

## Self-Efficacy for Coping with Breast Cancer in North-Eastern State of Peninsular Malaysia

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### Abstract

**Objective:** To determine the level of self-efficacy for coping with breast cancer among Malaysian women and its association with socio-demographic and clinical variables. **Materials and Methods:** This cross-sectional study involved 168 women diagnosed with breast cancer. The inclusion criteria were age >18 years old, having histologically confirmed breast cancer, and being diagnosed between January 1, 2009 to December 31, 2012. The exclusion criteria were being illiterate and having cognitive impairment. For data collection patients' medical records and the Cancer Behaviour Inventory-Brief (CBI-B) Malay version questionnaire were used. Simple and multiple logistic regression methods were used to analyse the data. **Results:** Patients' mean (SD) age was 51.4 (10.8) years old. Most of the patients were Malays, married, diagnosed at stage 2 breast cancer (41%), and completed their breast cancer treatment. The mean score for self-efficacy for coping with breast cancer was 83.67 (95% CI: 81.87, 85.47). The significant factors positively correlated with self-efficacy for coping with breast cancer were higher educational background and a higher family income. However, factors such as a family history of breast cancer and breast surgery reduced the mean score of self-efficacy for coping with breast cancer. **Conclusion:** The mean score of self-efficacy for coping with breast cancer in this study was moderate. Self-efficacy for coping with breast cancer in Hospital Universiti Sains Malaysia was not adequate among sufferers and improvement is needed probably by providing education to these patients.

**Keywords:** Breast cancer- The Cancer Behaviour Inventory-Brief (CBI-B) Malay version- self-efficacy for coping

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### Introduction

Breast cancer is a pandemic cancer among women, accounting for 1.8 million new cases each year (Fitzmaurice et al., 2015). In developing countries, such as Malaysia, 50% of the patients are diagnosed before the age of 50 years old, specifically with more aggressive and rare forms of cancer, such as inflammatory types (Pathy et al., 2011; Corbex et al., 2014). On the contrary, in Western countries, the disease is prevalent among post-menopausal women and is prominent in the mean age of 60 years old (Yip et al., 2011). In Malaysia, 18,343 thousand female breast cancer patients are registered in the National Cancer Registry Malaysia, accounting for 17.7% of all cancer patients registered between 2007–2011 (National Cancer Registry, 2015). The latest report from the Malaysian cancer registry shows that the incidence of breast cancer increases from the age of 25 and peaks at the age of 55 years old before its decline (National Cancer Registry, 2015).

Self-efficacy for coping with cancer refers to a person's confidence in his or her ability to deal with cancer and its treatment (Kohlmann et al., 2019). Coping

self-efficacy is a dynamic process and fluctuates based on how a person deals with a cancer diagnosis, treatment, and transition from primary treatment into survivorship care (Chirico et al., 2017a). Self-efficacy of patients with various types of cancers, especially breast cancer, has been studied extensively (Akin et al., 2008; BorjAlilu et al., 2017; Chirico et al., 2017a). Several studies have reported that highly efficacious patients have less anxiety, are less depressed, and are able to adapt to stressful situations and maintain a good quality of life (Porter et al., 2008; Heitzmann et al., 2011; Phillips and McAuley, 2013; Chirico et al., 2017a; Akin and Kas Guner, 2019). Highly efficacious people also show increased motivation; therefore, they should be supported by healthcare providers and family members (BorjAlilu et al., 2017).

Coping self-efficacy is a dynamic process which fluctuates from time to time (Bandura, 1982), that is at the time of diagnosis, during treatment, and after completion of treatment.

Women with high coping self-efficacy can better manage their symptoms or treatment side effects such as pain, fatigue, vasomotor symptoms, neuralgia, and arthralgia (Porter et al., 2002). Coping self-efficacy is

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beneficial in breast cancer survivors because it facilitates the achievement of self-care goals and adaptation to illness (Akin et al., 2008), contributing to better mental health and more positivity in fighting cancer.

