

RESEARCH COMMUNICATION

Predictors of Adherence to Clinical Breast Examination and Mammography Screening among Malaysian Women

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Abstract

Breast cancer is the most common cancer among Malaysian women and early detection can play an important role in reducing cancer morbidity and mortality. The aim of this cross-sectional study was to determine the rates and factors related to clinical breast examination (CBE) and mammography among 425 female teachers in Selangor, Malaysia. A self-administered questionnaire that included questions on socio-demography, cancer-related knowledge practice and an adapted version of Champion's revised Health Belief Model Scale was employed. The mean age of participants was 37.2±7.16 years. Only 25% of the women ever had a CBE. Of women over the age 40 (n=138), 13.6% reported having had a mammography. The results showed higher susceptibility to breast cancer, higher benefits of doing CBE and regular visits with a physician to be significant predictors for undergoing CBE (p<0.05). In addition, higher a perceived susceptibility to breast cancer and regular undergoing CBE were significant predictors for having a mammography. The findings clearly suggest a need for improving women's awareness on breast cancer screening, its importance and recommended guidelines.

Keywords: Breast cancer - clinical breast examination - health beliefs - Malaysia

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Introduction

Breast cancer is the most common cause of cancer incidence and cancer mortality among women worldwide (Parkin et al., 2005). The incidence of breast cancer varies between countries. It is the highest in the United States and Northern South America, and the lowest in Asia (Pisani et al., 2002). However, the incidence of breast cancer has been rising in traditionally low incidence Asian countries, as these regions make the transition toward a Western-style economy and pattern of reproductive behavior (Nagata et al., 1997; Hisham and Yip, 2004). According to the latest Malaysian cancer registry report, breast cancer is the most common women cancer, accounting for 31.4% of all cancers diagnosed, and 54% of new cases are found among women below 50 years old (National Cancer Registry NCR, Malaysia, 2003).

Although mammography is the most effective method for the early detection of breast cancer, clinical breast examination (CBE) by a trained examiner has the potential to advance the diagnosis of breast cancer and does not the expense of a mammography (Anderson et al., 2003). Survival rate of breast cancer is high, if breast cancer is diagnosed early (Aspinall, 1991). Therefore, early detection of breast cancer can play an important role to reduce deaths and complications of the disease.

A few data have been collected on participation of Malaysian women in breast cancer screening programs and

the findings have not been well documented. A community study, which was conducted among over 50,000 Malaysian women, demonstrated low participation rates in breast cancer screening. The rate of performing CBE and mammography were reported 31% and 3% respectively (National Morbidity Survey, 1997).

In Malaysia, due to lack of enough mammography equipments, technical supports, formal screening programs and educational programs, breast cancer is usually diagnosed in late stages. Therefore, the incidence of breast cancer and mortality from this disease remain high in countries with limited resources such as Malaysia (Hisham and Yip, 2003). Even in cases where breast tumors have been discovered, many women have been unable or reluctant to undergo further diagnostic examination and receive proper treatment for various reasons: economic and psychological reasons, women's health beliefs, impact of traditional medicine, as well as a lack of education about the importance of early diagnosis of cancer and effective treatment (Hisham and Yip, 2004).

Undergoing regular CBE and having mammography have been associated with concepts of Health Belief Model (HBM) including perceived susceptibility to breast cancer, seriousness of breast cancer, the benefits and barriers to CBE and mammography, and health motivation (Miller and Champion, 1996; Champion and Scott, 1997; Champion, 1999; Straughan and Seow, 2000; Ahmad et al., 2005; Secginli and Nahcivan, 2006). Other factors

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such as socio-economic status, a referral from a physician, knowledge of breast cancer screening, health insurance coverage and family history of breast cancer also have been related to breast cancer screening behaviors (Miller and Champion, 1996; Laws and Mayo, 1998; Secginli and Nahcivan, 2006).

