ORIGINAL ARTICLE

Breast Cancer Screening Knowledge and Perceived Health Beliefs among Immigrant Women in Korea

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Purpose: Recently, through international marriage, immigrant women have rapidly increased throughout Korea. This study was performed to identify health beliefs and practices related to breast cancer screening in immigrant women in Korea. **Methods:** A cross-sectional survey was carried out between March and July 2012, and study population included immigrant females from six other Asian countries (Cambodia, China, Japan, Mongolia, Vietnam, and the Philippines). We surveyed 197 women and categorized them into four groups according to home countries. The questionnaire consisted of 55 items, including demographic and socioeconomic factors, breast cancer-related knowledge regarding risk factors and symptoms, beliefs and attitudes towards health and breast cancer, perceived susceptibility, barriers, and benefits of screening. **Results:** Japanese participants were significantly older and had resided in Korea for more years than other country-of-origin groups (all $p < 0.001$), and showed higher screening rates without statistical significance ($p = 0.392$). In mul-

tivariate analysis, country of origin showed a significant correlation with knowledge ($p = 0.001$), positive beliefs ($p = 0.002$), and perceived benefits ($p = 0.025$) of breast cancer screening. The group with the lowest household income showed a significantly lower score of perceived benefits ($p = 0.022$). Through analysis to identify factors affecting participation in screening mammography, we found that education level ($p = 0.009$), occupation status ($p = 0.006$), and Korean language fluency ($p = 0.002$) were independent predictors for screening behavior. **Conclusion:** This study identified conditions related to breast cancer screening knowledge, perception, and behavior of immigrant women in Korea. The results reflect the need for increased social aids to remove barriers to medical services and more educational programs to facilitate higher rates of screening.

Key Words: *Breast neoplasms, Emigrants and immigrants, Health behavior, Health knowledge, Mass screening*

INTRODUCTION

Traditionally, Korea has been composed of a single ethnic group and, until very recently, has had little or no experience with large-volume immigration. However, the Korean society is changing, and the number of multicultural families is rapidly growing. This social phenomenon has been driven, in part, by the recent increase in international marriages, which accounted for 3.5% and 9.0% of all marriages in 2000 and 2011,

respectively. Marriages between Korean men and foreign women make up more than 75% of international marriages. There were 128,000 immigrant women living in Korea in 2008, and the number is increasing every year [1,2].

According to a survey provided by the Ministry of Health and Welfare in 2009, about 45% of immigrant women had used a medical institution over the past year due to illness [3]. Because most immigrant women come from relatively underdeveloped countries, it is difficult to know the quality of their previous healthcare and health hygiene education and therefore, they may be vulnerable with respect to healthcare utilization [4]. Furthermore, communication problems, a lack of health insurance, the burden of medical costs, and differences in social conditions could reduce accessibility to medical services [5,6].

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Previous studies have compared differences in mammography screening rates and health beliefs between specific ethnic immigrant groups [7-9]. However, most of these studies were conducted in multiracial and multiethnic countries such as the United States. No research has been conducted to investigate knowledge, perceptions, and behaviors of immigrant women in Korea regarding breast cancer screening, although it is essential to consider these issues in order to keep pace with the changing social environment. The purpose of this descriptive, cross-sectional study was therefore to identify knowledge, health beliefs, and behaviors related to breast cancer screening in immigrant women living in Korea, as well as to provide a starting point for further systematic investigation.

METHODS

Study population and sample

A cross-sectional survey was conducted in Korea between March and July 2012. The area from which participants would be recruited was selected in consideration of the physical distance from the authors' institution and the standard of living of the participants, but without regard for participant age or country of origin. Eligible participants were women who were immigrants from six Asian countries (Cambodia, China, Japan, Mongolia, Vietnam, and the Philippines), had immigrated for the purpose of an international marriage, were living in the city of Seongnam, and were members of the Seongnam Multicultural Family Support Center. The survey was conducted in cooperation with the Seongnam Multicultural Family Support Center. A total of 225 women participated in the study, and 197 were included in the final analysis. We excluded 28 participants who were missing data for more than five items about knowledge, belief, perceptions, barriers, or benefits, or who did not provide basic demographic factors (age, country, or length of residence). The participants were categorized into four groups by country of origin: Vietnam and Cambodia (n = 73), China and Mongolia (n = 78), Japan (n = 19), and the Philippines (n = 27).

