., 2012) even as death rates from cancer, including breast cancer,

have been falling in developed countries (Siegel et al., 2011). There may be a number of socio-cultural factors that account for the disparity in survival rates between the different ethnic groups (Bhoo-Pathy et al., 2012), including different CAM use rates, and we were interested in exploring the relationship between CAM use as a dependent variable and respondents' perceived support from family and friends as well as sources of information regarding breast cancer. The data set used in the analysis was from a study conducted to identify the socio-economic impacts of breast cancer among Malaysian women (Yen et al., 2010; Yen et al., 2011). The use of CAM had been specifically asked for and explored in some detail during the interview sessions because we had been interested in finding out the total amount Malaysian women spent on treating breast cancer.

## Materials and Methods

### Participants

After getting the approval from USM Human Ethics Committee\* and the relevant hospital authorities, a convenience sample of patients with breast cancer who were attending oncology outpatient clinics at four hospitals in Penang and one teaching hospital in Kelantan was obtained. The hospitals were located in both urban and

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rural areas and the data collection was performed between January and August 2009.

A total of 102 patients consented to participate and were interviewed by trained enumerators using a guided questionnaire format which had been pilot-tested on a separate group of breast cancer survivors who were members of a support group not associated with any of the hospitals. All the interviews were conducted in the language that the patients felt most comfortable in [English, Malay, two Chinese dialects [Hokkien/Mandarin] or Tamil] and audiotaped. The interviews were translated into English and transcribed. The researchers used the transcribed interviews to verify the data collected in the questionnaire which had been filled in by the enumerator during the interview session. Two interview recordings were missing so a total of 100 sets of data were used in the analyses. Inclusion criteria were Malaysian citizens with a confirmed diagnosis of breast cancer and the ability to converse in a language that the enumerator was fluent [if the enumerator was not fluent in the preferred language, an appointment for an interview with another enumerator was offered for the next clinic appointment, this was never taken up, reflecting the difficulty in getting data from this group of patients]. Breast cancer patients with brain metastases or other medical conditions were not included as these could cause problems with memory or make it difficult to get estimates of treatment costs for breast cancer. We enlisted the help of the nurses in the oncology outpatient clinic to identify the patients to approach; in the private hospitals the refusal rate was much higher than in the public [government] hospitals and as such there were a higher number of participants from the latter. Interviews ranged from 30 minutes to over an hour and each participant was given a small token of appreciation [a shopping bag] at the end of the interview.

We considered CAM use as any treatment or technique not prescribed by a registered medical practitioner that was used by the patient to either influence the course of the disease [breast cancer] or for symptom control or to improve quality of life. This definition included all herbal supplements, visits to traditional medical practitioners and spiritual healers but did not include personal prayers.

#### *Statistical analysis*

SPSS ver 19 was used for the analysis. Descriptive analyses were initially carried out. For the multivariate analyses, CAM use was the binary outcome variable; age, income, treatment costs/expenditure, distance and journey time were treated as continuous variables. The other variables, apart from “perceived support” and education level, were categorised into binary variables and the category with the largest number of respondents was made the reference category, for example ethnicity was divided into Malay [reference category] and non-Malay. The significance level ( $\alpha$ ) was set at 0.05 for checking assumptions.

“Perceived support” was generated as a composite score from three items in the questionnaire which were (a) relationship with partner/spouse [unmarried or those without a response was scored as 2-no change]; (b) relationship with closest family member and (c)

relationship with friends and neighbours. Each variable had a choice of ‘better’ [scored as 1], ‘no change’ [scored as 2] or ‘worse’ [scored as 3], the scores were added and the total taken away from 10. A score of 7 was interpreted as good perceived support and a score of 1 was poor perceived support. The information had been elicited by first asking the participants to describe how they felt their relationships with their spouse, family, friends and neighbours have been since the diagnosis of breast cancer. The participants were then asked to give an assessment of their relationships since the diagnosis and to indicate if there had been a change, whether the relationship had improved or deteriorated.

Simple univariate logistic regression was first used to see if there were any significant associations between selected factors and the outcome [CAM use] and factors with an association with p-value lower than 0.2 were considered for the next stage of analyses. To build the preliminary binary logistic regression models, selection of associated factors was based on completeness of data as well as whether the variables were correlated to each other using bivariate correlation analysis [Spearman]; if two numerical variables were highly correlated only one was chosen to build the preliminary model. Both forward and backward variable entry approaches that were available in the software were used. When location of respondent [Kelantan or Penang] was entered as a covariate, no preliminary model could be built by the software so it was decided to exclude this variable so that exploration of the other variables could be done. The preliminary final model chosen was based on the number of explanatory variables as well as the model fit to the data. This model was rechecked for collinearity and interactions between the explanatory variables as well as for outliers.

