The Factors Influencing the Compliance of Breast Self-Examination of Middle-Aged Womem

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Purpose. This cross-sectional survey was conducted to described the compliance of Breast Self-Examination of middle-aged women using a convenient sample, and to examine relationships between the compliance of BSE and Health Beliefs, and the influencing factors on the compliance of BSE.

Methods. The subjects were 373 literate volunteers who were from 41 to 60 years of age who visited 6 public health centers. From June 7, 2004 to August 20, 2004, data were collected by 5 research assistants using a self-report questionnaire. The questionnaire was used to obtain information on the general characteristics, knowledge, health beliefs, and compliance of BSE.

Results. The findings of this study suggested that there were significant differences in the scores of the perceived susceptibility and severity between compliers and non-compliers of the BSE. BSE compliance was significantly correlated with knowledge, perceived susceptibility, and perceived severity. The most powerful predictor of BSE compliance was the perceived susceptibility. The perceived susceptibility, the perceived severity, the knowledge and educational level accounted for 41.8% of the variance in middle aged women's BSE compliance.

Conclusion. Increase in knowledge about breast cancer, with a concomitant increase in both perceived susceptibility and perceived severity could produce a subtle cue or motivating force sufficient to affect a behavior change. Further research is needed to examine the qualitative difference between BSE and other early detection behaviors.

Key Words : Breast Self-Examination, Health Belief, Middle-Aged Womem

INTRODUCTION

Breast cancer is a highly feared disease since it poses a threat to life. Breast cancer can involve such disfigurement that it is a potential threat to a woman's image of herself. The incidence of breast cancer is the highest in Korea females (Ministry of Health and Welfare, 2002). Breast cancer may occur in any age after puberty but mostly among women of middle age. The Korean Cancer Society (2002) predicted that approximately 68 out of 100,000 in 40-year-old women, 58 in 50-year-old women and 33.5 in 60-year-old women would be diagnosis with breast cancer.

The Korean Cancer Society (2002) recommends the monthly practice of Breast Self-Examination (BSE) by women 30 years and older as a routine and sound health habit. The BSE is an effective method of detecting pathological change in the breast. Alcoe and McDermot (1985) indicated that 85% to 95% of lumps of the

breast were discovered by women who performed the BSE. Their data also indicated that tumors as small as 0.5 cm to 2.0 cm were found via BSE; while most tumors which were found in a clinical setting were larger than 2.9 cm. Smith (1993) also found that lumps in the breast were discovered more frequently by women performing the BSE than by their physicians.

In the case of early detection of breast cancer, the BSE is a voluntary behavior designed to increase the possibility of detecting changes in the breast while these changes are still amenable to treatment (Carstenson & O' Grady, 1989). Participation in BSE are specific preventive behaviors aimed at the early detection of breast cancer. According to the Health Belief Model (HBM), a woman's readiness to perform BSE occurs as a result of her perceived susceptibility to breast cancer and perceived seriousness of the consequences of breast cancer, in addition to her perceptions of benefits and barriers to BSE. The perceived susceptibility to breast cancer cannot be lowered, but the perceived severity of the consequences of this disease may be decreased. Consequently, a woman assesses the benefits of BSE, and the feasibility and effectiveness of BSE in reducing the severity of potential breast cancer. The benefits are considered concurrently with the perceived barriers to performance, which may be psychological, emotional, or both. Merely knowing the benefits of the BSE does not predict that women will comply with a monthly BSE. Other variables appear to influence compliance with the BSE. Such factors as knowledge about a disease, the perceived susceptibility, perceived severity, perceived benefits, and perceived barriers influence the compliance with a preventive health behavior (Rosenstock, 1974).

This investigation intend that the health beliefs will be used to examine the preventive behavior of BSE in middle-aged women. There are more researchers paying attention to the BSE as preventive behavior, however, little is know about BSE behavior of middle-aged women using the health beliefs.

Therefore, the purpose of this study was to investigate preventive health behavior related to BSE of middle-aged women. The specific aims of this study were: 1) to determine the differences in the BSE compliance according to characteristics; 2) to determine the differences in the Health Beliefs between compliers and non-compliers of the BSE performance; 3) to identify the relationship between the BSE compliance and Health Beliefs; and 4) to examine the factors influencing the compliance of

BSE.