Furthermore, some studies have found higher breast cancer risk among women in professional occupations such as nursing (Threlfall et al., 1985) and teaching

(Coogan et al., 1996; Goldberg, 1996; Petralia and Vena, 1999; Bernstein et al., 2002). A study by Rubin et al., (1993) found teachers to be at twice the risk of breast cancer mortality as other women. Despite the fact that teachers could play an important role in cancer education and prevention, several studies have shown inadequate level of knowledge related to risk factors, signs and symptoms of breast cancer and early detection methods as well as low screening behaviors among female teachers

Table 1. Factors Associated with Performing CBE and Mammography

Characteristics	CBE performance		p	Mammography		p
	Yes (n=106)	No (n=319)		Yes (n=18)	No (n=120)	
Age (years)						
20-30	14 (13.2)	65 (20.3)	0.031*	-	-	0.058
31-40	49 (46.2)	157 (49.2)		-	-	
41-50	40 (7.7)	78 (24.4)		16 (88.9)	100 (83.3)	
>51	3 (2.8)	19 (6.1)		2 (11.1)	20 (16.7)	
Marital status						
Married	95 (89.6)	283 (88.7)	0.796	2 (11.1)	13 (10.8)	0.972
Single	11 (10.4)	36 (11.3)		16 (88.9)	107 (89.2)	
Educational status						
Diploma	7 (6.6)	22 (6.9)	0.708	1 (5.6)	16 (13.3)	0.319
Degree	93 (87.7)	285 (89.3)		14 (77.8)	95 (79.2)	
Post graduate	6 (5.7)	12 (3.8)		3 (16.7)	9 (7.5)	
Ethnic						
Malay	84 (79.2)	277 (86.7)	0.341	9 (50.0)	100 (83.4)	0.007*
Indian	9 (8.5)	17 (5.4)		2 (11.1)	8 (6.7)	
Chinese	13 (12.1)	25 (7.9)		7 (38.9)	2 (1.7)	
Menstruation status						
Pre-menopause	100 (94.3)	300 (93.4)	0.358	15 (83.3)	101 (84.2)	0.754
Post-menopause	4 (3.8)	19 (6.0)		3 (16.7)	19 (15.8)	
Income level (RM)						
Low(<3000)	12 (12.6)	38 (14.2)	0.017*	2 (11.1)	8 (6.7)	0.072
Moderate (3000-5000)	34 (35.8)	135 (50.6)		3 (16.7)	47 (39.3)	
Good (>5000)	49 (51.6)	94 (35.2)		13 (72.2)	54 (45.0)	
Health insurance coverage						
Yes	90 (84.9)	249 (78.1)	p=0.128	3 (16.7)	23 (19.2)	0.800
No	16 (15.1)	70 (21.9)		15 (83.3)	97 (80.8)	
Having a regular visit with a physician for check-up						
Yes	43 (40.6)	53 (16.6)	0.000*	10 (55.6)	78 (65.0)	0.437
No	63 (59.4)	266 (83.4)		8 (44.4)	42 (35.0)	
Family history of BC						
Yes	8 (7.5)	28 (8.8)	0.694	3 (16.7)	9 (7.5)	0.198
No	98 (92.5)	291 (91.2)		15 (83.3)	111 (92.5)	
History of breast disease						
Yes	6 (5.7)	5 (1.6)	0.021*	15 (83.3)	118 (98.3)	0.001*
No	100 (94.3)	314 (98.4)		3 (16.7)	2 (1.7)	
Ever heard/ read about BCS						
Yes	82 (77.4)	223 (69.9)	0.140	4 (22.2)	29 (24.2)	0.857
No	24 (22.6)	96 (30.1)		14 (77.8)	91 (75.8)	
BSE performance						
Yes	76 (71.7)	268 (84.0)	0.005*	11 (61.1)	99 (82.5)	0.035*
No	30 (28.3)	51 (16.0)		7 (38.9)	21 (17.5)	
CBE performance						
Yes	-	-		6 (33.3)	88 (74.2)	0.000*
No				12 (66.7)	31 (25.8)	
Perceived health status						
Good	47 (44.3)	125 (39.1)	0.609	4 (22.2)	43 (35.8)	0.042*
Satisfied	56 (52.8)	186 (58.4)		11 (61.1)	73 (60.8)	
Poor	3 (2.8)	8 (2.5)		3 (16.7)	4 (3.3)	

* Significance value at level p<0.05

(Galedar et al., 2001; Jarvandi et al., 2002; Madanat and Miller, 2002).

At present, little is known about the factors associated with breast cancer screening behaviors among Malaysian women. Thus, it is important to have a better understanding of breast cancer screening behaviors among women and the factors that influence low utilization of them. Considering teachers are in a position to effectively educate young women about breast cancer and screening behaviors, the aim of this study was to examine factors related to breast cancer screening behaviors in a sample of Malaysian women teachers.