Questionnaire

The questionnaire used in this study was based on several surveys employed in previously published studies [9-11] of perceptions and knowledge related to breast cancer and mammography, with several questions added for the purposes of this study. Based on the Health Belief Model (HBM), the following terms related to breast cancer screening were defined: behaviors as mammography screening or seeking medical advice, beliefs and attitudes as a positive or negative evaluation of breast cancer health behavior, perceived susceptibility as an

individual's subjective perception of risk to a health condition or feelings concerning the seriousness of contracting a disease, benefits as the decision about a course of action that will produce positive outcomes for a health condition, and barriers as impediments to undertaking particular health behaviors. The questionnaire included a total of 55 items in six areas, including questions assessing demographics, socioeconomic factors, and previous use of health services (including mammography). Knowledge of breast cancer risk factors and symptoms were assessed using nine true or false items. Seven questions measured beliefs and attitudes towards health and breast cancer. Perceived susceptibility and barriers to breast cancer screening were queried with five items each. Six questions were used to identify the perceived benefits of screening (Appendix 1). Each question related to knowledge, attitudes, and perceptions of breast cancer screening was formulated as a simple yes (scoring as 1) or no (scoring as 0) question, and the total scores of each subcategory were computed for each participant by summing the scores for the items included. Higher scores represented better knowledge, positive beliefs and attitudes, and greater perceptions of vulnerabilities, barriers, and benefits. The questionnaire was developed in Korean and subsequently translated into Cambodian, Chinese, English, Japanese, Mongolian, and Vietnamese. For each language, a bilingual reviewer reviewed the questionnaire to confirm correct translation.

Human subjects research approval

This study was approved by the Institutional Review Board (IRB) of Samsung Medical Center (IRB file number: 2012-04-012-001). Since the study interviewed healthy people in a community setting and participants could not be identified after the interview, informed consent form requirements were waived. However, before the participants answered the questionnaire, they received information from the researchers about the survey, including its purpose, procedures, and confidentiality.

Statistical analysis

Statistical analyses were conducted using Predictive Analytics SoftWare (PASW) Statistics 18.0 software (SPSS Inc., Chicago, USA) and R version 2.10 (Vienna, Austria; http://www.r-project.org). Descriptive analyses of all variables were stratified by country of origin subgroups. The Mann-Whitney test, Kruskal-Wallis test, and Fisher exact test were used to compare demographic characteristics and questionnaire results between the four subgroups. *Post hoc* comparisons were conducted using Tukey test. We also performed univariate and multivariate binary logistic regression and median regression analyses with Bonferroni correction to identify which factors

had an effect on breast cancer screening behavior and screening knowledge, beliefs, and perceptions. All *p*-values were two-tailed, and *p*-values <0.05 were considered statistically significant.

RESULTS

Table 1 shows the distributions of demographic variables in each of the four country-based subgroups. Participants' medi-

an age was 31 years (range, 19–55 years). After *post hoc* comparison, Cambodian and Vietnamese women (median, 25 years; range, 19–41 years) were found to be significantly younger than those in the other three groups (all *p* < 0.001). In contrast, Japanese women (median, 43 years; range, 34–53 years) were significantly older than the other groups (all *p* < 0.001). Vietnamese and Cambodian women had lived in Korea for a shorter period of time (median, 24 months; range, 1–110 months) than Chinese and Mongolian (*p* = 0.001) and

Table 1. Demographic characteristics of the four Asian groups (N = 197)

