Factors Affecting Mammography Behavior and Intention Among Korean Women

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Purpose/Objectives: To understand factors that influence the mammography experience and intention to receive mammography among Korean women using the Health Belief Model and subjective norm of the Theory of Reasoned Action.

Design: Cross-sectional.

Setting: Two university hospitals and one general hospital in Korea.

Sample: A convenience sample of 310 women aged 30 years and older who visited participating hospitals during the data collection period.

Methods: Self-administered questionnaire.

Main Research Variables: Perceived susceptibility and severity, perceived benefits and barriers, self-efficacy, normative beliefs, and motivation to comply.

Findings: Age, self-efficacy, and perceived susceptibility were significantly associated with participants' mammography experience, whereas knowledge, self-efficacy, perceived susceptibility, perceived barriers, subjective norm, and income were significant in predicting women's intention to receive mammography.

Conclusions: The combined model synthesizing the Health Belief Model and the Theory of Reasoned Action was more effective in predicting mammography intention than in explaining mammography experience.

Implications for Nursing: Tailored health education and health promotion programs to promote mammography screening among Korean women should be developed based on women's perceptions and norms.

Key Points . . .

➤ Perceptions and motivations are dynamic and changeable; therefore, those measured at one point in time are more congruent with future intention than past experience.

➤ Women's perceptions and norms may change during or after mammography screening; therefore, healthcare professionals should try to make use of mammography screening events as an opportunity to positively impact women's perceptions and norms.

➤ Women's mammography experiences tend to be associated with personal factors (i.e., age, self-efficacy, perceived susceptibility). In addition to personal factors, women's intentions to receive mammography were influenced significantly by social and environmental factors (i.e., subjective norm, income, perceived barriers).

C ancer is the leading cause of death among Koreans, constituting 25.6% of all deaths in the country (Korea National Statistical Office, 2003). Breast cancer is the most common cancer among Korean women and accounts for 7.1% of all cancer diagnoses. Breast cancer is responsible for 16% of all cases of cancer among women, and the percentage continually is increasing (Korea Ministry of Health and Welfare, 2002). The breast cancer mortality rate has increased by 280% since 1983.

Although some of the risk factors that increase women's chances of developing breast cancer are known, most causes of breast cancer still are unknown. Because the process of how some known risk factors cause cells to become cancerous has not been established, no specific method exists to prevent the disease (American Cancer Society [ACS], 2005); therefore, early detection of breast cancer is important because the death rate as a result of the disease could be reduced if more women engaged in early detection activities, such as a breast self-examination (BSE), clinical breast examination, and mammography.

ACS (2005) recommends yearly mammograms for every woman beginning at age 40 and continuing for as long as she is in good health to improve the chances that breast cancer is diagnosed at an early stage and treated successfully. Likewise, clinical breast examination should be part of periodic health examination to be conducted about every three years for women in their 20s and 30s and every year for women aged 40 years and older. In addition, BSE is an option for women that should be initiated in their 20s.

In Korea, breast cancer is most prevalent in women in their 40s; the highest incidence rate is 76.84 cases per 100,000 women aged 45–49 years (Korea Ministry of Health and Welfare, 2005). However, breast cancer is most prevalent in women in their 50s in the United States (ACS, 2005), indicating that the susceptible age is a decade younger for Korean women than American women. Therefore, recommendations for breast cancer screening for Korean women provided by Korean epidemiologists, radiologists, and clinicians differ from those suggested by ACS. In Korea, guidelines suggest that women aged 20 years and older perform monthly BSE, women aged 30–34 years receive baseline mammography,

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and women aged 35–59 years receive biennial mammography (Kim & Moon, 1996).

In 2002, only 24% of women in urban areas and 16% of women in rural areas participated in breast cancer screenings in Korea (Korea Institute for Health and Social Affairs, 2002). Studies have found mammography participation rates among women in Western countries to be 47%–79% (Han, Williams, & Harrison, 2000; Maxwell, Bastani, & Warda, 2000). Compared to women in Western countries, Korean women underuse mammography as an early detection screening practice.