Materials and Methods

A cross-sectional study was carried out among female secondary school teachers in the state of Selangor, Malaysia, from January to April 2006. A multistage random sampling was used to select the schools. Out of nine districts in Selangor, four districts were selected randomly. Six secondary schools from all schools in each selected districts were then chosen randomly (giving a total of 24 secondary schools). The inclusion criteria were: no history of breast cancer or any other cancers, not pregnant or breastfeeding. A total of 425 female teachers met the inclusion criteria and gave informed consent to participate in this study. This study obtained permission of Ministry of Education, Malaysia for conducting this research.

A questionnaire was developed to obtain information on participants' socio-demographic characteristics, and other factors such as having heard/read about breast cancer and screening tests; sources of breast cancer information; having a family history of breast cancer; having a regular visit with a physician, and having a physician referral. Socio-demographic variables included age, current marital status, education level, income level, ethnicity, religion and health insurance coverage.

Breast cancer knowledge section consisted of 43 questions with yes/no response options, which included 3 questions on general facts about breast cancer, 7 questions on symptoms, 15 questions on risk factors, and 18 questions on breast cancer screening methods. One point was given for a correct answer and zero for an incorrect. More description of the development knowledge scales can be found in another published paper (Parsa et al., 2008).

The section of beliefs consisted of 40 questions which were self-reported measure and representing 7 scales, namely, susceptibility to breast cancer (5 items); seriousness of breast cancer (7 items); health motivation (7 items); benefits of CBE (4 items); barriers to CBE (6 items); benefits of mammography (6 items); and barriers to mammography (5 items). A 5-point Likert Scale format with code 1 (strongly disagree) and code 5 (strongly agree) was used for all items. Construct validity and reliability of the adapted Champions' Health Belief Model scales (CHBMS) were tested and found to be acceptable (Parsa et al., 2008).

Screening behaviors were measured by self-reported response to the questions: have women ever undergone

CBE and mammography (for women aged 40 and older). Frequency and reason for their reluctance of performing breast cancer screening were also asked.

Descriptive statistics were used to identify the respondents' socio-demographic status. The independent t-test and chi-square test were used to identify factors associated to breast cancer screening practices. Logistic regression analysis was used to examine which variables significantly predicted CBE and mammography use separately. In all tests, the level of significance was set at 0.05.

Results

General characteristics of the subjects

The mean age of respondents was 37.2 (SD=7.2) ranged between 23 to 56 years and 138 women aged 40 years or older. Most of them were married, Muslim and Malay. Most of teachers had tertiary level of education and 20% had no medical insurance. A family history of breast cancer was recorded by 9.6% respondents and only 3% reported that they had a personal history of breast disease (Table 1).

Breast Cancer Screening Practices

Although 72% and 66.6% of the participants reported that they had heard about CBE and mammography, respectively. Only 25% and 13.6% of eligible women performed a CBE and mammography, respectively. The most common reason for reluctance of breast cancer screening practices was lack of knowledge followed by embarrassment, fear of cancer diagnosis, and women's perceive that breast screening tests not being needed if they are in good health status. Magazines and Television programs were identified as the main sources of information on breast cancer by 95% and 83% of the participants, respectively. Printed materials (67%), friends (52%) and health professionals (46%) were mentioned as other sources of information on breast cancer.

Factors associated with performing CBE and mammography

As shown in Table 1, significant associations were identified between performing CBE and age ($\chi^2=8.909$, $df=3$, $p=0.031$), income level ($\chi^2=8.160$, $df=2$, $p=0.017$), having a regular visit with physician ($\chi^2=26.10$, $df=1$, $p=0.000$), history of breast disease ($\chi^2=5.287$, $df=1$, $p=0.021$) and performing BSE ($\chi^2=7.821$, $df=1$, $p=0.005$). Marital status, family history of breast cancer, menstruation status, education level, ethnic, ever have heard about CBE and perceived health status were not related variables with undergoing CBE.