Self-efficacy is an important component of social cognitive theory. Self-efficacy has become recognised for its significant effect on patients' adaptation to their illness and self-care behaviour (Akin et al., 2008). The theory of self-efficacy was developed based on four principles, namely performance attainment (direct mastery experiences), vicarious experiences (observing the performance of others), verbal persuasion, and arousal state (physiological states to partly judge their capability, strength, and vulnerability). Given the importance of self-efficacy in breast cancer patients, it should be included as one of the positive psychology treatment option (Taheri and Falavarjani, 2019).

Coping self-efficacy in cancer patients is affected by many factors. These factors include cancer symptoms, diagnosis, stage of disease, and treatment, spiritual beliefs, and level of pain, fatigue, depression, and anxiety (Guerreiro Godoy et al., 2014; Nejad et al., 2015). Every patient adopts a different approach to self-manage their symptoms and psychological and emotional response to accepting and coping with cancer and cancer-related side effects. Women with strong emotions use their religious beliefs as a coping mechanism when diagnosed with non-invasive breast cancer (Witek-Janusek Linda, 2008). The aim of this study was to determine self-efficacy for coping with breast cancer and its associated factors among breast cancer patients in Kota Bharu, Kelantan, Malaysia.

## Materials and Methods

### *Setting and sample*

This cross-sectional study was conducted at a Oncology Clinic and Radiotherapy Unit in Universiti of Sains Malaysia Hospital (Hospital USM). The Oncology clinic and Radiotherapy Unit has been started since 1996 and admits patients with various types of cancers, such as breast and gastrointestinal cancers. Most of the patients are from East Coast of Malaysia that is Kelantan, Terengganu, and Pahang. There are 1 Oncologist, 4 medical officers, 12 staff nurses, and 2 oncology counselors in the oncology clinic. Each day, on average, 30 patients are admitted to this clinic, of whom about 10 to 15 cases have breast cancer. The oncology clinic also provides a chemotherapy day-care center for breast cancer women.

In this study, women who were over 18 years of age, had histologically confirmed breast cancer, were diagnosed with breast cancer from January 1, 2009 to December 31, 2012, and received treatment at HUSM were selected. Illiterate and cognitively impaired patients were excluded. The universal sampling method was applied in this study. The study lasted for one year.

The sample size calculation was done for each objective of the study, and the largest sample size was taken as the study sample size. Power and sample size calculation (PS) software using single mean formula to calculate the sample size. The objective of obtaining mean coping self-efficacy had the largest sample size

with the standard deviation of expressing negative feeling a score of 2.17 and precision of 0.35. Considering the non-response rate of 10%, the calculated sample size of 177 was taken as the sample size of this study.

The Cancer Behaviour Inventory-Brief (CBI-B) questionnaire was used to assess self-efficacy for coping with cancer, which is defined as an individual's self-judgement on their capability to organise the necessary activities to successfully demonstrate a specific performance (Bandura, 1982). Although there are several tools to assess self-efficacy for coping with cancer (Cunningham JA, 1991; Reynolds et al., 2000), CBI-B was used as it is an established method to measure self-efficacy for coping with cancer. CBI-B contains 14 items derived from 33 items of the Cancer Behaviour Inventory Long (CBI-L). The CBI-B is a simplified version of the CBI-L, which requires 15 to 20 minutes to be completed compared to the latter which takes twice as much time. The psychometric analysis showed favourable internal consistency for CBI-B, ranging from 0.84 to 0.88 (Heitzmann et al., 2011). The correlation between the CBI-B and CBI-L is high ( $r = 0.95$ ,  $p < 0.001$ ).