The aim of this study was to assess the contribution of each of the selected variables in explaining women's mammography experiences and in predicting their intentions to receive mammography in the future as well as to determine whether mammography experiences and intentions are influenced by similar or different factors.

Theoretical Framework

The theoretical framework guiding this study was based on the Health Belief Model (HBM) and the subjective norm of the Theory of Reasoned Action. The HBM has been used by many researchers to describe women's behavior in seeking mammography (Miller & Champion, 1997; Thomas, Fox, Leake, & Roetzheim, 1996). The HBM states that a person must feel that he or she is susceptible to a specific disease (susceptibility) that can cause serious health effects (severity) in order to engage in certain health-protective behaviors. A person must believe that the desired behavior would bring personal benefits, whether to prevent or detect a specific disease in the early stages. Finally, barriers that could prevent a person from adopting the desired behavior must be overcome.

Studies have found that perceived susceptibility and severity are not associated with mammography screening (Holm, Frank, & Curtin, 1999; Maxwell et al., 1998; Thomas et al., 1996), although many studies have identified perceived benefits to be positively associated (Choi, Park, & Han, 2001; Holm et al.; Thomas et al.) and perceived barriers to be negatively associated with mammography screening. Researchers have concluded that cost, time, lack of physician referrals, and concern about radiation exposure are barriers that significantly affect mammography use (Coyne, Hohman, & Levinson, 1992; Maxwell et al., 1998).

Self-efficacy, or an individual's faith in his or her ability to participate in a specific behavior, was added to the HBM to improve the model's explanation of health behavior (Rosenstock, Strecher, & Becker, 1988). Janz, Champion, & Strecher (2002) contended that self-efficacy is an important factor in successfully changing lifelong behavior. Studies have found that self-efficacy is significantly related to mammography screening (Maxwell et al., 1998) and to the health-promotion behaviors of middle-aged Korean women (Choi & Oh, 1998; Lee, Choi, Chung, & Her, 1999); however, the HBM focuses on cognitive variables in that it only includes components that measure an individual's perception of a desired behavior and fails to address social influences and cultural factors that affect health behavior (Janz et al.).

The Theory of Reasoned Action was introduced by Fishbein (1967) and was developed further by Ajzen and Fishbein (1980) to examine the association among behavioral and normative beliefs, attitudes toward certain behaviors, the intention to change or to adopt particular behaviors, and

behaviors themselves. The underlying assumption of the Theory of Reasoned Action is that an individual's behavior is affected primarily by the individual's behavioral intention. An individual's attitudes toward a behavior and the subjective norm regarding the behavior are the two predictors of behavioral intention. Attitudes are affected by an individual's beliefs that a certain behavior will result in an expected outcome and whether the individual positively or negatively evaluates the outcome. Likewise, the subjective norm is affected by normative beliefs (i.e., individuals' beliefs regarding whether referent individuals support or oppose a behavior) and individuals' motivation to follow referent individuals' opinions (Montano & Kasprzyk, 2002).

The Theory of Reasoned Action has been employed widely to explain individual health behavior and to develop programs targeted to modify individual behavior (Bosompra, 2001; Trost, Saunders, & Ward, 2002). Using the Theory of Reasoned Action framework, studies have found subjective norms to be positively associated with mammography screening: Women with friends and relatives who were supportive of mammography screening were more likely to have received a mammogram (Maxwell et al., 1997). Likewise, a significant correlation existed in women's normative beliefs between their physicians and mammography screening, indicating that women who believed their doctors wanted them to obtain a mammogram had positive intention to undergo future mammography screening. In addition, a significant association was found between attitude and mammography screening (Montano, Thompson, Taylor, & Mahloch, 1997).

