EFFECTIVENESS OF A BEHAVIORAL CHANGE PROGRAM FOR PROMOTING BREAST SELF-EXAMINATION IN PHICHIT PROVINCE, THAILAND

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Abstract. The Ministry of Public Health, Thailand recommends all Thai women aged 35-59 years perform a breast self-examination monthly. The researchers aimed to determine the efficacy of a behavioral change program, which would increase the number of women performing breast self-examination and increase the frequency they perform this exam in order to improve compliance with this recommendation. The population sample were women aged 35-59 years living in the Banna Sub-district, Wachirabarami District, Phichit Province, Thailand. A purposive sampling technique was used to select the study subjects from these women who had not performed a breast cancer self-screening before data collection. They were divided into two groups: an experimental group and control group of 68 subjects per group. The experimental group and control group were recruited from two different villages. The intervention program consisted of teaching the importance of breast self-examination and how to perform it. The control group received only routine health services from health care providers during the study and were not given any education regarding breast cancer or how to perform breast cancer self-examination. Study subjects, both in the intervention and in the control group, filled out a questionnaire at baseline and 3 and 6 months after intervention. The questionnaire asked about demographics, perceptions of susceptibility to breast cancer, severity to breast cancer, self-efficacy in performing a breast self-examination and the outcomes of breast self-examination. Questionnaire data were quantified and compared between the intervention and control groups. Frequencies, percentages, means and standard deviations were calculated. The independent *t*-test, paired *t*-test and chi-square test were used to make comparisons. At baseline, there were no significant differences between the groups in perceived susceptibility to breast cancer, perceived severity of breast cancer, self-efficacy in performing breast self-examination and the perceived outcomes. After intervention, the intervention group improved in perceived susceptibility to breast cancer, perceived severity of breast cancer, self-efficacy in performing breast self-examination and the perceived outcomes from baseline and were significantly higher than the control group ($p< 0.001$). At 3 and 6 months post-intervention, significantly more subjects in the intervention group than the

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control group performed breast self-examination ($p< 0.001$). Our results show the intervention improved perceptions and self-exam rates among study subjects. Further studies among larger groups of subjects in the study population and in other populations are warranted.

Keywords: breast cancer, breast self-examination, behavioral change.

INTRODUCTION

Breast cancer is a serious cause of morbidity and mortality among Thai women. In the US, 232,670 new cases of breast cancer were reported in 2014 and 40,000 resulted in deaths (Siegel *et al*, 2014). The Bureau of Non-Communicable Diseases, Department of Disease Control, Ministry of Public Health, Thailand reported the mortality rates due to breast cancer in 2012, 2013 and 2014 were 4.54, 5.07, and 5.35 per 100,000 women, respectively (Bureau of Non-Communicable Diseases, 2016).

The Ministry of Public Health for Thailand recommends all Thai women aged 35-59 years perform a breast self-examination monthly. This is because the mammogram is expensive. Therefore, breast self-examination is important screening tools for Thai women. (Department of Health, 2015). A survey of the proportions of women performing breast self-examination in Wachirabarami District, Phichit Province during 2012, 2013, 2014 and 2015 were 18%, 12%, 14% and 16%, respectively (Jaikham, 2015). Since the main form of screening for breast cancer in Thailand is breast self-examination, those percentages need to be increase greatly. Therefore, we aimed to determine the efficacy of a breast cancer education and breast self-examination promotion program among women in this study district in order to improve education and breast self-examination rates.

MATERIALS AND METHODS

Study design and population

This study was a quasi-experimental, two-group, pre-test/post-test study design. The study population were women aged 35-59 years living in the Banna Subdistrict, Wachirabarami District, Phichit Province, Thailand. Study subjects were selected from women who had never performed a breast cancer self-examination before. Study subjects were divided into two groups: an intervention group and a control group. Sixty-eight subjects were chosen for each group using the formula for testing two independent proportions by Bernard (2000). The subjects for the intervention and control groups were recruited from different villages. Inclusion criteria were women aged 35-59 years who had not performed a breast self-examination during the 3 months period prior to data collection and whom were willing to participate in the study. Exclusion criteria were women who had moved to other areas during the study period. Power was set up at 80% and the alpha at $p<0.05$. The intervention program provided information on how to perform a breast self-examination. It also provided breast cancer information and educational brochures. The control group received only the routine health services from health care providers during the study and were not given any education regarding breast cancer or how to perform breast cancer examination.

Data collection

This study was carried out between September 2016 and June 2017. Data were collected from intervention and control groups before and after intervention. Breast cancer self-examination behavior was reported in both groups 3 and 6 months after the intervention. The intervention consisted of: 1) a behavioral change program to encourage breast self-examination. This program provided information about the morbidity and mortality of breast cancer, using video lectures focusing on perceived susceptibility to and perceived severity of breast cancer. Subjects were instructed on how to perform a breast self-exam in order to improve perceived breast self-exam self-efficacy. Peers and health personnel evaluated the effectiveness of breast cancer screening, emphasizing warning signs.

The study instrument consisted of: a questionnaire asking about demographics and subjects relevant to breast cancer. The questionnaire answers consisted of a 5-point Likert scale (Wuensch, 2009) with answers ranging from 1 (strongly disagree) to 5 (strongly agree). The self-evaluation part of the exam had 2 possible answers with a score of 1 point for performing a breast self-exam and 0 points for not doing a breast self-exam. The questionnaire was reviewed by 5 experts and then tested for understandability among 30 women aged 35-39 years from another sub-district. Chronbach's alpha coefficient was used to test reliability, which ranged between 0.76-0.92 (Chronbach, 1951; Tavakol and Dennick, 2011). Answers regarding perceived susceptibility to breast cancer, severity of breast cancer, self-efficacy in performing a breast self-exam, and the outcomes of breast self-examination were collected and evaluated at the end of the intervention at 3 and 6 months. Intervention subjects were evaluated for their ability to perform a breast self-exam at 3 and 6 months, but control subjects were not. The control group received only the routine health services from health care providers during the study and were not giving any education regarding breast cancer and how to perform a breast self-exam.