Characteristic	Vietnam and Cambodia (n = 73) No. (%)	China and Mongolia (n = 78) No. (%)	Japan (n = 19) No. (%)	The Philippines (n = 27) No. (%)	*p*-value
Age (yr)					<0.001
≤30	57 (78.1)	23 (29.5)	0	10 (37.0)	
>30	16 (21.9)	55 (70.5)	19 (100.0)	17 (63.0)	
Married					0.535
Yes	72 (98.6)	72 (92.3)	19 (100.0)	27 (100.0)	
No	1 (1.4)	6 (7.7)	0	0	
Childbirth					0.392
Yes	54 (74.0)	55 (70.5)	17 (89.5)	19 (70.4)	
No	19 (26.0)	23 (29.5)	2 (10.5)	8 (29.6)	
Length of residence (yr)					<0.001
≤2	37 (50.7)	15 (19.2)	2 (10.5)	8 (29.6)	
>2, ≤5	18 (24.7)	32 (41.0)	5 (26.3)	10 (37.0)	
>5	18 (24.7)	31 (39.7)	12 (63.2)	9 (33.3)	
Family income (1,000 KRW)					0.440
<1,000	3 (4.1)	5 (6.4)	2 (10.5)	3 (11.1)	
≥1,000, <2,000	41 (56.1)	32 (41.0)	6 (31.6)	15 (55.6)	
≥2,000, <3,000	19 (26.0)	25 (32.1)	6 (31.6)	7 (25.9)	
≥3,000, <4,000	3 (4.1)	9 (11.5)	2 (10.5)	2 (7.4)	
≥4,000	1 (1.4)	1 (1.3)	1 (5.3)	0	
Education					<0.001
Less than high school	43 (58.9)	22 (28.2)	0	8 (29.6)	
High school graduate	28 (38.4)	40 (51.3)	9 (47.4)	6 (22.2)	
More than college	2 (2.7)	16 (20.5)	10 (52.6)	13 (48.2)	
Job					0.078
Yes	9 (12.3)	22 (28.2)	5 (26.3)	4 (14.9)	
No	64 (87.7)	56 (71.8)	14 (73.7)	23 (85.1)	
Korean language*					0.028
Nothing	3 (4.1)	0	0	1 (3.7)	
Poor	18 (24.7)	10 (12.8)	1 (5.3)	5 (18.5)	
Normal	34 (46.5)	40 (51.3)	13 (68.4)	14 (51.9)	
Good	18 (24.7)	16 (20.5)	2 (10.5)	7 (25.9)	
Very good	0	12 (15.4)	3 (15.8)	0	

KRW = Korean Won (₩).
*It means Korean language ability in listening and speaking.

Table 2. Breast cancer screening practice according to countries

	Vietnam and Cambodia (n = 73) No. (%)	China and Mongolia (n = 78) No. (%)	Japan (n = 19) No. (%)	The Philippines (n = 27) No. (%)
Mammography episode	34 (46.6)	32 (41.0)	12 (63.2)	13 (48.2)
Last screening (months ago)*	12 (4–24)	12 (4–16)	12 (4.5–18)	7.5 (1–16)
Abnormality in mammography	13 (38.24)	4 (12.5)	4 (33.3)	5 (38.5)

*Median (interquartile range).

Japanese women ($p < 0.001$). Japanese women had resided in Korea longer than Filipino women ($p = 0.048$). Marital status, number of children, income, and employment status were not significantly different between the four groups.

Among 197 responders, 91 women (46.2%) reported that they had undergone mammography for screening at least once. Screening status was not significantly related to country of origin, although a higher percentage of Japanese women had received mammography ($p = 0.392$), as shown in Table 2.