Poss (2001) was successful in combining the HBM and the Theory of Reasoned Action to study factors that influenced Mexican migrant workers' participation in tuberculosis screening. In measuring components, Poss excluded perceived barriers and benefits from the HBM because they are parallel to the attitudes toward behavior found in the Theory of Reasoned Action. VanLandingham, Suprasert, Grandjean, and Sittitrai (1995) also argued that perceived severity, barriers, and benefits in the HBM and perceived attitudes toward behavior in the Theory of Reasoned Action are the conceptual overlap between the two models. Therefore, in combining the HBM and the Theory of Reasoned Action, along with HBM components, the subjective norm of the Theory of Reasoned Action (i.e., women's perceptions of what referent others think they should do) was added to compensate for the weakness of the HBM, which is its failure to account for social influences and cultural factors. Additionally, attitudes were removed from the Theory of Reasoned Action to avoid duplication in measuring concepts to understand mammography screening behavior and intention to receive mammography in the future among Korean women (see Figure 1).

Methods

A cross-sectional study design was used to analyze factors that influence past experiences and future intentions to receive mammography screening among Korean women.

Setting and Sample

The study took place at two university hospitals and one general hospital in Seoul, Korea, and adjacent cities. Each hospital contains a health-promotion center, and more than 20 clinics in the outpatient department care for more than 300
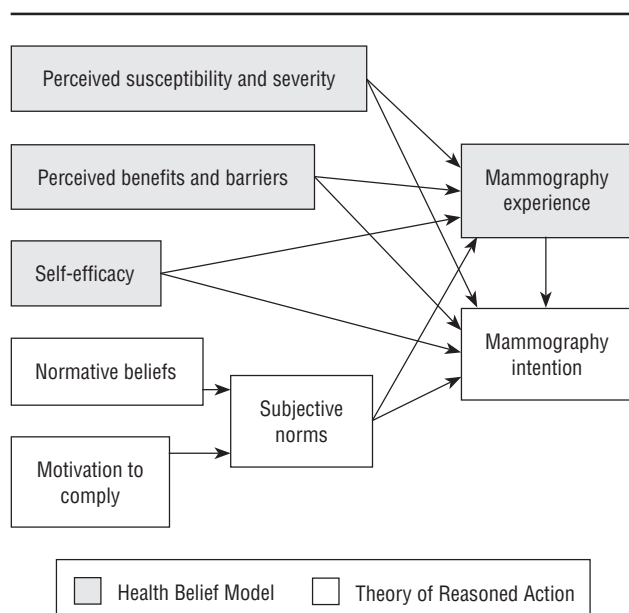
Figure 1. Model Combining the Health Belief Model and the Theory of Reasoned Action

patients daily. Most patients at the hospitals are city residents of middle socioeconomic status. Among clients of the three participating hospitals, a convenience sample of 339 women aged 30 years and older agreed to participate in the survey. Only Korean women who had not been diagnosed with breast cancer were included in the study. Approval to conduct the survey was provided by the Human Subject Review Committee of Texas Woman's University in Denton.

Instrument

The questionnaire for the study originally was developed in the Korean language through an extensive literature review, and a Korean version of the questionnaire was used throughout the study. To establish content validity, the questionnaire was reviewed by a panel of experts (i.e., two nursing professors and one health education professor). The questionnaire consisted of 73 items in five sections: (a) demographic variables, (b) mammography and BSE experiences, (c) knowledge regarding breast cancer and mammography, (d) HBM components, and (e) subjective norms.

Knowledge: Questions related to the prevalence of breast cancer in Korea, risk factors for breast cancer, significance of early detection, and criteria for breast cancer early detection activities were included in 12 items to evaluate knowledge.

Perceived susceptibility: Women's estimation of their susceptibility to developing breast cancer was measured by three perceived susceptibility items. Perceived susceptibility was measured on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The reliability coefficient (i.e., Cronbach's alpha) was 0.73.

Perceived severity: Women's beliefs regarding the severity of breast cancer and the serious consequences of the disease to their lives were measured by five perceived severity items on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha was 0.64.

Perceived benefits: Women's estimation of the benefits of obtaining mammography screening was measured by four benefit items on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha was 0.69.

Perceived barriers: Perceived physical and emotional barriers to mammography screening were measured by six items on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha was 0.48.

Self-efficacy: Women's confidence in obtaining mammography screening in various circumstances was measured by five self-efficacy items on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha was 0.94.