The 14 items of the CBI-B were translated to Malay language by two bilingual persons. Several discussions were held among family medicine specialists, epidemiologists, and bilingual English teachers to validate the content and check the comprehensiveness of the Malay version of the CBI-B. The Malay version of the CBI-B was given to 10 breast cancer patients selected from Hospital Raja Perempuan Zainab II, Kota Bharu Kelantan (HRPZII), to check its face validity. A pilot study was also done to test its construct validity and reliability. The pilot study involved 30 breast cancer patients selected from the oncology clinic at HRPZII. Analysis of the study and internal consistency validity was substantiated using Cronbach's alpha and exploratory factor analysis, which evaluates the construct validity. Two items from CBI-B (question number 11 and 12) were eliminated from the actual study due to low factor loadings. The eliminated items were "sharing my worries or concerns with others" and "managing nausea and vomiting".

The psychometric analysis and validity of the Malay version of the CBI-B were also substantiated. The reliability score was calculated based on the Cronbach alpha. For each domain, the score range was satisfactory, which was between 0.789 and 0.916. The finalized questionnaire consisted of 12 items. The CBI-B items were scored using a 9-point Likert scale (1 indicated no confidence and 9 indicated absolute confidence). The total score for the CBI-B was obtained by adding up the points of the 12 items. The minimum and maximum scores that could be obtained were 12 and 108, respectively. Based on expert opinion, the scores of self-efficacy for coping with cancer were classified based on quartiles; poor scores are less than the 25<sup>th</sup> quartile, moderate scores are between 25<sup>th</sup> to 75<sup>th</sup> quartiles, and more than 75<sup>th</sup> quartile is considered as good scores.

### *Data collection procedure*

Eligible female patients who came for follow-up appointments at the oncology clinic and Radiotherapy

Unit in HUSM were recruited in this study. Informed consent was obtained when a patient agreed to participate in the study. The patients were brought into a quiet and comfortable room where they were given a set of self-administered questionnaires. Verbal instructions were given on how to answer the questions. The questionnaire contained three parts: i) socio-demography, ii) clinical characteristics, and iii) the CBI-B instructions. Information regarding the date of diagnosis, type of breast surgery, pathological tumour size, tumour grade, node status, breast cancer symptoms, concurrent illnesses, and other parameters such as height and weight were obtained from the patients' medical records.

#### Statistical analysis

Data analysis was carried out using the Statistical Package for the Social Sciences (SPSS) for Windows version 22. Descriptive analysis was performed for socio-demographic, clinical characteristics, and numerical variables. Numerical variables were used to determine the mean score of self-efficacy for coping with cancer. Categorical variables were expressed using percentage, and numerical variables were expressed using mean (standard deviation). The score of self-efficacy for coping with cancer were presented as mean, and 95% confidence interval/standard deviation was considered.

The association between socio-demographic and clinical factors and self-efficacy for coping with cancer was determined using mean score. This was processed followed by multiple linear regression analysis for variables with p value of less than 0.25 using forward multiple linear regression method. Model assumptions were fulfilled, and no interactions amongst independent variables were found. The correlation coefficient (r) in this study was interpreted as follows:  $r = 0$  implied no correlation,  $r < \pm 0.30$  implied weak correlation,  $r \pm 0.4-0.7$  implied moderate correlation, and  $r > \pm 0.7$  implied strong correlations.

## Results

A total of 176 patients were recruited in this study. Out of these 176 patients, five patients refused to participate, and three patients did not complete the questionnaire. Ultimately, 168 women agreed to participate in this study, with a response rate of 95.5%. The age range of our patients was quite wide, ranging from 32 years old to 82 years old. Patients' mean (SD) age was 51.4 (10.8) years old. Most of the patients, 91.7%, were Malays, and 8.3% were other races. The socio-demographic details of the study participants are presented in Table 1.

Table 2 shows the clinical data of the patients. Patients' mean (SD) body mass index was 23.5 (7) kg/m<sup>2</sup>. Most of the patients had breast cancer surgery (97.6%), and more than half of them underwent a mastectomy (81%). Most of the patients were diagnosed at stage 2 with the presence of a breast lump.