The means of five screening-related variables (breast cancer-related knowledge, beliefs, perceived susceptibility, barriers, and perceived benefits of screening) stratified by demographic factors that could affect health behavior are shown in Table 3. Japanese women had greater knowledge and more positive beliefs and attitudes towards healthcare, compared to women in other country groups. The perceived benefits of screening mammography differed according to the participants' country of origin and education level. Other factors, such as age, income, employment status, or Korean language fluency, did not affect the results. Multivariate analysis using median regres-

sion showed that country of origin correlated significantly with knowledge ($p = 0.001$), positive beliefs ($p = 0.002$), and perceived benefits ($p = 0.025$). While not significant in univariate analysis, after adjustment for confounding factors, women with monthly incomes of less than 2,000,000 won showed a significantly lower score for perceived benefits ($p = 0.022$).

The correlations between knowledge or perceptions and screening participation were not as distinct, and only perceived barriers appeared to be a significant predictor of screening behavior ($p = 0.015$). Perceived benefits of and positive beliefs regarding screening were significantly and inversely associated with screening behavior ($p = 0.038$ and $p = 0.021$, respectively); however, it seemed that these factors did not affect actual screening mammography in practice rather than they had a real negative effect on.

We performed univariate and multivariate analyses to identify the factors that affected screening mammography participation (Table 4). In univariate analysis, a higher level of education (more than college vs. less than high school; odds ratio [OR], 4.40; 95% confidence interval [CI], 1.72–11.22; $p =$

Table 3. Breast cancer-related knowledge, beliefs and attitudes, perceived susceptibility or vulnerability, barriers, and perceived benefit of screening according to the demographic factors and screening experience

	Knowledge*		Beliefs[†]		Susceptibility[‡]		Barriers[‡]		Benefits[§]	
	Mean±SD	p-value	Mean±SD	p-value	Mean±SD	p-value	Mean±SD	p-value	Mean±SD	p-value
Country		0.001		0.001		0.148		0.269		0.003
Cambodia and Vietnam	4.7±1.5		5.7±1.4		1.5±1.1		1.4±1.5		4.9±1.6	
China and Mongolia	4.9±1.6		5.7±1.0		1.6±1.0		1.7±1.5		5.4±1.3	
Japan	6.4±1.6		6.6±0.5		1.8±1.3		1.1±1.1		5.3±1.1	
The Philippines	5.5±1.7		5.2±1.6		2.1±1.2		1.4±1.4		4.5±1.5	
Age (yr)		0.055		0.407		0.465		0.990		0.057
≤30	4.8±1.4		5.5±1.5		1.6±1.1		1.5±1.6		4.9±1.5	
>30	5.3±1.8		5.9±1.0		1.7±1.1		1.5±1.4		5.2±1.4	
Family income (1,000 KRW)		0.811		0.515		0.228		0.637		0.197
<2,000	4.9±1.5		5.7±1.4		1.7±1.1		1.5±1.4		4.8±1.7	
≥2,000, <3,000	4.8±1.4		5.7±1.2		1.4±0.9		1.4±1.6		5.3±1.2	
≥3,000	5.1±1.2		5.9±0.7		1.9±1.3		1.6±1.5		5.3±1.0	
Education		0.241		0.398		0.873		0.952		0.043
Less than high school	5.1±1.3		5.9±1.2		1.6±1.0		1.4±1.3		5.3±1.5	
High school graduate	4.8±1.6		5.6±1.4		1.7±1.0		1.5±1.5		4.9±1.5	
More than college	5.0±1.4		5.7±1.1		1.8±1.4		1.6±1.8		5.1±1.3	
Job		0.636		0.066		0.908		0.516		0.795
Yes	5.2±1.5						1.4±1.6		5.0±1.7	
No	5.0±1.7		5.4±1.4		1.6±1.1		1.5±1.4		5.1±1.4	
Korean language		0.405		0.085		0.820		0.858		0.935
Poor	4.9±1.5		5.8±1.5		1.7±1.2		1.5±1.3		5.0±1.6	
Normal	4.8±1.5		5.8±1.3		1.7±1.2		1.4±1.4		5.0±1.5	
Good	5.1±1.4		5.6±1.1		1.6±0.9		1.6±1.7		5.2±1.2	
Screening mammography		0.550		0.021		0.801		0.015		0.038
Participation ever	4.9±1.4		5.5±1.5		1.7±1.1		1.4±1.6		4.8±1.6	
Never	5.0±1.4		6.0±1.1		1.7±1.1		1.6±1.3		5.3±1.2	

