

## **EFFECTIVENESS OF A HEALTH EDUCATION INTERVENTION FOR BREAST CANCER PREVENTION AMONG WOMEN**

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### **ABSTRACT**

Many efforts had been implemented to improve breast health in Malaysia. However the situation is still worrying whereby the number of advanced breast cancer is still higher. Health educations play an important role in promoting breast cancer prevention. The objective of this study is to assess the effectiveness of a health education intervention on women's beliefs and behavior concerning breast cancer prevention. The material and methods of the study is a quasi-experimental and was done to one hundred and twenty women who had follow up and seeks a treatment as an outpatient at Klinik Kesihatan Bandar Seri Putra (KKBSP) (sixty in intervention group and sixty in control group). Participants were selected through nonprobability convenience sampling. Self-administered questionnaire from Champion's Health Belief Model related women's beliefs and barriers towards breast cancer prevention was used. The results showed the beliefs and barriers towards breast cancer had changed positively after the health education intervention. The mean score of perceived susceptibility (M=18.76, SD=3.66), perceived severity (M=29.65, SD=4.44), cues to action (M=31.91, SD=4.09), and self-efficacy (M=44.76, SD=6.41) were significantly higher in intervention group. The mean score of perceived barriers (M=32.35, SD=9.79) of breast cancer prevention significantly decreased in the intervention group. There are significant relationships between socio-demographic with women's beliefs and barriers. The health education intervention was successful improved the women's beliefs and barriers. The health education intervention for breast cancer prevention to

women can be effectively modifying in beliefs and behavior. Health care provider plays an important role in educating women through the appropriate health education regarding breast cancer prevention to create awareness and knowledge among women.

**Keywords:** Breast cancer prevention, clinical breast examination, mammography, beliefs, behavior.

## **1.0 INTRODUCTION**

Breast cancer is a major health challenge in Malaysia, and the incidence rate is rapidly increasing. Statistics shown the breast cancer is the most common cause of death from cancer in women worldwide and also among women in Malaysia. According to the World Health Organization (WHO) 70% of cancer deaths in 2005 occurred in low- and middle-income countries. In addition, report from WHO (2010), the rising of incidence in developing countries is worsened by the fact that majority of the cases present in the late stage. Rising breast cancer incidence in developing countries is due to urbanization, ageing population and lifestyle changes.

In Malaysia there are many programs had been implemented to promote a breast health among women. However the situation is still worrying whereby the number of advanced breast cancer is still higher. According to the Third National Cancer Registry Report 2008, the peak incidence for breast cancer is between the age of 50 to 60 years old.

Early detection and treatment is a major prognostic factor in breast cancer. If the breast cancer is diagnosed early is curable and only give a minor effects on the quality of life (Merakou, 2013). Unfortunately in Malaysia, generally women presents at later stages of breast cancer compared to other parts in the developing countries, which 30-40% present at stage 3 to stage 4 involving mostly the Malays resulting poorer outcome compared to other ethnicities (Yip and Ibrahim, 2006).

Recommendation for screening to all women above the age of 20 years up to 39 years, they are encouraged to undergo clinical breast examination by trained health care providers every three years while for those above the age of 40 years and those with high risks of getting breast cancer regardless of the age should have annual clinical breast examination (KKM, 2002).

Although health education efforts to educate women on breast health awareness including the awareness on the different screening modalities available, the incidence

of breast cancer and presentation at an advanced stage is still a problem in Malaysia (Dahlui, Ramli, & Bulgiba, 2011).

In breast cancer early detection plays an important role in reducing mortality rates and in improving the patient's prognosis. The recommended screening methods for early detection of this fatal disease are: mammography, clinical breast examination (CBE) and breast self-examination (BSE) (Montazeri et al., 2008). Meanwhile the primary prevention for breast cancer, every woman needs to adequately inform about the risk factors and strategies for reduction in breast cancer which included women who has a family history. Study found that, those in communities with low level of knowledge and awareness often present at a late stage. This is also discussed by Coughlin & Ekwume (2009) in their finding, about 75% of women in developing countries present with in clinical stages III and IV.