#### Self-efficacy for coping with cancer

The mean the self-efficacy for coping with cancer score was a moderate score of 83.67 (95% CI: 81.87,

Table 1. Socio-Demographic Characteristics of the Subjects (n=168)

Characteristic	n (%)	mean (SD)
Age (years)		51.4 (10.8)
Race		
Malay	154 (91.7)	
Non-Malay	14 (8.3)	
Marital status		
Married	145 (86.3)	
Not Married	23 (13.7)	
Educational background		
None/primary	40 (23.8)	
Secondary / tertiary	128 (76.2)	
Occupation		
Employed	62 (37.0)	
Non-employed	106 (63.0)	
Income		
RM <1000	95 (56.5)	
RM 1000-5000	58 (34.5)	
RM >5000	15 (9.0)	
Number of children		3.7 (2.2)
Nulliparous	31(18.5)	
Parous	137 (81.5)	
Living with partner/spouse		
Husband	116 (69.0)	
Family members	31 (18.5)	
Others	21 (12.5)	
Family history breast cancer		
Yes	34 (20.2)	
No	134 (79.8)	
Comorbidities		
Diabetes	27 (16.1)	
Hypertension	39 (23.2)	
Heart disease	7 (4.2)	
No comorbidities	95 (56.5)	

SD, Standard deviation

85.47). Based on interquartile, the mean score < 77.0 is considered as poor, and the mean score >92.0 is considered as good. Therefore, the overall self-efficacy for coping with cancer score among breast cancer women in this study was moderate.

Table 3 demonstrates the mean scores of the 12-item of the CBI-B. Three items with the highest scores were "maintaining work activity", followed by "trying to be calm throughout treatments and not allowing scary thoughts to upset me", and "actively participate in treatment decisions". Two items with the lowest were "putting things out of my mind at times" and "expressing negative feelings about cancer".

The mean score for domain 1 on the positive attitude and sense of humor was below the 75th quartile, and only 33% of women scored above it. Similarly for domain 2, 3, and 4 all were below the 75th quartile. Table 4 explains the detail about the subdomains of self-efficacy for coping

Table 2. Clinical Data of the Subjects (n=168)

Characteristic	n (%)	median (IQR)
BMI		23.5 (7)
Menstrual cycle irregularities		
Yes	105 (62.5)	
No	63 (37.5)	
Breast cancer surgery		
Yes	164 (97.6)	
No	4 (2.4)	
Type of surgery		
Mastectomy	136 (81.0)	
BCS	28 (19.0)	
Stage at diagnosis		
Stage 1	23 (13.7)	
Stage 2	70 (41.6)	
Stage 3	49 (29.2)	
Stage 4	26 (15.5)	
Breast cancer symptoms:		
Presence of lump		
Yes	141(83.9)	
No	27 (16.1)	
Nipple discharge		
Yes	5 (3.0)	
No	163 (97.0)	
Nipple retraction		
Yes	23 (13.7)	
No	145 (86.3)	
Ulcerated skin		
Yes	2 (1.2)	
No	166 (98.8)	
Inflamed skin		
Yes	6 (3.6)	
No	162 (96.4)	
Peau de orange		
Yes	10 (6.0)	
No	158 (94.0)	
Arm swollen		
Yes	6 (3.6)	
No	162 (96.4)	
Other symptoms		
Yes	18 (10.7)	
No	150 (89.3)	
Loss of Appetite		
Yes	11 (6.5)	
No	157 (93.5)	
Loss of Weight		
Yes	17(10.1)	
No	151(89.9)	
Lymph node status		
Positive	96 (57.1)	
Negative	72 (42.9)	

Table 2. Continued

Characteristic	n (%)	median (IQR)
Chemotherapy		
Yes	150 (89.3)	
No	18 (10.7)	
Radiotherapy		
Yes	134 (79.8)	
No	34 (20.2)	
Hormonal therapy		
Yes	50 (29.8)	
No	118 (70.2)	

IQR, interquartile range

with cancer on quartiles.