LITERATURE REVIEW

The theoretical framework for this study is based on the Health Belief Model (Rosenstock, 1974). The explanatory principles embodied in the model provided the framework for predicting what variables were related to one another and the nature of the relationship. The HBM has been widely used for describing health behavior. It was formulated to explain the widespread failure of people to accept low-cost or free health screening and detection measures for asymptomatic disease. The major components of the model include four concepts: perceived susceptibility, perceived severity, perceived benefit, and perceived barrier. The theory postulates that preventive health behaviors occurs as a result of a combination of these four attitudes (Rosenstock, 1974). The following four conceptual definitions developed by Champion(1984) were used for the purpose of this study: Perceived susceptibility refers to subjective risks of contacting a specific condition within a specified time period. Perceived severity is concerned with perceived degree of personal threat related to a specific condition. Threat is defined as perceived harmful consequences of the condition in relation to altering personal physical health, role and social status, and ability to complete desired tasks. Perceived benefit focuses on belief regarding the effectiveness of a specific new behavior or alternate behavior in preventing or detecting disease, maintaining health, and curing or lessening undesirable consequences of a diseased state. Perceived barrier is the negative components of an anticipated behavior, which would be undertaken to prevent or detect disease, maintain health, and cure or lessen undesirable consequences of a disease state. The negative aspects might involve problems such as monetary consequences, pain, changing habits, inconvenience, embarrassment, side effects, or need for new patterns of behavior.

Champion(1984) chose compliance of BSE as the dependent variable in developing scales to test the Health Belief Model. Constructs related to the Health Belief Model were used as independent variables. Five to 12 items were developed to measure susceptibility, seriousness, benefits, barriers, and health motivation. A convenience sample of 640 women was selected from the membership of organizations and businesses throughout a large metropolitan area; the sample was skewed to-

ward a higher level of education. Susceptibility(21% of the variance) and barriers(5%) were the only constructs which made a significant contribution in explaining the variance in BSE frequency. Women who had high scores on susceptibility and saw few barriers reported greater frequency of BSE. Stillman(1987) used the Health Belief Model to investigate the nature of women's health beliefs about breast cancer and BSE and the extent of BSE practice. Findings showed that there was a statistically significant relationship between women who held high belief in perceived susceptibility and their BSE practice.

The value of BSE is evident that BSE practice would detect an earlier stage of breast cancer at the time of diagnosis(Scanlon & Strax, 2000). Their findings support the value of BSE in the early detection of breast cancer. Morrison(1991) found a positive, significant relationship(p<0.001) between the periodic practice of BSE and the diagnosis of breast cancer before nodal involvement, even after controlling for a wide variety of variables such as education, age, marital, status, and family history. The analysis of data from 996 newly diagnosis of breast cancer patients revealed that regular practice of BSE was associated with a one-third reduction in the likelihood of diagnosis of disease with positive nodes. When Smith(1993) interviewed 230 breast cancer patients from a population-based cancer registry in Washington state, she found that patients practicing BSE were significantly more likely to find their own tumors than patients not practicing BSE (80% vs 67%, p=0.047). Smith(1993) concluded that patients with breast cancer who practice BSE are more likely to find their tumors than patients who do not practice BSE. Therefore conclusion, the nurses need to identify which variables in Health Beliefs can be influenced the compliance of BSE, and the identified variables of Health Beliefs will contribute to practice BSE actually.

METHODS

Design

This study is a cross-sectional descriptive survey, which identifies the influencing factors to the compliance of BSE in middle-aged women.

Subjects and data collection

This study was conducted using a convenient sampling method from 6 public health centers in Daegu city.

The subjects were 373 literate volunteers who were from 41 to 60 years of age who visited 6 public health centers. Total sample of 410 middle aged women aged 41 to 60 years was obtained for the study, of which 373 women completed the questionnaires used for the analysis. They were provided with informed consent form as prescribed by the committee as human subjects. From June 7, 2004 to August 20, 2004, data were collected by five research assistants using a self-report questionnaire. The research assistants were undergraduate nursing students in 'D' university. They were educated for data collection by data collection protocol.