Among women over 40 years ($n=138$) as shown in Table 1, the significant associations were found between performing mammography and CBE performance ($\chi^2=12.167$, $df=1$, $p=0.000$), doing regular BSE ($\chi^2=4.428$, $df=1$, $p=0.035$), ethnicity ($\chi^2=12.239$, $df=2$, $p=0.007$), history of breast disease ($\chi^2=10.085$, $df=2$, $p=0.001$), and perceived health status ($\chi^2=6.337$, $df=2$, $p=0.042$). Marital status, age, family history of breast cancer, menstruation status, having health insurance, having a regular visit with

Table 2: Comparison Knowledge and Belief Mean Scores among Respondents Who Performed CBE and Mammography and Who did not.

Variables	CBE performance		p	Mammography performance		p	Range
	Yes (n=106)	No (n=319)		Yes (n=18)	No (n=120)		
	Mean± SD	Mean± SD		Mean± SD	Mean± SD		
Knowledge							
Incidence	1.68±0.82	1.63±0.87	0.201	1.66±0.84	1.92±0.85	0.228	1-3
Symptom	2.55±1.28	2.52±1.35	0.828	2.94±1.34	2.65±1.40	0.421	1-7
Risk factors	6.17±2.80	6.00 ±2.51	0.538	7.44±3.09	6.00±2.60	0.036*	1-15
Screening	10.23±3.32	9.79±2.91	0.192	11.16±3.14	9.85±3.20	0.107	1-18
Total knowledge	20.78±6.73	20.30±5.58	0.472	23.22±6.72	20.44±6.26	0.086	1-43
Beliefs							
Susceptibility BC	2.48±0.83	2.30±0.77	0.025*	2.66±0.79	2.30±0.81	0.084	1-5
Seriousness BC	3.38±0.78	3.44±0.72	0.476	3.17±0.60	3.47±0.77	0.126	1-5
Benefits CBE	4.09±0.54	3.90±0.57	0.004*	-	-	-	1-5
Barriers CBE	3.12±0.62	3.19±0.64	0.331	-	-	-	1-5
Benefits mam.	-	-	-	3.50±0.54	3.58±0.75	0.638	1-5
Barriers mam.	-	-	-	2.92±0.66	3.08±0.66	0.343	1-5
Health motivation	3.95±0.54	3.87±0.50	0.139	4.00±0.56	3.95±0.62	0.779	1-5
Total beliefs	3.46±0.27	3.43±0.27	0.328	3.43±0.22	3.44±0.34	0.916	1-5

* Significance value at level $p < 0.05$

physician, income level, and ever heard/ read about breast cancer or mammography were not related variables with performing mammography among women aged above 40 years.

Comparisons women's knowledge and health beliefs with undergoing CBE and mammography

Findings of Table 2 shown significant differences between women who performed CBE and those who did not were observed for the susceptibility scale ($t=1.967$; $p=0.025$), and the benefits of CBE scale ($t=2.906$; $p=0.004$). There were no significant differences between the two groups for remaining health belief subscales and knowledge subscales.

Regarding to mammography performance, there was only a significant difference between those who performed mammography and those who did not for the knowledge on risk factors of breast cancer ($t=2.117$; $p=0.036$). There were no significant differences between two groups on the CHBMS subscales and other knowledge subscales.

Predictors for undergoing CBE and mammography

Results of logistic regression analyses for predicting CBE and mammography use are shown in Table 3. The logistic regression models included socio-demography characteristics, cancer related factors, knowledge and belief subscales. These models were relatively good for prediction CBE (chi-square=49.213, $df=23$, $p=0.001$, Nagelkerke R Square=0.192) and mammography performance (chi-square=28.537, $df=21$, $p=0.037$, Nagelkerke R Square=0.370). These models explained 19% and 37% of the variance of CBE and mammography practices, respectively.

Findings shown participants who had regular visit with their physicians were over three times more likely

to perform CBE than others who had not (OR=3.098, 95% CI: 1.695-5.662, $p=0.000$). Furthermore, women who had higher perceived susceptibility for breast cancer (OR=1.077, 95% CI: 1.001-1.158, $p=0.046$) and had greater benefits of having a CBE (OR=1.167, 95% CI: 1.015-1.341, $p=0.030$) were more likely to underwent CBE than who had not. The remaining belief variables, seriousness, health motivation, and barriers of CBE were not significant predictors for performing CBE.

Two significant odds ratios were identified from logistic regression analysis related with mammography. Women who had reported having a regular CBE more than seven times were more likely to do mammography (OR=7.174, 95% CI: 1.413-36.426, $p=0.000$). In addition, women who had higher perceived susceptibility to get breast cancer were more likely to undergo mammography use (OR=1.164, 95% CI: 1.044-1.126, $p=0.000$).