There are study found that, health education and communication are the effective way to promote health seeking in behavioural changes in breast cancer prevention and screenings strategies (Dundar et. al., 2006). Unfortunately currently in Malaysia, health care workers in health clinics are no longer routinely teaching women on breast self-examination but are available if requested by the client (Maznah Dahlui, Ramli, & Bulgiba, 2011). Parsa & Kandiah (2008), also reported the situation in Malaysia, the breast cancer patient usually diagnosed in late stages due to the lack of educational program. Despite, female healthcare professionals have greater influence on women's positive perception of breast cancer and motivation to practice screening methods for early detection of the disease (Ibrahim & Odusanya, 2009).

Although breast cancer usually develops after age of 45 years old but, nowadays there are more young women are affected from breast cancer (Karayurt et. al., 2008). Study found breast cancer among young women is generally more aggressive resulting in lower survival rates. In this case, early detection is more important in order to increase the survival rates. To reduce breast cancer disease burden among women especially younger women, there is need to increase knowledge and awareness about the risks of breast cancer and benefits of early detection. Healthcare professionals plays an

important role to developed effective breast health care programs to help young women acquired a good health habits (Karayurt et. al., 2008).

The prevalence rate in breast cancer now reached an epidemic level, and one of the main reasons of onset of breast cancer is poor in preventive beliefs and behaviour of women towards breast cancer prevention. In Malaysia there are limited studies about the effectiveness of health education on breast cancer prevention. The aim of the study is to assess the effectiveness of a health education intervention on women's beliefs and behaviour concerning breast cancer prevention. Researcher hope that by understanding the Malaysian women's beliefs related to breast cancer screening behaviours will help physicians and other healthcare professionals implement health education programmes with the potential to increase screening practices.

## **2.0 LITERATURE REVIEW**

Several studies have been conducted to assess the effectiveness of health education intervention for breast screening behaviour among women to examine their beliefs and behaviour towards of breast cancer prevention (Merakou, et al., 2013; Rezaeain, et al., 2014; Wang, et al., 2012; Secginli & Nahcivan, 2011; Farma, et al., 2014). Most of the studies are used HBM scale to evaluate the beliefs and behaviour of women's on prevention of breast cancer. The Champion Health Beliefs Model Scale (CHBMS) is a right tool in order to evaluate women's beliefs related to breast cancer, BSE, and mammography. It could be easily used by nurses and other healthcare providers to determine the beliefs in need of interventions.

Study by Parsa & Kandiah (2008), suggested that awareness on breast cancer screening among women in Malaysia need to improve. Another study by Chee, et al., (2003), breast screening practice rate among women in Malaysia were low, their suggested the socio-demographic significantly associated as a barriers towards screening practices. Similar study reported that the low rate of BSE among Iranian women was related to socio-economic status, lower levels of education, and lack of breast cancer knowledge

and how to conduct BSE (Tavafian, et. al., 2009). Merakou, et. al. (2013), besides women's beliefs and attitude, their social network experience and accessibility of mammography services also are the major barriers for women to practice breast screening behaviour.

Study by Khaee-Pool, et al. (2014), suggested the most important parameters to encourage women to practice breast cancer preventive behaviours are increased the awareness, developed a positive attitudes, strengthened the motivational factors, and reduced the barriers. The programmes related to breast cancer prevention are necessary in order to create awareness in target group or among women.

### **3.0 MATERIALS AND METHODS**

The research design for this study is quasi experimental, which involved two groups of participants the intervention and control groups. Study participation were women aged more than 18 years old who had follow up at the health clinic (KKBSP) and who are willing to involve in this study.

#### **3.1 Instrument**

Data was collected by using a questionnaire, which was adopted from Champion's Health Belief Model Constructs Instrument (1999). The questionnaire was developed to measure Health Believe Model (HBM) related to breast cancer screening behaviors. The questionnaire has three sections Part A, Part B, and Part C. Part A the demographic data. Part B contains 42-items instrument related to women's beliefs towards breast cancer prevention. Part C contains 15-items instrument related to barriers towards breast cancer prevention.

A five-point Likert Scale was used to measure responses. Strongly agree was scored as five and strongly disagree as one. The following is a brief description of the scales used to measure the variables of interest.