#### *Associated factors for self-efficacy for coping with cancer*

Table 5 shows some of significant factors associated with self-efficacy based on multiple linear regression results. There was a significant linear positive relationship between education level and self-efficacy for coping with cancer. Women with breast cancer who had a secondary/tertiary level of education had 7.26 higher self-efficacy scores than women who had primary education level.

There was a significant linear positive relationship between income and self-efficacy for coping with cancer score. Women with breast cancer who had an increase of RM1000 income gained one score higher in self-efficacy for coping with cancer.

There was a significant linear negative relationship between positive family history of breast cancer and self-efficacy for coping with cancer. Women who had family members with breast cancer had -5.43 lower self-efficacy scores than those without family members with breast cancer.

There was a significant linear negative relationship between having history of breast surgery and self-efficacy for coping with cancer. Those who had breast surgery had -16.44 lower self-efficacy scores in than those without history of breast surgery.

The coefficient of determination (R<sup>2</sup>) was 0.31, which indicated that 31% of the self-efficacy for coping with cancer was due to the high educational background, family income, family history of breast cancer, and having breast surgery.

## Discussion

The results of our study suggested that the overall mean score for self-efficacy for coping with cancer was moderate among our patients, with a value of 83.67 (95% CI: 81.87, 85.47). A study in the United State noted higher mean score for self-efficacy for coping with cancer 91.5 ( $\pm$ 15.4). However, this study was conducted using Cancer Behavior Inventory-Brief Arabic (CBI-BA) among Arab community male and female patients who had been diagnosed with any type of cancer and their participants' mean (SD) age was younger than our study (Algamdi and Hanneman, 2016). Another study was also done in the United States among 1304 male and female



Table 3. Mean Score of the 12-Item of Self-Efficacy for Coping

	Items	mean (SD)
1	Maintaining independence	7.60 (1.93)
2	Maintaining a positive attitude	7.70 (1.95)
3	Maintaining a sense of humor	7.27 (2.10)
4	Expressing negative feelings about cancer	4.30 (3.08)
5	Putting things out of my mind at times	4.21 (3.06)
6	Maintaining work activity	7.89 (1.63)
7	Remaining relaxed throughout treatments and not allowing scary thoughts to upset me	7.88 (1.74)
8	Actively participating in treatment decisions	7.82 (1.93)
9	Asking physician questions	7.32 (2.06)
10	Seeking social support	7.18 (3.01)
11	Coping with physical changes	7.13 (2.37)
12	Trying to be calm while waiting at least one hour for my appointment	7.39 (2.41)

patients who were either living with or were survivors of lung cancer, breast cancer, prostate cancer, colon cancer, and lymphoma. measured the correlation of CBI-B with each of the domains. They demonstrated that CBI-B had a positive correlation with the quality of life and optimism, but a negative correlation with depression and sickness (Heitzmann et al., 2011). However, they did not report the mean score for coping with cancer and only mentioned the correlation.

A more recent study was performed in Italy using the Italian version of the CBI-B (CBI-B-IT). They included a group of women with a mean age of 54 years old who were at stage IV breast cancer and were under palliative care treatment. The study reported that the patients were able to cope with cancer, experienced good quality of life, and had low levels of anxiety and depression. However, this study also did not mention any cut-off point between good and poor scores of self-efficacy for coping with cancer (Chirico et al., 2017b).

Several factors contributed to the moderate level of self-efficacy for coping with cancer in this study. The majority of the women in this study were Malay Muslims who have religious, race and cultural norms, as well as different coping mechanisms and health-seeking behaviours (Vivien et al., 2013). Another factor that influenced self-efficacy for coping with cancer was age. The mean age (SD) of the women with breast cancer in

this study was 51.4 (10.8) years old. This finding can be attributed to this fact that most women who are over 50 years old presumably have a stable source of income, children who have grown up, have experienced the onset of menopause, and are more capable of handling life's predicaments.