Discussion

In the present study, only 25% and 13.6% of eligible women ever had performed a CBE and mammography, respectively. Compare with other studies, the rates of undergoing a CBE and mammography practices in our study were higher than Dundar study (18% and 5.5%, respectively) among Turkish women in a rural area (Dundar et al., 2006), and were lower than Wu et al. (2006) study (59% and 64%, respectively) among educated Asian immigrant women in the U. S. The mammography practice rate was also lower than 30% among female teachers in Italy (Pavia et al., 1999), 61.3% among Asian Indian women in the U. S. (Salder et al., 2002), and 25% among Turkish women in the Istanbul, Turkey (Secginli and Nahcivan, 2006). A large number of illiterate women (20.1%) living in a rural areas in Dundar study

Table 3: Logistic Regression Analysis for Factors Related to Performing CBE and Mammography

Variables	CBE performance		Mammography performance	
	OR	(95% CI)	OR	(95% CI)
Marital status				
Single	1		1	
Married	0.667	0.237-1.881	1.588	0.095-26.555
Age				
20-30	1			
31-40	1.148	0.483-2.730		
41-50	1.380	0.533-3.578	1	
>50	0.365	0.060-2.232	0.365	0.074-19.170
Education				
Diploma	1		1	
Degree	1.015	0.348-2.961	1.187	0.133-6.170
Postgraduate	1.004	0.210-4.808	1.304	0.121-9.594
Income				
<3000	1		1	
3000-5000	0.557	0.230-1.352	0.215	0.107-6.646
>5000	1.153	0.414-3.019	1.081	0.104-16.494
Health insurance				
No	1		1	
Yes	1.648	0.804-3.377	3.317	0.302-36.397
Having regular check-up				
No	1		1	
Yes	3.098*	1.695-5.662	0.687	0.113-4.136
Family history BC				
No	1		1	
Yes	1.203	0.426-3.398	0.713	0.0.57-8.855
Breast disease				
No	1		1	
Yes	3.327	0.762-14.523	9.499	0.364-24.686
Perceived health status				
Poor	1		1	
Good	0.895	0.183-4.374	0.592	0.143-2.245
Satisfied	1.460	0.286-7.452	0.811	0.216-4.32
Performing BSE				
No	1		1	
Yes	1.625	0.843-3.132	1.646	0.337-8.031
Performing CBE				
No	-	-	1	
Yes			7.174*	1.413-36.426
Sources of information (referral)				
Others	1		1	
Doctors	1.002	0.593-1.691	0.621	0.149-2.594
Knowledge BC & BCS				
Knowledge BC & BCS	0.991	0.943-1.040	1.032	0.96-1.1.103
Susceptibility BC				
Susceptibility BC	1.077*	1.001-1.158	1.164*	1.044-1.267
Seriousness BC				
Seriousness BC	0.979	0.929-1.032	0.956	0.885-1.032
Health motivation				
Health motivation	0.955	0.875-1.041	0.988	0.883-1.106
Benefits CBE				
Benefits CBE	1.167*	1.015-1.341	-	-
Barriers CBE				
Barriers CBE	0.980	0.910-1.055	-	-
Benefits Mammography				
Benefits Mammography	-	-	1.023	0.921-1.138
Barriers mammography				
Barriers mammography	-	-	1.034	0.909-1.176

OR= Odds ratio; CI= confidence interval; * Significance value at level p<0.05

may be the reason of lower performance of breast cancer screening than our study. The higher rates of performing CBE and mammography in the U.S. and European studies may be due to the free screening programs and more community educational programs in such developed countries. However, they have also reported a lower rate of participation of Asian women than white women in screening programs (Wu et al., 2006). Considering Asian

women health beliefs and cultural and differences, future studies are needed to investigate the barriers of breast cancer screening.

Our results showed that women who performed BSE regularly were more likely to adhere to CBE and mammography. Similarly, Solomon et al (1998) and Lane et al (2002) found that regular BSE practice had a positive association with both CBE and mammography

adherence. Overall, women who perform BSE regularly overtime more likely to adhere to the other breast cancer screening guidelines (Solomon et al., 1998).