- Susceptibility: A five-item scale was used to assess perceived susceptibility of breast cancer.
- Severity: A seven-item scale was used to assess perceived seriousness of breast cancer.
- Benefits: A ten-item scale was used to assess perceived benefits of performing BSE. Five items were adapted from the BSE model to a self-report questionnaire to assess perceived benefits of performing clinical breast examination (CBE).
- Cues to action: An eight-item scale was used to assess motivation of living a healthy lifestyle.
- Self-Efficacy: Twelve items were added to a self-report questionnaire to assess self-efficacy for performing BSE and getting CBE.
- Barriers: A fifteen-item scale was used to assess perceived barriers of performing BSE. Eight items were adapted from the BSE model to a self-report questionnaire to assess perceived barriers of performing CBE.

The HBM subscales which used in this study were the perceived susceptibility (5 items), perceived severity (7 items), perceived benefits (10 items), cues to action (8 items), self-efficacy (12 items), and perceived barriers (15 items). All the items had five response choices ranging strongly disagree = 1 to strongly agree = 5. Higher scores showed more agreement with health beliefs except for barriers. Each subscale was calculated separately, and therefore, six different scores were obtained for each subject.

### **3.2 Setting and sample**

The sample for this study was convenience samples of 120 women aged more than 18 years old who had follow up and seek a treatment as an outpatient at KKBSB. A sample size for each group randomly assigned to 60 women in control group and 60 women in intervention. The first five respondents were group in intervention group and the second five respondents were group in control group until reached 120 respondents.

Each respondent completed the pre self-administered questionnaire for both group. While the intervention group were received health education intervention after completed pre questionnaire. Post 1 questionnaire was collected from intervention group immediately after health education program. Post 2 questionnaires completed after two weeks of educational program, and researcher received from respondent by mailing. Meanwhile, respondents from control group were completed the post 1 questionnaire after two weeks.

Both groups received a reminder phone call by researcher two days before mailing. The questionnaire was placed into sealed envelopes and the data was collected immediately after respondent completed the questionnaire. However the return rate was 80.8% which the sample recruited for the intervention group was 46 respondents and for control group was 51 respondents. The rest was rejected due to uncompleted form.

### **3.3 Inclusion and exclusion criteria**

The inclusion criteria were women age more than 18 years old, no history of breast problem and breast cancer, and able to understand Bahasa Malaysia or English who agreed to participate with the study. Exclusion criteria were woman with mental disability.

### **3.4 Ethical considerations**

This study was registered to the National Medical Research Register (NMRR) (NMMR-14-925-21980), which is under MOH National Institute of Health (NIH), as the study was conducted in a Government Clinic. The researcher invited participants and explained the purpose of the study. The researcher also explained the participation is voluntary, the anonymity and confidentiality would be maintained. The reassurances of freedom to withdraw from the study at any time without compromising their medical care were provided.



### **3.5 Data analysis**

The results of the study were analyzed using descriptive and inferential statistics. Data was obtained from the study tools was categorized, tabulated, analyze and data entry was performed using the SPSS software version 21. Descriptive statistics such as frequencies, means, and standard deviations were utilized to describe the demographic variables of age, frequencies and percentage done for income, education, ethnicity, and family history of breast cancer.

Major analysis used inferential statistics which is t-test. Paired sample t-tests (repeated measures) were used to compare two sets of data (pre-intervention and post-intervention). Spearman's rho was used to determine relationship between women beliefs and demographic data and relationship between barriers and demographic data. A significance level value was consider when  $p < 0.05$ .

## **4.0 RESULTS**

The aim of this study was to assess the effectiveness of a health education intervention on women's beliefs and behavior concerning breast cancer prevention. The sample for this study was convenience samples of 120 women aged more than 18 years old who had no personal history of breast cancer are participated in this study.

### **4.1 Demographic data**

In the demographic data shows age, education, marital status, income, race, and family history of breast cancer. The ages of the women ranged from 20 to 60 years old ( $M = 38.03$ ,  $SD = 11.68$ ). The background of education for respondents was 1.7% had primary education, 45 % had secondary education, and 53.3% had tertiary education as college and university. The marital status for the respondents was 15% single and 85% married. Individual income per month ranged from <RM 1500 was 66.7%, RM 1501 – RM 5000 was 27.5%, and RM 5001 – RM 10000 was 5.8%. The ethnic group for this

study was 100% from Malays. The respondent who has a family history of breast cancer was 15% and 85% no history of family history of breast cancer.