Normative beliefs: Seven normative belief items assessed referent individuals' positions regarding their support of mammography screening. Referent individuals included healthcare professionals (e.g., doctors, nurses), family members (e.g., spouse, daughter[s], mother, sister[s]), and friends. Normative beliefs were measured on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha was 0.95.

Motivation to comply: Seven items measured women's motivation to comply with the wishes of referent individuals on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha was 0.96.

Subjective norm: Subjective norms were determined by multiplying normative beliefs and corresponding items of motivation to comply, indicating whether referent individuals supported mammography screening and whether women intended to follow referent individuals' opinions. Subjective norms ranged from 1–25. The subjective norm is calculated by multiplying the normative belief and motivation to comply scores, both of which range from 1–5. For example, if a woman choose 1 (strongly disagree) for both variables, the subjective norm is 1. Likewise, if 5 (strongly agree) is chosen for both variables, the subjective norm score is 25.

Data Collection

Women aged 30 years and older who visited the outpatient department or health-promotion center of the three participating hospitals during the data collection period were approached and asked whether they would be willing to participate in the survey. If a woman agreed to participate, a data collector obtained her written consent to participate in the study prior to data collection. Then, the survey questionnaire was administered. To protect women's privacy, the survey was self-administered. Data collection was conducted in the waiting areas of the outpatient departments and health-promotion centers of the participating hospitals.

Four Korean nursing students were trained to conduct data collection. They were instructed to explain the purpose of the study to each woman before data collection, to obtain written consent if a woman agreed to participate, to administer the questionnaire with guidance, and to wait silently for women to complete the questionnaires in the waiting areas. All respondents read and completed the questionnaires themselves except for six women who preferred that the questionnaires be read to them by a data collector. For the six women, a data collector read each question, to which the women responded orally. Korean was the primary language of all participants; therefore, only Korean was used throughout the data collection

process. The questionnaire took approximately 20 minutes to complete.

Data Analysis

Descriptive statistics were used to describe general characteristics of the sample; mean scores for knowledge, HBM variables, and subjective norm; and the frequency of mammography screenings and BSE according to participants' ages. Finally, a multiple regression analysis was performed to determine the extent to which demographics, HBM variables, and subjective norm explained past mammography experience and predicted intention to receive mammography. Statistical significance was determined at the 0.05 level. SPSS® 11.0 (SPSS Inc., Chicago, IL) was used in the analysis.

Results

A total of 339 questionnaires were completed, and 310 questionnaires were included in the analysis. Twenty-nine incomplete questionnaires, each of which contained more than 10 missing items of the total of 73 items, were excluded from the study.

General Characteristics

The mean age of study participants was 42.32 ± 9.23 years (range = 30–69). The largest proportion of participants were 30–39 years of age (47%) and in the equivalent of the $20,000–$40,000 yearly income bracket (44%). The average yearly income is equivalent to $14,500 for Koreans, so most participants in the study were in the middle socioeconomic bracket. Approximately 50% of participants had received an education at or above the community college level. Most women were married (86%), and more than half were housewives (69%) who did not work outside of the home. Of the 310 participants, 23% reported family members, relatives, or friends with a history of breast cancer (see Table 1).

Knowledge, Perceptions, and Subjective Norms

Most women answered 10 of the 12 knowledge items correctly ($\overline{X}$= 8.41 ± 2.47), showing a high level of knowledge concerning breast cancer and early detection methods. Participants perceived that they had a low susceptibility to developing breast cancer ($\overline{X}$ = 2.61 ± 0.62) and reported low perceived barriers to mammography screening ($\overline{X}$= 2.72 ± 0.44) compared with other study variables. Participants also reported moderate levels of perceived severity ($\overline{X}$ = 3.13 ± 0.57) and self-efficacy ($\overline{X}$ = 3.0 ± 0.76), whereas they reported high levels of perceived benefits of mammograms ($\overline{X}$ = 3.69 ± 0.52), high levels of normative beliefs ($\overline{X}$ = 3.56 ± 0.73), and a high motivation to comply with referent individuals' opinions ($\overline{X}$ = 3.86 ± 0.66). The total subjective norm score was calculated by multiplying the normative belief score and the score for motivation to comply with the opinions of referent individuals and adding the seven subjective norm scores. The mean subjective norm score was 14.03 (SD = 4.30, range = 1–25), as seen in Table 2.