Statistical analyses

Data were analyzed using the paired *t*-test to compare four specific perceptions in the intervention group and control group before and after intervention. The various perceptions of subjects in the intervention and control groups were compared using the independent *t*-test. Breast self-exam behavior in the intervention and control groups were performed using the chi-square test. Statistical significance was set at $p<0.05$.

Ethical considerations

The Ethics Committee, Naresuan University Review Board (290/2557) approved this study. All study subjects gave written informed consent prior to participation in the study.

RESULTS

Forty-eight point six percent and 49.8% of study subjects in the intervention and control groups were aged 40-49 years, and 28.7% and 30.3% were aged 50-59 years, respectively. Eighty-seven point five percent of study subjects in the intervention and 88.9% of the control group were married, respectively. Sixty-five point six percent and 64.8% of study subjects in the intervention and control groups had an elementary education level, respectively. Seventy-six point four percent of study subjects in the intervention group and 77.2% of the control group were agriculture workers. Fifty-six point three percent and 55.8% of subjects in the

intervention and control groups had a household income > USD 1,715/year, respectively. Seventy-two percent and 73.7% of subjects in the intervention and control groups had≥2 children, respectively. None of the above statistics were significantly difference between the intervention and and control groups.

Prior to intervention, there were no significant differences between the intervention and control groups for the mean scores of perceived susceptibility to breast cancer, perceived severity of breast cancer, perceived self-efficacy in performing a breast self-exam and the perceived outcome to performing breast self-examinations.

After the intervention, the intervention group had a significantly higher perceived susceptibility to breast cancer, higher perceived severity of breast cancer, higher perceived self-efficacy in performing breast self-exam and higher perceived outcome for breast self-exam than before the intervention (p<0.001). However, there were no significant differences in any of these perceptions in the control group. (Table 1).

After the intervention, the intervention group had significantly higher values for perceived susceptibility to breast cancer, perceived severity of breast cancer, perceived self-efficacy in performing a breast self-exam and the perceived outcome of performing breast self-exam (p<0.001) than the control group (Table 2).

In the intervention group 3 and 6 months after the intervention, 92.6% and 88.2% of subjects were still performing breast self-exam once monthly versus 7.3% and 4.4% among control subjects, respectively (p<0.001).

DISCUSSION

Among our subjects, those who perceived greater risk performed breast self-examination more regularly, similar to the

Table 1
A comparison of perceptions between subjects in the intervention and control groups before and after intervention.

Group	Mean scores		p-value
	Before	After	
Intervention group			
Perceived susceptibility of breast cancer	2.84	3.73	0.001
Perceived severity of breast cancer	3.08	3.81	0.001
Perceived self-efficacy in practice	2.64	4.13	0.001
Perceived outcome of self-practice	2.89	3.79	0.001
Control group			
Perceived susceptibility of breast cancer	2.80	2.84	>0.05
Perceived severity of breast cancer	3.00	3.09	>0.05
Perceived self-efficacy in practice	2.57	2.52	>0.05
Perceived outcome of self-practice	2.90	3.00	>0.05

Table 2
A comparison of perceptions between the intervention and control groups after intervention

Perceptions	Mean scores		*p*-value
	Intervention group	Control group	
Perceived susceptibility for breast caner	3.73	2.84	0.001
Perceived severity of breast cancer	3.81	3.09	0.001
Perceived self-efficacy in practice	4.13	2.52	0.001
Perceived outcome of self-practice	3.79	3.00	0.001

finding of a previous study (Rogers and Prentice - Dunn, 1997). The result is also consistent to a study of a media-led education intervention conducted in female Vietnamese which found that after using a media-led education intervention the odds ratios for the intervention effect were statistically significant for having heard of general checkup, Paptest, and clinical breast examination (Jenkins *et al*, 1999). Similarly, a study result of media campaign among Chinese women using television, radio, and newspaper showed that after intervention the intervention group had 2.25 times greater knowledge how to perform breast self-exam than those of the control group. Moreover, the intervention group reported that they performed breast self-exam within the past month 3.12 times, having a clinical breast exam 2.98 times, accessing to receive mammogram 1.97 times higher than those of the control group (Zhang *et al*, 2007). A study of peer education intervention among women in Eastern Turkey found that after intervention women has statistically significant increase in knowledge, beliefs and practices in breast cancer screening (Gözüm *et al*, 2010). Additionally, the study of education based on health belief model for screening behavior in high risk women for breast cancer in Tehran, Iran indicated that the intervention group had higher mean scores in perceived susceptibility and perceived seriousness of breasts cancer, self-efficacy, and self-screening practices than the baseline. However, the mean scores of perceived treat and usefulness of breast self-examination was not different (Hajian *et al*, 2011). The above results from the previous studies reveal that studying in behavioral change for breast cancer screening among women were performed in various patterns in order to increase knowledge, attitude, and health perceptions.

The results of this study show the behavioral change program improved perceptions and practices regarding breast self-examination. This program should be studied on larger populations in other settings to determine if this efficacy can be repeated.

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