The relationship between women's belief and barriers with demographic data in intervention group two weeks after health education intervention (post 2) was analyzed using Spearman rho. The result was show in table 1.

Table 1: Relationship between women's beliefs and barriers with demographic data (n=46).

		Perceived susceptibility	Perceived severity	Perceived benefit	Cues to action	Self-efficacy	Perceived barriers
<b>Age</b>	<i>r</i>	-0.16	0.02	-0.08	-0.18	0.17	0.24
	<i>P</i> value	0.269	0.853	0.592	0.224	0.237	0.100
<b>Education</b>	<i>r</i>	0.16	0.05	0.04	0.28	-0.12	-0.26
	<i>P</i> value	0.286	0.737	0.787	0.060	0.416	0.074
<b>Marital status</b>	<i>r</i>	-0.18	0.08	-0.14	-0.19	-0.06	0.000
	<i>P</i> value	0.229	0.597	0.342	0.184	0.690	1.000
<b>Income</b>	<i>r</i>	-0.09	-0.15	-0.23	0.07	<b>-0.43**</b>	-0.12
	<i>P</i> value	0.537	0.312	0.112	0.634	<b>0.002</b>	0.400
<b>Family history of breast</b>	<i>r</i>	0.05	-0.05	-0.19	<b>-0.36*</b>	-0.04	0.23
	<i>P</i> value	0.729	0.698	0.192	<b>0.014</b>	0.783	0.122

\*Correlation significant at the level 0.05 level (2-tailed)

\*\*Correlation significant at the level 0.01 level (2-tailed)

The Spearman rho was conducted to know the relationship between women's beliefs and barriers with demographic data two weeks after health education intervention (post 2) in intervention group. The value reported there is a moderate significant relationship between income with self-efficacy ( $r=-0.43$ ,  $p=0.002$ ). There are a moderate significant relationship between family history of breast cancer with cues to action ( $r=-0.36$ ,  $p=0.014$ ).

The main purpose of this study is to evaluate the effectiveness of health education intervention on women's beliefs and behavior concerning breast cancer prevention. A paired samples t-test was conducted with the variables being comparison between the mean scores on the baseline (pre- test) and the mean scores on the follow up (post-test) for each variable to measure beliefs and behaviors. The comparison was made between pre-test with post-test for intervention group and control group before and after health education intervention to evaluate the effectiveness of health education intervention. The results of the paired sample t-test illustrate in table 2.

Table 2: Comparison the mean scores of CHBMS subscales by time and group.

	Time	Control group (n=51)			Intervention group (n=46)		
		mean	SD	<i>P</i> value	mean	SD	<i>P</i> value
Perceived susceptibility	Baseline	14.57	3.65	0.791	12.80	3.73	<b>&lt;0.001</b>
	Follow up	14.65	3.58		18.76	3.66	
Perceived severity	Baseline	26.47	4.96	0.146	25.26	5.95	<b>&lt;0.001</b>
	Follow up	25.76	5.10		29.65	4.44	
Perceived benefit	Baseline	42.04	4.86	0.700	42.54	5.00	0.314
	Follow up	42.25	5.30		43.43	4.39	
Cues to action	Baseline	29.73	4.42	0.275	30.20	4.56	<b>0.031</b>
	Follow up	29.31	4.46		31.91	4.09	
Self-efficacy	Baseline	38.67	7.30	0.415	37.15	7.81	<b>&lt;0.001</b>
	Follow up	39.29	7.79		44.76	6.41	
Perceived barriers	Baseline	41.14	8.52	0.981	37.20	9.37	<b>0.002</b>
	Follow up	41.12	8.73		32.35	9.79	

The results indicated that the mean scores for each domains significantly increasing in intervention group such as perceived susceptibility from baseline (pre- test) (M=12.80, SD= 3.73) to follow up (post-test) (M=18.76, SD= 3.66); perceived severity from baseline (pre- test) (M=25.26, SD= 5.95) to follow up (post-test) (M=29.65, SD=4.44); cues to action from baseline (pre- test) (M=30.20, SD= 4.56) to follow up (post-test) (M=31.91, SD=4.09); and self-efficacy from baseline (pre- test) (M=37.15, SD= 7.81) to follow up (post-test (M=44.76, SD=6.41). Meanwhile, there was a statistically significant decrease in perceived barriers, from baseline (pre- test) (M=37.20, SD= 9.37) to follow up (post-test (M=32.35, SD=9.79).