Instruments
Knowledge

Knowledge was measured by Howe's scale of the knowledge of breast cancer and BSE(Howe, 1981). It consists of 15 items with three dimensions to assess one's factual knowledge of breast cancer (7 items), risk factors associated with the development of breast cancer (5 items), and knowledge concerning the performance of the BSE (3 items). Each items score range were 0 to 1, double points scale and total score range was 0 to 15. The higher score of this scale means the higher knowledge of breast cancer and BSE in subject. The internal consistency reliability, Cronbach's alpha was .83.

Health Belief

Health beliefs were measured by Korean version(Choi, 2000) of the Stillman's Health Belief Model Construct Scale(Stillman, 1987). It consists of 20 items with four dimensions to assess one's perceived susceptibility to breast cancer (5 items), perceived severity of breast cancer (5 items), perceived benefit of BSE (5 items), and perceived barrier of performing BSE (5 items). Each items score range were 1 to 3, three points Likert scale and subtotal score range of subscale was 1 to 15. The higher score of perceived susceptibility, perceived severity and perceived benefit mean the higher health belief of the performance of the BSE. But The higher score of perceived barrier mean the lower barriers of the performance of the BSE because of calculating on the reverse coding in the subscale of the perceived barrier. The internal consistency reliability, Cronbach's alpha was .78.

Compliance of BSE

The compliance of BSE was measured with the one item question "Have you performed Breast Self-Examination at least once during the past six months?"

If the response of "Yes" or "No" was checked as the response, the subject was placed in the complier or the non-complier category. The reasons limiting the duration of BSE performance within six months are that 1) the women who have gotten the experience of BSE at least once during six months intend to have the regular compliance of BSE after health education of BSE(Budden, 1998), and 2) it tries to minimize the effect of the recall bias.

Data analysis

Data was analyzed using SPSS program. The general variables were analyzed using descriptive statistics. Cronbach's alpha was used to verify the reliability and internal consistency of the instruments. The difference in

BSE compliance according to general characteristics were analyzed by chi-square test. The difference in health beliefs between compliers and non-compliers of BSE performance were analyzed by t-test. Pearson Product Moment Correlation analyzed the relationship between BSE compliance and health beliefs. The linear relationship between BSE compliance and these related factors were examined using Stepwise Multiple Regression Analysis.

RESULTS

General Characteristics

The sample consisted of subjects 41 to 60 years of age, and the mean age was 52.1(SD=12.8). Most of the sub-

Table 1. The difference of BSE Compliance according to the General Characteristics   (n = 373)

Characteristics	BSE Complier (n = 116)	BSE Non-complier (n = 257)	x^2	p
	n (%)	n (%)		
Age (years)				
41~50	56 (34.6)	106 (65.4)	14.21	.082
51~60	60 (28.4)	151 (71.6)		
Marital state				
Single/Widowed	22 (35.5)	40 (64.5)	9.02	.004*
Married	84 (30.0)	196 (70.0)		
Separated / Divorced	10 (32.3)	21 (67.7)		
Educational level				
Elementary	3 (25.0)	9 (75.0)	6.44	.002**
Middle / High	81 (30.0)	189 (70.0)		
Undergraduate	32 (35.2)	59 (64.8)		
Employment status				
Yes	27 (16.8)	64 (83.2)	14.01	.342
No	89 (42.0)	193 (58.0)		
Religion				
Yes	72 (30.6)	163 (69.4)	2.84	.097
No	44 (31.9)	94 (68.1)		
Family income				
Upper	6 (33.3)	12 (66.7)	13.19	.041*
Middle	85 (31.4)	186 (68.6)		
Lower	25 (29.8)	59 (70.2)		

* p < .05, ** p < .01

Table 2. The differences in Health Beliefs between Compliers and Non-compliers of BSE Performance

Variables	BSE Complier (n = 116)	BSE Non-complier (n = 257)	t	p
	M (SD)	M (SD)		
Knowledge	10.25 (1.76)	8.10 (1.53)	-.74	.042*
Health Belief				
Susceptibility	10.55 (1.84)	8.95 (2.57)	-4.21	.003**
Severity	11.47 (2.66)	9.45 (3.21)	-.47	.009**
Benefit	12.25 (1.72)	11.16 (2.88)	.64	.624
Barrier	9.68 (2.89)	10.22 (2.69)	5.21	.714

* p < .05 , ** p < .01

jects were married (75.1%), educational level of middle/high school (72.4%), no employment (56.8%), religious belief (63.0%) and middle-class economic status (72.7%) (Table 1).