Women younger than 35 years old, on the other hand, had lower self-efficacy for coping with breast cancer. They expressed fears of their partner's rejection, employment issues, childcare responsibilities, and sometimes the onset of menopause. Similarly, it was shown that these factors significantly affect the coping process and reduced coping self-efficacy (Ganz et al., 2013b).

In this study, domains of "maintaining work activity", "trying to be calm throughout treatments, "not allowing scary thoughts to upset me", and "actively participate in treatment decisions" gained the highest scores. Women in our study did not allow their predicament to interfere with their normal daily activities. They were able to remain calm in a stressful situation, be confident in managing their emotion towards cancer, and contribute to their treatment decisions. Hence, thinking and acting more positively improved their self-efficacy for coping with breast cancer.

The results also showed that when patients were involved in the decision making of their cancer treatment, their level of self-efficacy for coping with breast cancer increased. This was reflected in the high score for item

Table 4. Subdomain of Self-Efficacy for Coping

Subdomain	Questions	Mean (SD)	Range of score	75 <sup>th</sup> quartile (mean)	Percentage above 75 <sup>th</sup> quartile (%)
Domain 1 Belief positive attitude and sense of humor	2,3,7	22.85 (4.41)	3-27	27	33
Domain 2 Belief in their ability to participate in medical care and coping management	5,8,11,12	26.54 (4.69)	4-36	29	26
Domain 3 Belief in maintaining independence and activity	1,6,9	23.42 (4.05)	3-27	27	28
Domain 4 Capacity to manage their emotions and seeking social support	4,10	11.48 (3.86)	2-18	14	36

Table 5. Factors Associated with Self-Efficacy for Coping in Women with Breast Cancer Using Multiple Linear Regression (n=168)

Variables	Simple Linear Regression		Multiple Linear Regression	
	b <sup>a</sup> (95% CI)	p-value	b <sup>b</sup> (95% CI)	p-value
Educational background (secondary/tertiary)	6.77 (1.28, 12.26)	0.016	7.26 (3.23, 11.29)	<0.001
Family income (RM)	0.001 (<0.001, 0.001)	0.234	0.001 (<0.001, 0.002)	0.021
Family history with breast cancer	-5.48(-10.17, -0.79)	0.022	-5.43 (-0.94, -1.41)	0.008
Breast surgery	-16.58 (-28.99, -4.17)	0.009	-16.44 (-27.02, -5.87)	0.003

b<sup>a</sup>, Crude regression coefficient; b<sup>b</sup>, Adjusted regression coefficient; Forward multiple linear regression method applied. Model assumptions are fulfilled; There were no interactions amongst independent variables. No multicollinearity detected (VIF less than 10). The assumption was checked and found no violation.; Coefficients of determination (R<sup>2</sup>) = 0.31

“actively participating in treatment decisions”. This result correlated to another study that included patients with different types of cancer. The highest mean scores were allocated to items “asking physicians questions” followed by “actively participating in treatment decisions”, and “maintaining a sense of humour”(Heitzmann et al., 2011). The lowest scored item was “putting things out of my mind at times/using denial”.

The women in this study were mainly housewives who felt compelled to maintain a stable household despite their conditions. They felt that if they could continue with their daily activities, their self-efficacy for coping with breast cancer would increase. Consequently, this was reflected as the score of “maintaining work activity” was slightly higher with the mean (SD) 7.89 (1.63) compared to the study by Heitzmann et al., which was 6.99 (1.81) in which their patients had different backgrounds, different types of cancer, and consisted of male and female patients, who had different perceptions of their work activity (Heitzmann et al., 2011).

Women are generally sensitive about their body image particularly when it involves the breasts since they are symbols of femininity in a society. Most women were unhappy with their appearance after breast cancer treatment (Avis et al., 2005). Furthermore, patients suffered pain, lymphedema, and numbness at the affected area following cancer treatment (Ganz et al., 2013a; Guerreiro Godoy et al., 2014). This result was also obtained given the low mean (SD) of 7.13 (2.37) for item “coping with physical changes”.