KRW = Korean Won (₩).
*Scores 0–9. Higher scores indicate better knowledge; [†]Scores 0–7. Higher scores indicate more positive belief and attitude; [‡]Scores 0–5. Higher scores indicate greater perception of vulnerability and barriers; [§]Scores 0–6. Higher scores indicate greater perception of benefits.

Table 4. Multivariate analysis for factors associated with screening experience

Characteristic	Mammography ever (%)	Adjusted OR	95% CI	Corrected p-value
Country				0.568
Cambodia and Vietnam	46.6	1.31	0.32–5.33	1.000
China and Mongol	41.0	0.88	0.25–3.09	1.000
The Philippine	48.2	1.82	0.33–10.07	1.000
Japan	63.2	Reference		
Age (yr)				0.159
≤30	48.9	1.79	0.80–4.02	
>30	43.9	Reference		
Length of residence (yr)				0.040
≤2	48.4	2.84	0.85–9.44	0.104
2–5	41.5	0.79	0.29–2.19	1.000
>5	48.6	Reference		
Family income (1,000 KRW)				0.488
<2,000	45.8	1.11	0.39–3.16	1.000
≥2,000, <3,000	43.9	0.70	0.23–2.17	0.959
≥3,000	51.5	Reference		
Education				0.009
Less than high school	32.9	Reference		
High school graduate	47.0	1.55	0.65–3.72	0.527
More than college	68.3	4.81	1.50–15.49	0.005
Job				0.006
Yes	62.5	3.17	1.40–7.19	
No	42.0	Reference		
Korean language*				0.002
Poor	23.7	Reference		
Normal	47.5	5.59	1.56–20.03	0.005
Good	58.6	9.04	2.18–37.50	0.001

OR = odds ratio; CI = confidence interval; KRW = Korean Won (₩).
*It means Korean language ability in listening and speaking.

0.001), having a job (OR, 2.30; 95% CI, 1.13–4.69; $p = 0.022$), and better Korean listening/speaking ability (good vs. poor; OR, 4.57; 95% CI, 1.61–12.96; $p = 0.002$) were associated with greater mammography participation. After adjusting for country of origin, age, duration of residence, and family income using logistic regression analysis, we found that education level, occupation status, and Korean language ability were still important predictors for mammography, as shown in Table 4. Although a higher percentage of Japanese women had experience with screening mammography, this association did not remain statistically significant after adjusting for other demographic factors.

DISCUSSION

The immigrant population of Korea has been rapidly increasing over the last few decades, and there has been growing social interest and concern regarding the public health problems of multicultural families [12]. However, the medical cov-

erage provided to these families has been insufficient, and there have been no studies investigating the knowledge level of immigrant women in Korea regarding breast cancer or whether these women recognize the necessity and effectiveness of screening tests for early detection and management of breast cancer. According to studies conducted in other countries, immigrant women underutilize breast cancer screening services, which have been interpreted as a combination of cultural differences regarding the value of healthcare and disease prevention, relatively low socioeconomic status, differences in knowledge of breast cancer, and financial and/or linguistic barriers [13-16]. Immigrants often have low health motivation as a result of preoccupation with immediate resettlement issues of survival and adjustment in a new country [17].