Breast Cancer Early Detection Practices

Among the women in the study, 51% had undergone mammography screening more than once in the previous three years. For women aged 40 years and older, only 8% had undergone regular mammography (i.e., three or more mammograms) during the previous three years. Sixty-three percent of all participants had not performed BSE in the previous six months, and only 4% had performed BSE monthly or more frequently during the same time period. Women ages 40 and older were more likely to have undergone mammography screening, and women in their 40s had the highest frequency of practicing BSE (see Table 3).

Variables Associated With Mammography Experience and Intention

Two multiple regression analyses were conducted to explain participants' past mammography experiences and to predict their intentions to receive mammography in the future. Independent variables such as age, income, knowledge, HBM variables, and the subjective norm were included in the regression analyses. The findings indicated that age, self-efficacy, and perceived susceptibility explained 24.8% of the variance of past mammography experience, whereas 41% of the variance for intention to receive mammography was predicted by participants' income, knowledge, self-efficacy, perceived barriers and susceptibility, and subjective norms (see Table 4).

Discussion

Although ACS recommends annual mammograms for women aged 40 years and older, 38% of participants

Table 1. Sample Characteristics

Characteristic	n	%
Age (years)		
≤ 39	145	47
40–49	101	33
≥ 50	64	21
Annual income ($)[a]		
< 20,000	86	29
20,000–40,000	131	44
> 40,000	78	26
Education		
Less than middle school	45	15
High school graduate	109	35
Community college graduate	44	14
More than university	112	36
Marital status		
Married	266	86
Widowed	6	2
Divorced	5	2
Separated	2	1
Never married	22	7
Cohabitating	9	3
Employment status		
Full- or part-time	97	31
Unemployed or other	213	69
Breast cancer history		
Family[b]	5	2
Relatives[c]	5	2
Friends	59	19

N = 310

[a] Income was not determined in 15 cases.

[b] Family members include mother, sister(s), and daughter(s).

[c] Relatives include grandmother(s) and aunt(s).

Note. Because of rounding, not all percentages total 100.

Table 2. Mean Scores for Knowledge, Perception, Self-Efficacy, and Subjective Norm

Variable	Example of Questionnaire Items	Range	$\overline{X}$	SD
Knowledge	A mammogram can find lumps that cannot necessarily be felt by your doctor or by yourself when doing breast self-examination.	0–12	8.41	2.47
Perceived susceptibility	I am more likely than the average woman to get breast cancer.	1–5	2.61	0.62
Perceived severity	Breast cancer would threaten a relationship with my boyfriend, husband, or partner.	1–5	3.13	0.57
Perceived benefits	When I have completed a mammogram, I don't worry as much about breast cancer.	1–5	3.69	0.52
Perceived barriers	Being naked while obtaining a mammogram is embarrassing.	1–5	2.72	0.44
Self-efficacy	I am confident I will participate in mammography screening without a recommendation from a doctor.	1–5	3.04	0.76
Normative belief	My husband wants me to undergo mammography screening.	1–5	3.56	0.73
Motivation to comply	I intend to undergo mammography screening if my husband recommends it.	1–5	3.86	0.66
Subjective norm[a]	–	1–25	14.03	4.30

[a] Normative belief multiplied by motivation to comply

younger than age 40 in this study had received mammograms more than once during the previous three years, whereas 34%–40% of women aged 40 and older had not had a mammogram during the same period. Because incidence and prevalence of breast cancer differ for Korean and American women, establishing breast cancer screening guidelines for Korean women at the national level that consider the prevalent age for developing breast cancer is necessary, and campaigns to increase awareness of breast cancer screening guidelines should be developed.