This can indicated that the health education intervention was effective to changed women's beliefs and behavior concerning breast cancer prevention.

## **5.0 DISCUSSION**

The results of this study support the literature that found the differences in women's beliefs and barriers concerning breast cancer prevention before and after health education intervention (Merakou et al., 2013; Rezaeian et al., 2014; Secginli & Nahcivan, 2011). The perception that one is highly susceptible is a positive factor of intention influencing women's decision on performing BSE or others breast screening such as CBE or mammography (Bastien, 2005; Duman, et al., 2013; Parsa, 2008). In this study, it seems that women felt much more susceptible after the intervention ( $p < 0.001$ ) compared to the baseline. Other researchers support that perceived susceptibility can modified after health education interventions (Wang, et al., 2012; Secginli & Nahcivan, 2011; Merakou, et al., 2011).

This study revealed that there are a relationship between women's beliefs and barriers with demographic data after health education intervention. In consistent with this study, previous research suggest that the breast screening practices among women was related to age, level of education, marital status, socioeconomic, and family history of

breast cancer (Donnelly, et al., 2013; Al-Naggar, et al., 2011; Shaheen, et al., 2011; Ahmadian & Abu Samah, 2012; Charkazi, et al., 2013; Sharaa, 2013). However, there are disparate findings concerning factors that affecting women's beliefs and barriers on breast cancer prevention (Tavafian, et al., 2009; Parsa & Kandiah, 2010; Duman, et al., 2013).

Available information is limited about the health beliefs and barriers within socio-demographic factors. There are also poor in understanding about the amount of these factor are affecting the health beliefs and barriers. Similar with this study, there are a relationship between women's beliefs and barriers with demographic data after health education intervention. It appears that many barriers to breast cancer screening are related to socio-demographic such as age, level of education, marital status, income, and family history of breast cancer (Parsa, et al., 2006; Edgar, et al., 2013).

This study revealed that the health education intervention was effective on women's beliefs and behavior concerning breast cancer prevention. In consistent with this study, the previous research findings was health education intervention was effective in order to improve women's beliefs and behaviors towards breast cancer prevention (Merakou, et al., 2013; Rezaeian, et al., 2014; Secginli & Nahcivan, 2011; Farma, et. al., 2014; Parsa, 2008). There are many studies have reported that the appropriate educational interventions can promote women knowledge, changed their attitude and health beliefs about breast cancer prevention (Parsa, et al., 2006; Sharaa, 2013; Chee, et al., 2003).

Reviewed by Edgar, et al. (2013), it is essential to increased women's knowledge on breast cancer and risk factor, therefore health care provider should provide reassurance to women on the benefits of early detection. The respondents in this study indicate an increase in perceived susceptible and lower in barriers after health education intervention, is a positive factor of intention influencing women's decision on performing breast screening. This study support that the health education intervention had improved women's health beliefs and health behavior towards breast cancer prevention.

## **6.0 RECOMMENDATION FOR FUTURE RESEARCH**

In this study, revealed the significant relationship between socio-demographic with women's beliefs and behavior towards breast cancer prevention. The importance of socio-demographic context to direct impact of behavior has been pointed out. Therefore, more and thorough studies are needed to support these present findings.

## **7.0 CONCLUSION**

This study revealed that the health education intervention was effective on women's beliefs and behavior concerning breast cancer prevention. The health education intervention is really needed in order to influence and modified a women's beliefs and behaviors towards breast cancer prevention. The results can assess by higher levels of perceived susceptibility and by decreasing the levels of barriers to breast cancer prevention. The health education plays a major role in order to promote preventive behavior among women and it is necessary to plan the appropriate health education to strengthen the program regarding breast cancer prevention and breast screening.

Women need to be informed about breast cancer risk factors before they can be expected to make lifestyle modifications. Nurses should provide women with proper health education regarding breast cancer to create awareness and knowledge among women. This information offers insight into how women develop their risk perceptions and provides a basis for educating women about breast cancer and the benefits of healthy lifestyle practices in order to prevent breast cancer. Nurses have to provide information and education clearly and precisely to women who are interested in knowing how to conduct breast self-examination (BSE), clinical breast examination (CBE) and mammography.



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