According to the HBM, screening behaviors are influenced by knowledge, attitudes, and perceptions [18-20], and the same may be true of breast cancer screening behaviors [21]. Individuals are more likely to engage in preventive health behaviors if they perceive themselves to be susceptible to a certain disease, recognize the condition to have potentially serious consequences, believe that a course of action will produce positive outcomes (perceived benefits), or think that barriers to taking actions are outweighed by the potential benefits. This study was the first one to investigate such concepts based on the HBM about breast cancer screening among specific subgroups of immigrant women in Korea. Through this descriptive, cross-sectional study, we explored knowledge and interest regarding breast cancer and screening, the perceived need for screening, and the accessibility of screening services of immigrant women in Korea. We also investigated the relationship between knowledge and perceptions and actual breast cancer screening behaviors. Our results should provide useful information that can be used by healthcare providers and researchers to improve the current understanding of breast cancer and to enhance screening participation in multicultural families.

This study was conducted to investigate breast cancer-related knowledge, beliefs, and attitudes, perceived susceptibility to or severity of the disease, barriers, and perceived benefits of screening among immigrant women in Korea, as well as whether these factors differed between four country-based subgroups. As previous studies have shown [7,9,22], our findings suggest some influence of ethnicity on knowledge, beliefs, and perceptions related to breast cancer. In this study, Japanese women showed a tendency for older age, longer duration of residence in Korea, higher education level, and relatively better Korean language fluency than women in the other subgroups. Discrepancies in demographic factors might have affected our results and magnified differences between ethnic groups. Nevertheless, country of origin was a major factor as-

sociated with knowledge, positive beliefs or attitudes, and perceived benefits after adjusting for confounding variables. The reason for this finding may be that the concept of preventative care is a complex construct influenced not only by socioeconomic status, but also by cultural meaning and values specific to the country of origin, and these differences may be proportional to the cultural distance between natives and immigrants.

Time of residence is thought to be an important variable affecting screening behaviors; a longer time of residence can produce changes in knowledge, perceptions, and actual behaviors by allowing immigrants to obtain healthcare information and to lower language barriers [23,24]. Contrary to our expectations, the length of stay in Korea did not significantly affect knowledge and perception scores or screening participation in this study. One possible explanation for this finding is that the overall duration of residence was not very long in this study population (median, 44 months; range, 1–288 months), and thus the length of residency might have been too short for immigrants to integrate into their host country. Another reason for this lack of impact may be that Korean health programs or services for multicultural families might be insufficient; therefore, a thorough examination of breast healthcare status with a cultural component as well as effective delivery of health information and education regarding the significance of preventive behavior will be needed to generate changes in knowledge, attitudes, and perceptions.

The relationships between health-related concepts and screening behaviors found in this study were not consistent with previous studies. Many researchers have found that more knowledge, more positive attitudes regarding perceived benefits, lower perceptions of barriers, and great susceptibility and concern are significant predictors of mammography utilization [21,25]. As in previous studies [21], immigrant women in this study who had previously undergone mammography had lower barrier scores. However, we did not find a correlation between concepts and screening behaviors, with the exception of perceived barriers. Health-related concepts are related to social class or setting [26,27], and immigrant women face numerous disadvantages when seeking medical services; therefore, perceptions and attitudes seemed not to be directly reflected in screening behaviors. Furthermore, to accurately measure the relationships between health-related concepts and behaviors, appropriate measurement tools for immigrant women in Korea need to be developed. Additional systemic studies should be performed to clarify the relationships between screening-related knowledge and perception and actual behavior.

Although breast cancer screening rates of immigrant women in this study were lower than those of Korean natives, who have a lifetime screening rate of almost 80% [28], the partici-

pants in the current study were relatively young and may not have been candidates for routine screening mammography; therefore, a direct comparison between native and immigrant women was impossible. However, this study found that women with a higher education level, current employment, and better Korean language ability were more likely to have undergone screening mammography. In previous studies, education level was found to be significantly associated with cancer screening rates [29], as education level reflects the social environment and affects understanding of disease and prevention. The relationship between occupational status and screening rates indicates that occupation was not only a source of household income but also an opportunity to make use of social and healthcare services, which may lead to more opportunities to come into contact with medical services. Language is one of the most important factors acting as a barrier; therefore, our results could be interpreted in the same context.