Previous studies have found that age, education, income, and marital status were associated with previous mammography experience (Fredman et al., 1999; Maxwell et al., 1997). However, in the current study and among demographic variables, only age was significantly associated with mammography experience, and income showed a positive correlation with intention to receive mammography. Because mammography screening is neither provided free of charge nor covered by the national health insurance in Korea, the higher cost of mammography screening may influence the decision among women at lower income levels to not undergo the procedure. Knowledge was significantly associ-

ated with intention to receive mammography in the study, which is consistent with previous study results (Maxwell et al., 1997). The study results suggest that media efforts are required to increase knowledge about breast cancer and to communicate the importance of early detection activities.

Among HBM variables, perceived susceptibility and self-efficacy were significantly associated with mammography experience, whereas perceived susceptibility, perceived barriers, and self-efficacy were significant in predicting intention to receive mammography. Therefore, women with higher perceived susceptibility and higher self-efficacy were more likely to have received mammograms in the past, and women with higher perceived susceptibility, higher self-efficacy, and lower perceived barriers were more likely to have positive intention for future mammography screening. Many researchers have reported the predictive ability of the HBM for mammography screening, particularly regarding perceived susceptibility and perceived barriers (Champion & Menon, 1997; Choi et al., 2001). Interventions to increase perceived susceptibility may include informing women about risk factors associated with breast cancer as well as increasing incidence and death rates as a result of the disease in Korea.

Among most women in the study, concerns about pain, radiation, and cost were major barriers to obtaining a mammogram. The findings were similar to those of previous studies (Coyne et al., 1992; Maxwell et al., 1998). Therefore, education addressing barriers to obtaining mammography screening and interventions to reduce perceived barriers would be effective in promoting mammography screening among Korean women. Examples include providing free mammography screening programs or providing mammograms at discounted fees for low-income women, informing women of the appropriate period for obtaining mammography to reduce pain, and explaining that exposure to radiation during a mammogram is very low and not harmful.

The reliability coefficient for perceived barriers was 0.48 and may be explained by the barrier items for most women—pain, radiation, and cost—that were the major concerns regarding obtaining a mammogram. For the three items, the mean scores were higher ($\overline{X}$ = 2.93–2.98 ± 0.87–0.93), whereas the item "I don't think a mammogram is necessary," which has been reported elsewhere as a barrier to breast cancer screening (Lee, Kim, Ko, & Ham, 2003), showed a much lower mean score in the present study ($\overline{X}$ = 2.16 ± 0.65). The low mean score of the

Table 3. Experience of Mammography Screening and Breast Self-Examination by Age Group

Health Behavior	Age ≤ 39 (n = 145)		Age 40–49 (n = 101)		Age ≥ 50 (n = 64)	
	n	%	n	%	n	%
Mammography screening[a]						
0	90	62	40	40	22	34
1	43	30	41	41	28	44
2	9	6	12	12	9	14
3 or more	3	2	8	8	5	8
Breast self-examination[b]						
0	100	69	55	54	43	67
1	31	21	21	21	11	18
2–3	10	7	18	18	7	11
4–5	1	1	–	–	1	2
≥ 6	3	2	7	7	2	3

[a] Number of mammograms during the previous three years

[b] Number of breast self-examinations performed in the previous six months

Note. Because of rounding, not all percentages total 100.

Table 4. Multiple Regression Analyses for Explaining Mammography Experience and Mammography Intention

Variable	B	β	t	p
Mammography experience				
Age	1.96E-02	0.196	3.415	0.001
Self-efficacy	0.480	0.408	7.031	0.000
Perceived susceptibility	0.170	0.118	2.034	0.043
Mammography intention				
Knowledge	0.110	0.260	3.995	0.000
Self-efficacy	0.291	0.226	3.100	0.002
Perceived barriers	−0.472	−0.200	−3.095	0.002
Perceived susceptibility	0.295	0.198	3.068	0.003
Subjective norm	4.106E-02	0.174	2.392	0.018
Income	9.210E-02	0.137	2.118	0.036

Note. $R^2 = 0.248$, $F = 25.85$, $p < 0.01$ for mammography experience; $R^2 = 0.410$, $F = 17.81$, $p < 0.01$ for intention to receive mammography

barrier item related to the necessity of mammography screening may be associated with higher perceived benefits of mammography as well as higher education levels and knowledge among study participants. Likely because of higher education levels, most women were knowledgeable regarding the benefits of mammography and may have believed that mammography screening is necessary while at the same time perceiving mammograms to be expensive, painful, and detrimental to health because of radiation. Therefore, disagreement about the level of perception on the six barrier items may have influenced the low reliability coefficients.