The differences of the BSE compliance according to the general characteristics

Thirty one % of the middle-aged women performed the BSE at least once during the last six months. The BSE compliance was statistically significant difference in accordance with their marital state (x^2=9.02, p<.01), educational level (x^2=6.44, p<.01), and income of family (x^2=13.19, p<.05). The degree of BSE compliance of women with single/widowed, higher educational status, and higher economic status were higher than that of women with married, lower educational status, and lower economic status (Table 1).

The differences in Health Beliefs between compliers and non-compliers of BSE performance

Among BSE compliers, the mean of knowledge was 10.25 (SD=1.76), the mean of susceptibility was 10.55 (SD=1.84), the mean of severity was 11.47 (SD=2.66), the mean of benefit was 12.25 (SD=1.72) and the mean of barrier was 10.22 (SD=2.69). On the other hand, among BSE non-complier, the mean of knowledge was 8.10 (SD=1.53), the mean of susceptibility was 8.95 (SD=2.57), the mean of severity was 9.45 (SD=3.21), the mean of benefit was 11.16 (SD=2.88) and the mean of barrier was 9.68 (SD=2.86).

The health beliefs between compliers and non-compli-

ers of BSE performance were statistically significant difference in accordance with knowledge (t=-.74, p<.05), susceptibility (t=-4.21, p<.01) and severity (t=-.47, p<.01). The mean of knowledge of compliers of BSE performance was higher than that of non-compliers. The mean of susceptibility of compliers of BSE performance was higher than that of non-compliers. The mean of severity of compliers of BSE performance was higher than that of non-compliers (Table 2).

The correlation between the BSE compliance and Health Beliefs

There were high positive correlations between the BSE compliance and perceived susceptibility (r=.461, p<.01), between the BSE compliance and perceived severity (r=.349, p<.01), between perceived susceptibility and perceived severity (r=.083, p<.05) (Table 3).

The factors influencing the compliance of BSE

A stepwise regression analysis was performed to determine factors that influence on the compliance of BSE. Excluding those parameters out of general characteristics which did not reach a significant level of .05, marital state, educational level, family income, and health belief variables were selected as independent variables, and compliance of BSE was set as the dependent variable in the analysis. Compared to the standardized regression coefficient, the perceived susceptibility was the best predisposing factor of the compliance of BSE, followed by the perceived severity, knowledge and educational level. This regression model was significant (p<.001), and the

Table 3. The Correlation between the Compliance of BSE and Health Beliefs   (n = 116)

	BSE Compliance	Susceptibility	Severity	Benefit	Barrier
BSE Compliance	1,000				
Susceptibility	.461(.006**)	1.000			
Severity	.349(.003**)	.483(.037*)	1.000		
Benefit	.239(.217)	.517(.241)	.062(.310)	1.000	
Barrier	-.498(.413)	-.320(.073)	-.169(.177)	-.363(.208)	1.000

* p<.05, ** p< .01

Table 4. Factors Influencing on the Compliance of BSE   (n = 116)

Variables	Beta	Cummurative R^2	F	p
Susceptibility	.721	.364	108.50	.000
Severity	.508	.389	65.05	.000
Knowledge	.162	.403	47.11	.000
Educational level	.170	.418	33.20	.000

variance of these four parameters in explaining the compliance of BSE was 41.8% (Table 4).

DISSCUSSION

Cancer ranks second only to heart disease as a killer of women. The breast is the most common site of cancer in women today in Korea, accounting for more than one quarter of all cancer cases(Ministry of Health and Welfare, 2003). BSE, if fully utilized and optimally performed, may be the most efficacious method for mass screening that presently exists(Foster, Costanza & Rathbun, 1990). It was found that women performing BSE were most likely to detect their own cancers, either by accident or during conscious self-examination (Newcomb et al., 1991).