This study had several limitations. We used a convenience sample, selected according to geographic location, and our study may suffer from selection and participation biases because of the small sample size and lack of random sampling. While the percentage of women by country of origin or age in our study was similar to that of the total immigrant population [2], our findings may not be generalizable to the entire population of immigrant women in Korea. Although not suitable for academic research, this study design was necessary for the convenience and feasibility of the survey. Second, there is no standardized and validated questionnaire to evaluate breast cancer-related knowledge and perceptions in Korea, although the questionnaire used in this study was created using similar inventories from previous studies [9,10]. Therefore, additional research is needed to develop appropriate tools for more reliable measures. Third, native Korean women were not included in this study as a control group, so a direct comparison between native and immigrant women in Korea was impossible. For a more precise comparison and better understanding of the distinct features of screening perceptions and behavior in immigrant women, subsequent studies should include native Korean women for a comparison group.

In summary, this study provided insights into the breast cancer-related knowledge, perceptions, and screening behaviors of immigrants in Korea for the first time. Our study showed that country of origin and education level influenced breast cancer-related knowledge, beliefs and attitudes, and perception of the benefits of breast cancer screening. Although we did not observe a significant correlation between knowledge and perceptions, with the exception of perceived barriers and screening participation behavior, additional studies should be conducted to clarify the relationships between

these factors and breast cancer screening and to determine the best systematic approach to multicultural families' preventive care problems. Our findings revealed that education level, occupational status, and Korean language ability were major contributors to screening mammography behaviors. To increase the use of breast cancer screening modalities, it will be necessary to provide active assistance, through language education or job placement, for immigrants settling in this country. To improve accessibility to health services and provide information regarding health and disease prevention, community-based programs should be provided consistently, such as implementation of Mammobus, a mobile mammography unit, or development of culturally and linguistically sensitive audiovisual materials about breast cancer risk and mammography screening. Further prospective longitudinal studies based on an understanding of the cultures and attitudes among different ethnic populations must be undertaken to clarify and strengthen our findings.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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Appendix 1. Items regarding knowledge about and perceptions of screening mammography used in this questionnaire

Constructs	Items
Knowledge about breast cancer and screening	Breast cancer can be cured if detected early.
	Breast lumps suspicious for cancer cause pain.
	Breast cancer can develop without any symptoms or signs.
	Stress can influence the appearance of breast cancer.
	Viruses and bacteria can cause breast cancer.
	The probability of developing breast cancer increases with age.
	Young woman can have breast cancer.
	Breast cancer can be inherited.
	Hormone treatment after menopause can cause breast cancer.
Beliefs and positive attitudes towards health and breast cancer	I want to identify any health problem as soon as possible.
	I think early detection of breast cancer is important for maintaining my health.
	I do not want to know if I have breast cancer.
	I need to be healthy and take care of myself because I have to take care of my family.
	I have other priorities before looking after my health.
	Only God can decide if I will have a disease.
	Getting breast cancer is a question of bad luck.
Perceived susceptibility to or severity of breast cancer	It is very probable that I will suffer from breast cancer in the future.
	Thinking about breast cancer scares me.
	If I had breast cancer, it would change my life and that of my family.
	I am more likely to develop breast cancer than other women.
	If I had breast cancer, I would not live longer than 5 years.
Barriers to screening mammography	Mammography could be harmful due to the X-rays.
	I am ashamed of undressing to get a breast exam.
	It would scare me if something abnormal was found.
	I don't have time to receive a mammography because I am always busy.
	Mammography is useless because if something abnormal is found, nothing can be done about it due to my social condition.
Perceived benefits of screening mammography	Mammography is safe.
	Mammography would enable the early detection of breast cancer.
	Mammography would enable cancer that I could not find with a self-exam to be detected.
	Mammography would decrease my chances of dying from breast cancer.
	It would help to put my mind at rest.
	It would enable cancer to be detected quickly, and therefore the treatment would not be so bad.