## **Results**

Most of the respondents were Malay Muslims in the 51-60 year old age group, the youngest respondent was 19 years old and the oldest were 71 years old. Less than half of the respondents [44%] claim to be not working at the time of diagnosis of the cancer as they were either retired or housewives. Tables 1 and 2 contain the descriptive variables that were analysed in this study. The two variables on income were highly correlated [ $r=0.833$ ,  $p<0.001$ ] and monthly family income variable had more missing data compared to personal income variable as many of the respondents who did not know the family income were able to state that they had no personal income. A similar situation arose with the variables for distance to hospital and duration of journey, more respondents could answer the question on duration compared to distance, both were highly correlated [ $r=0.883$ ,  $p<0.001$ ].

A quarter of the respondents ( $n=25$ ) reported CAM use and 6 of them described using more than one CAM product or therapy. The types of CAM treatments used and the costs reported by the respondents are shown in Table 3. The overall range of reported costs of CAM treatment was RM20.00 to RM24000.00 (Table 1); the maximum amount was reported by a 46 year old teacher with a 5 year history of cancer who claimed to have paid RM500.00

a month for the past 4 years for homeopathy treatment. Three respondents who reported CAM use did not give an estimate of the costs and one of them did not describe the type of CAM that she took as it had been given to her to 'help with recovery'. It was interesting to note that one of the respondents, a 35 year old housewife with 'early stage', was advised by the traditional healer [bomoh] to seek treatment at the hospital.

When simple logistic regression was carried out on all the possible explanatory variables, perceived support (p=0.52) and education level (p-values ranged 0.22 to 0.81 for the different levels) were found to have no

association with CAM use. The result of simple logistic regression is shown in Table 4, age is included because age is considered to be a universal confounder and the final model was adjusted for age.

From the crude odds ratios that were generated, being a non-Malay, non-Muslim as well as finding out about cancer from your doctor, family or friends and the internet appear to lower your odds of using CAM. Finding out about cancer from 'other medical staff apart from doctor', the print media as well TV or radio appear to increase the odds of CAM utilisation. In the audiotape recordings of the interviews, many respondents stated

**Table 1. Descriptive Statistics for Numerical Variables [n=100]**

Variable	Median* [IQR] {n <sub>2</sub> }	Using CAM Median* [IQR] {n <sub>2</sub> }	Not using CAM Median* [IQR] {n <sub>2</sub> }
Age [years]	53.2 [8.83] {100}	51.8 [7.56] {25}	53.7 [9.21] {75}
Monthly Income[RM]	2000.00 [2800] {83}	2500.00 [4900] {21}	1500.00 [1950] {62}
Monthly Personal Income[RM]	475.00 [2000] {90}	2000.00 [3237.50] {22}	60.00 [1200] {68}
Distance from home to hospital/treatment centre [km]	16.0 [41.5] {85}	22.0 [37.5] {18}	15.0 [42] {67}
Duration of journey from home to hospital/treatment centre [hours]	0.45 [0.7] {97}	1.00 [2.7] {24}	0.45 [0.8] {73}
Reported estimated total cost of treatment [RM]	50.00 [5000] {95}	0.00 [637.50] {24}	350.00 [20000] {71}
Reported estimated total cost of CAM [RM]	300.00 [930] {22} <sup>#</sup>		
Perceived support	4.0 [1.00] {100}	4.0 [1.00] {25}	4.0 [1.00] {75}

\*IQR: Inter-Quartile Range, n<sub>2</sub>: number of valid responses, \* Medians reported as the frequency distributions were positively skewed, #: only 25 respondents reported complementary/alternative treatment use, there were 3 respondents who could not give an estimate of the costs incurred