Having a history of breast disease was associated with performing CBE and mammography in our study. In contrary, Barr et al., (2001) and Juon et al., (2001) found that women who had a breast problem were more likely to undergo CBE and Mammography than others who had not. Having health insurance was not related to CBE and mammography use in current study. This finding is consistent with observations of previous studies (Juon et al., 2002; Bazargan et al., 2004; Secginli and Nahcivan, 2006) and suggest that it may be partially due to the effects of economic and medical care system factors. Most women in our samples (80%) had some kind of health insurance. Therefore, having health insurance was not a significant factor for undergoing breast cancer screening practices in this study. Future studies are needed to investigate the effect of health insurance on screening practices in various setting of female population in Malaysia. It seems interventions including low-cost or free access to mammography, targeting women, particularly women with no health insurance for breast cancer screening are needed.

Having a regular visit with doctor was a strong predictor for CBE practice. The low rate of undergoing CBE and mammography in our study may also accompanied by low rates of routine physical checkups (Ahmad et al., 2005). Approximately one-third of the participants ever had a routine physical examination, Laslie et al., (2003) found that women who had received health care and cancer screening instruction by health care providers had greater knowledge practices on breast cancer screening. It is necessary that physicians and other health care providers remind and update women's knowledge about breast disease and breast cancer screening.

Clinical breast examination and mammography practices were positively associated in our study. This relationship is likely driven by the impact of the physician's recommendation to get a mammogram (Solomon et al., 1998). However most of women over 40 years, did not receive a mammography referral by their physicians. Lack of physicians' referral and regular visit with a physician may be reason of the low rate of mammography practice. As mentioned by Secginli and Nahcivan (2006) in Turkey, efforts to educate health care providers, particularly physicians, should emphasize the importance of the mammography referral and regular physical check-ups. Future research is needed to find the role of physicians to promote breast cancer behaviors.

Meanwhile, nearly all women aged 40 years and older had high level of perceived benefits of mammography only 70% of women believed that mammography could detect breast cancer in early stages, the less number of them believed that it could decrease the mortality rate of breast cancer and surgery (59%). It may be influenced by low level of knowledge on advantage of breast cancer screening (Valdez et al., 2002; Fieg, 2005); and also low knowledge about advantage on breast cancer therapy (Franzcr, et al., 2005).

Grounded to HBM theory, results showed women

who had higher perceived susceptibility to breast cancer and had positive beliefs towards benefits of breast cancer screening methods were more likely to undergo CBE and mammography (Champion et al., 1997; Secginli and Nahcivan, 2006). This indicates if CBE and mammography are performed, most women feel better about their breast health condition and do not have to worry about breast cancer. CBE is able to detect 10 to 25 percents of lumps in breast which mammography could not detect them (Freund, 2001). This is good chance for physician to perform clinical breast exam for their female patients, and during the CBE procedures explain the normal and abnormal changes in the breasts; also teach them how they could perform breast self-exam. Considering an important role of women in breast cancer screening behavior and lack of breast screening programs in limited resource countries, women should be aware of CBE recommended basis and ask their health care provider to perform it for them. Several studies have shown that health care providers can be effectively trained in the performance of CBE and that education can improve their skill in performing the examination (Barton et al., 1999; Vetto et al., 2002). A variety of approaches can improve CBE skills such as performing a systematic and thorough examination, increasing the duration of palpation, and practicing on silicone breast models (Aliabadi-Whale et al., 2000)

In Malaysia, although national or even regional mammography screening programs are limited, biannual mammography screening has recently been recommended for women 50-69 years of age. The value of mammography for high risk women aged 40-49 year old is also supported (Anderson et al., 2003; NCR, 2003). Due to variation in mammography recommendations in different countries, it is important to encourage women particularly at risk women to follow the recommended breast cancer screening guidelines and consult with their physicians or other health care providers for more information about breast cancer screening services.

There are some limitations in our research. Firstly, the findings cannot be generalized beyond the study sample because the study was undertaken in one state and the results may not be generalized to other states of Malaysia. Secondly, all data were self-reported with no objective measures to evaluate the women. However, the results of this study provide some understanding on breast cancer screening behaviors among Malaysian women. Finding of this study strongly indicate that further research is needed to investigate issues related to women's motivation to perform preventive behaviors and participate in breast cancer screening programs. This is very important for Malaysian women because breast cancer is considered their main cause of cancer death and because younger Malaysian women have been found to be at even greater risk for breast cancer.

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