A number of studies have shown self-efficacy to be significantly associated with Korean middle-aged women's health promotion behaviors (Choi & Oh, 1998; Lee et al., 1999) and intention to undergo mammography screening (Allen, Sorensen, Stoddard, Colditz, & Peterson, 1998). In the current study, self-efficacy was included in both regression models as a significant factor in influencing past mammography experiences and intention to receive mammography in the future. Janz et al. (2002) contended that long-term behavior change requires a great deal of confidence to be successful. Therefore, to promote lifelong adoption or change of behavior (e.g., regular mammograms), the reinforcement of self-efficacy in obtaining mammography screening is crucial. Interventions to increase self-efficacy among women may include building their confidence in their ability to discuss mammography with healthcare providers and to obtain regular mammograms.

The subjective norm was a significant contributor for predicting participants' intention to obtain a mammogram in the future, which was consistent with previous study results by Montano et al. (1997), who found that women's normative beliefs about their doctors were significantly related to their rate of mammography screening. Based on the current study results, health education and health-promotion programs should target not only women but also their family members and healthcare professionals so that referent individuals can recommend mammography screening to women.

Factors associated with women's mammography experiences differed from those affecting their intention to receive mammography in the future. Age, self-efficacy, and perceived susceptibility were significantly associated with participants' previous mammography experience, whereas income, knowledge, perceived susceptibility, perceived barriers, self-efficacy, and subjective norms were significant in predicting their intention to receive mammography. The results are consistent with those of Stein, Fox, Murata, and Morisky (1992), who found that factors associated with previous mammography experience differed from those related to intention to receive mammography.

The model combining the HBM and the Theory of Reasoned Action in the current study was more effective in predicting future mammography intention than in explaining past mammography experience. The results showed that 41% of the variability for intention to receive mammography in the future and 26% of the variability for past mammography experience explained by the regression equations were statistically significant. Montano et al. (1977) contended that experience with the behavior of interest may alter perceptions and motivation and that perceptions are dynamic and change with experience. Therefore, perceptions and motivation measured at one point in time are more congruent with future intentions than past experiences.

Limitations

This study has a number of limitations. First, the use of a convenience sample limits the generalizability of the study results. This study also is limited by the self-reporting used to measure previous mammography experience. Additionally, the use of cross-sectional data makes determining causal relationship between study variables and past mammography experience difficult because individuals' beliefs and motivation may have changed after the behavior of interest took place (Montano & Kasprzyk, 2002).

Implications for Practice

The finding that factors associated with past mammography experience differ from those influencing intention to receive mammography in the future may imply that women's perceptions and norms changed during or after mammography screening as Montano et al. (1997) described. Therefore, to encourage women to participate in regular mammography screening, healthcare professionals should try to make use of mammography screening events as opportunities to positively influence women's perceptions and norms. Doctors and nurses can encourage women to get mammograms, and most women recognize that their family and friends approve of mammography screening, as Montano et al. suggested. Additionally, before initiating mammography screening, doctors and nurses should discuss the pain and radiation exposure that accompany the procedure. For women who have never had a mammogram, along with these messages, interventions to increase self-efficacy and perceived susceptibility, such as those described previously, should be provided to increase intention among women to receive mammography in the future.

Extrapolation of the findings to Korean-American and Korean women in the United States should be done cautiously because perceptions and norms of Koreans living in the United States may have changed during the acculturation process. In particular, daughters and granddaughters of Korean immigrants may have different perceptions and norms compared with Korean women living in Korea.

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