**Table 2. Descriptive Statistics For Categorical Variables [n=100]**

Variable	Frequency [%]	Using CAM Frequency [%]	Not using CAM Frequency [%]
Ethnicity	Malay	59 [59.0]	20 [33.9]
	Chinese	30 [30.0]	4 [13.3]
	Indian/others	11 [11.0]	1 [9.1]
Religion	Islam	59 [59.0]	20 [33.9]
	Buddhism	31 [31.0]	5 [16.1]
	Hindu	8 [ 8.0]	0
	Christian	2 [ 2.0]	0
Education Level	Unschooling	5 [5.0]	1 [20.0]
	Primary	22 [22.0]	3 [13.6]
	Lower Secondary	16 [16.0]	2 [12.5]
	Upper Secondary	40 [40.0]	10 [25.0]
	Certificate/Diploma/Degree	17 [17.0]	9 [52.9]
Cancer Information source	Doctor	Yes 80 [80.0]	16 [20.0]
	No	20 [20.0]	9 [45.0]
Cancer Information source	Other medical staff	Yes 37 [37.0]	13 [35.1]
	No	63 [63.0]	12 [19.0]
Cancer Information source	Family/Friends	Yes 60 [60.0]	11 [18.3]
	No	40 [40.0]	14 [35.0]
Cancer Information source	Print media	Yes 51 [51.0]	16 [31.4]
	No	49 [49.0]	9 [18.4]
Cancer Information source	TV/Radio	Yes 24 [24]	11 [45.8]
	No	76 [76]	14 [18.4]
Cancer Information source	Internet/Blog etc	Yes 14 [14]	1 [7.1]
	No	86 [86]	24 [27.9]

buying nutrition supplements from their friends who are also paramedical workers [nurses/medical assistants] and this may be one reason for the surprising finding of the higher odds of CAM utilisation if they are given information on cancer by healthcare providers other than the doctor. These healthcare providers are both providing cancer information as well as encouraging CAM use by the selling of a CAM product.

The final binary logistic regression model is shown in Table 5. The sample size of 100 [90 cases included in model] is adequate for the chosen model with three independent variables because the ratio of the number of cases to the independent variable is 30 [assuming the minimum ratio of 10 cases to one predictor and an ideal of 20 cases to one predictor]. The number of events [reporting CAM use] in this dataset is 25 which is adequate for only two predictor or independent variables in the model based on the '10 events to one predictor variable rule', however a simulation study in 2007 has concluded that ignoring or discounting significant associations when there were only 5-9 events per predictor variable was not justified and interpretation of the model with three predictor variables can be done with caution (Vittinghoff and McCulloch 2007).

**Table 3. Types of Complimentary/Alternative Medicine [CAM] Used and Reported Amount Spent**

Types of CAM	Frequency	Range of Reported Costs [RM] <sup>a</sup>
Nutrition supplements / vitamins	16	68-2,000
Herbal/natural products	8	120-450
Traditional healer ['bomoh']	4	20-120
Homeopathy	1	24,000

<sup>a</sup>Some respondents reported use of two or more types of CAM and gave an aggregate figure for the costs e.g herbal products and vitamins. In general, excluding the respondent who used homeopathy, the amount spent on nutrition supplements/vitamins were higher than the reported amounts spent on herbal/natural products

**Table 4. Factors Associated with CAM Use [Using Simple Logistic Regression and Cut-Off p<0.2]**

Variable	Crude O.R. [95% CI]
Age [years]	0.98 [0.93, 1.03]
Monthly Income[RM]	1.00 [1.00, 1.00]*
Monthly Personal Income[RM]	1.00 [1.00, 1.001]*
Distance from home to hospital/treatment centre [km]	1.01 [0.99, 1.02]
Duration of journey from home to hospital/treatment centre [hours]	1.07 [0.98, 1.18]
Reported estimated total cost of treatment [RM]	1.00 [1.00, 1.00]
Ethnicity	
Malay	1
Non-Malay	0.27 [0.09, 0.80]*
Religion	
Islam	1
Non-Islam	0.27 [0.09, 0.80]*
Cancer Information source	
Doctor	No Yes
Other medical staff	No Yes
Cancer Information source	
Family/Friends	No Yes
Cancer Information source	
Print media	No Yes
Cancer Information source	
TV/Radio	No Yes
Cancer Information source	
Internet/Blog etc	No Yes

\*p<0.05

The final model was tested for collinearity using all the cases and the standard error for the coefficients were all less than 2. There was, however, a moderate correlation coefficient of 0.58 between the variables of monthly personal income and information source from internet/blog when the correlation matrix was generated indicating some collinearity between the two variables was present in the data set. This is not surprising as access to internet could be associated with a higher personal income as it is still relatively expensive to have internet access in Malaysia, there may also be a difference in internet infrastructure access between the two states of Penang and Kelantan and Penang has been reported to be a more developed state with a GDP of about 5 times higher than Kelantan. (Department of Statistics, 2007; Department of Statistics, 2008) Collinearity was also tested using the collinearity diagnostics available under linear regression analysis. The Variance Inflation Factor [VIF] for all three variables were less than 10 which is considered to be acceptable (Norsa'adah, 2011).