The study found that the middle-aged women performed poorly BSE. This result is similar with that of Choi's study(2001) which said that the fulfillment rate of BSE in 540 women during six months was 34.8%. The BSE compliance of women with single/widowed, higher educational status and higher economic status in this study was higher than that of women with married, lower educational status and lower economic status. In a study of 842 subjects in the Cleveland area, Harris and Guten(1989) correlated age, income, race and educational level with preventive health behaviors. High income and educational level were positively correlated with performance of the BSE which is a preventive health behavior. According to Rogers, John & Michael(1992), older women, poorly educated women, and low-income women often refrain from annual medical examinations that include thorough palpation of the breasts in the absence of symptoms. Rutledge(1987) attempted to control the correlates of age, educational and income levels, and other demographic characteristics. The study addressed the extent to which older, low to middle income, less-educated women follow the recommended preventive practices for the early detection of breast cancer such as BSE and mammography screening-variables which potentially influence adoption of these practices by middle-aged women were explored.

In this study, the knowledge of breast cancer impacted on women's compliance with the BSE, some studies were reviewed. Howe (1981) surveyed 708 women in New York via telephone interviews. The interviews focused on procuring information on the subject's knowledge level about BSE and compliance with BSE. Howe

found that as the knowledge level about BSE increased, so did the compliance level. In Choi's study (2000), the knowledge of the disease revealed that there was a significant increase in compliance with the BSE. Perhaps the knowledge of breast cancer plays a part in compliance with the BSE.

The findings of this study suggested that there was the variables of perceived susceptibility and severity which act as motivating factors in the performance of the BSE. A study dealing with perceived susceptibility to breast cancer was done by Jenkins and Zyzanski (1985) that the sample consisted of 436 women in a county in Florida. The findings indicated that if the subject perceived herself as highly susceptible to breast cancer and perceived the disease as very serious, then the rate of BSE performance increased. Kim, Lee, Ahn and Chung (2003) have shown that, significant influencing factors on BSE compliance were 'susceptibility', 'barrier' and 'self-efficacy' and those variables explained 22.5% of variance in compliance of BSE. In a study by Gochman (1984), the variable of perceived susceptibility was correlated with health motivation behaviors. The results suggested that there was a significant inverse relationship between health behaviors and perceived susceptibility. In other word, if the perceived susceptibility of developing health problems was high, the preventive behaviors were high. Hallal (1992) conducted a descriptive-correlational study in order to determine difference in the health beliefs of 207 women. Analysis of data revealed a significant correlation between practicing BSE and obtaining higher scores on the subscales of perceived susceptibility to breast cancer. Rutledge (1987) reported that the perceived susceptibility, the perceived severity and the perceived benefits out of HBM influenced the compliance of BSE.

In sum, research based on the HBM seems to indicate that the susceptibility have considerable influence on the compliance of BSE. Recently, lifestyle change for the prevention and early detection of chronic disease has been emphasized. Therefore, the extent to which duration and degree of change required, act as the perceived susceptibility to adoption of BSE should also be examined.

The limitation of this study must be considered. First, the sample of convenience may not have been a proportionate representation of the target population as a whole. Generalization beyond the sample must be viewed with caution. Second, the question of validity

and accuracy of self-report is a major issue. The criterion behavior BSE is done voluntarily, regularly, and without supervision and is, therefore, accessible only through self-report.

CONCLUSION

In a sample of middle-aged women aged from 41 years to 60 years, the majority of the sample did not perform a BSE as preventive behavior, but had medium scores on health beliefs. This investigation provide empirical evidence supporting not only relationships, but also the predictive potential of the Health Belief Model for the preventive behaviors of BSE. An examination of the relationships between variables revealed significant positive correlations of BSE compliance, with knowledge, perceived susceptibility, and perceived severity. Results of the multiple regression indicated that combined constructs of susceptibility, severity and knowledge explained BSE compliance at a significant levels. The construct susceptibility was the most powerful predictor for all three dependent preventive behaviors. The second most important construct was the perceived severity for breast cancer. In other words, women with high scores on perceived susceptibility and severity reported greater compliance of BSE.

Nursing should stress the importance of prevention in middle-aged women and the effects which interaction of knowledge, susceptibility, severity, and other variables have on preventive health practices. Consequently, and increase in knowledge about breast cancer, with a concomitant increase in both perceived susceptibility and perceived severity could produce a subtle cue or motivating force sufficient to affect a behavior change.

There should be continued emphasis on early detection as the best hope for reducing long-term morbidity and mortality. Further research is needed to examine the qualitative difference between BSE and other early detection behaviors.

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