The scores of other items, such as “maintaining positive attitude”, “maintaining independence”, “seeking social support”, and “maintaining a sense of humour” did not differ greatly in this study compared to other studies.

#### *Associated factors with self-efficacy for coping with breast cancer*

Patients with a higher level of education were able to communicate efficiently with health care personnel (Suriati G, 2012). They educate themselves on the disease to have a better understanding of the complexities of the disease and its treatment. Therefore, they have better control over their situation. This correlates with patients who have a higher educational background compared to patients with a poor educational background. This is in line with many studies that concluded that patients with a higher education were significantly associated with self-efficacy (Akin et al., 2008; Rottmann et al., 2010; Nejad

ZK, April 2015).

Family income is another variable that significantly influences coping (Suriati G, 2012). A substantial family income is required to ease the financial burden for both breast cancer patients and caregivers. This, in turn, increased the self-efficacy for coping. The women in this study; however, did not have job. They depended heavily on the income of their husbands, children, or family members (Liamputtong and Suwankhong, 2015).

A family history of breast cancer was also found to significantly impact self-efficacy for coping with breast cancer. Most women with no family history of breast cancer showed less significant self-efficacy (Akin et al., 2008). Interestingly, in this study, the adverse psychological experiences were shown. Women with close family members who had breast cancer had lower self-efficacy for coping with their disease. The bitter experience about the cancer of their close family members or relatives had a negative impact on them, hence negatively affecting their self-efficacy for coping with cancer.

History of undergoing breast cancer surgery was another significant factor affecting self-efficacy for coping with breast cancer. Any type of breast cancer surgery, especially mastectomy, will result in complications which require long term treatment (Ganz et al., 2013b). Women with breast cancer who underwent a mastectomy or breast-conserving surgery had lower self-efficacy for coping with their disease. In contrast with this finding, another study demonstrated that breast-conserving surgery had similar effects to having no surgery regarding self-efficacy for coping (Akin et al., 2008).

The present study had several limitations. The study was conducted in the East Coast of Malaysia, where the majority of the women were Malays and Muslims and were mainly housewives. Therefore, the results of this study cannot be generalized. This study also did not include the effect of factors such as depression, religious belief, health care system, and health care provider on self-efficacy for coping with cancer.

#### *Implications of the study*

The obtained results suggested a specific intervention program to promote quality of life to increase self-efficacy for coping with breast cancer in sufferers. Women who have been diagnosed with breast cancer is suggested to be equipped with sufficient knowledge on the disease and treatment options (i.e. chemotherapy regimens and different types of surgeries and its effects) according

to their educational background. Psychological stress in women with breast cancer should be anticipated and recommendations such as cognitive behaviour therapy and counselling therapy should be made to assist them handle their stress. It is also highly important to involve their spouse and family members throughout the process. Finally, a five-year follow-up for measurement of patients' self-efficacy for coping with their disease is needed to yield a more conclusive result.

In conclusion, women with breast cancer in this study had moderate self-efficacy for coping with their disease. The item with the highest mean score was "maintaining work activity" and the item with the lowest score was "putting things out of my mind at times". Higher educational background and substantial income were significant indicators for higher levels of self-efficacy for coping with breast cancer. However, having a family history of breast cancer and breast surgery were significant indicators for low self-efficacy for coping with breast cancer.

#### Ethical consideration

This study protocol was approved and accepted by the Research and Ethics Committee, School of Medical Science, University Sains Malaysia, Human Ethics Committee (Ref: USM/KK/PPP/JEPem [245.4. (4.9)]). Confidentiality of the data was strictly maintained. They were counseled and convinced to inform their doctor in-charge if they felt depressed. However, none of the patients had a significant depression symptoms that needed to be referred to a psychiatric.

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