This model had a good fit when the Hosmer-Lemeshow test was run (p=0.231) and the area under the curve (AUC) of the ROC [Receiver Operating Characteristic] curve was 0.79 which indicates an acceptable ability to discriminate between two outcomes.

**Table 5. Factors Associated with CAM use (Using Multiple Logistic Regression and Adjusted for Age)**

Variable	Adj. O.R. (95% CI O.R.)
Monthly personal income	1.00 (1.000, 1.001)
TV/Radio information source:	(1.042, 11.160)
No	1.00
Yes	3.41
Internet/blog information source:	(0.001, 0.792)
No	1.00
Yes	0.03

\*Adj. OR=Adjusted Odds Ratio

## Discussion

The dataset had been collected to identify and describe socio-economic factors that were influencing compliance to prescribed medical treatment; as such there was a lot of emphasis on social and economic data and this allowed us to preliminarily explore the influence of such factors on CAM use. The enumerators involved in data collection did not have biomedical backgrounds and the validity of the medical data obtained such as stage of disease at diagnosis may not have been accurate and were not included in the multivariate analyses.

The overall percentage of respondents that reported CAM use was similar to one study (Khalid et al., 2014) but lower than reports of other studies. Many studies have used other patient groups (Hasan et al., 2009) or community samples (Cheung et al., 2007), although one prospective study of breast cancer patients undergoing radiotherapy in the United States reported a CAM use rate of 54% (Moran et al., 2013). However, if locality was taken into account, the percentage of CAM use from Kelantan was equivalent to that reported in other studies but the percentage of reported use in the Penang respondents was very low and quite possibly is an underestimate. Another possible reason for the disparity in reported usage of CAM is the differing definitions that other studies have used for CAM use which included prayers/spiritual activities which has been reported as the most common choice of CAM used (Wang and Chung, 2012; Nurfaizah et al., 2012).

The factors that had independent influences on CAM use were personal income and certain information sources. Education level was not significantly associated with CAM use which is different from another study carried out on breast cancer survivors in Malaysia which reported a significant association between CAM use and years of education (Nurfaizah et al., 2012). However our study has a smaller sample size and the data on education was collected in a different format which may have resulted in some loss of information. Television/radio positively influenced CAM use whereas the internet appeared to negatively influence CAM use. We did not find distance from hospital or perceived support as having any influence on CAM use. The results from the analyses highlights the importance of ensuring that information transmitted via television or radio is accurate especially if there is a possibility that women with cancer may be influenced to use CAM and thus cause delay in seeking treatment. (Malik and Gopalan, 2003).

A number of CAM users reported buying supplements from their healthcare givers. This raises an issue as cancer patients are in a vulnerable state of mind after diagnoses and the ethics of selling health supplements to patients are questionable especially when the efficacy of CAM use among breast cancer has been investigated and found to have varying results (Hajime et al., 2013; Yan et al., 2014). Although the results of multivariate analyses did not support this information source (other medical staff) as an independent factor influencing CAM use, this may be due to lack of power of the analyses.

The shortfalls of this study include the relatively small sample (resulting in a lack of power) and the lack of

random selection which would limit the generalizability of the findings. Respondents were, however, sourced from both private and public medical institutions as well as two different states as an attempt to get as large and varied group of respondents in the time available for data collection.

The frequency of the outcome of interest [CAM use] in this study can be considered to be of a high magnitude which can result in a biased estimate of the risk probability as odds ratios [O.R.] tend to exaggerate the magnitude of associations. Odds Ratios are considered good surrogates for relative risk when the outcome is rare (Szklo and Nieto, 2007). However, limited data are available that explores the influences upon CAM use in Malaysia and these analyses should be considered to be only preliminary. Further exploration of CAM use among breast cancer patients and survival rates should be considered as this would yield information to guide health policy makers in decisions regarding the integration of CAM into the public health system in Malaysia.

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