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Factors of Breast Cancer Screening Among Korean Immigrants in the United States¹

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Abstract

The purpose of this paper is to assess breast cancer screening rates and explore factors related to all three measures of breast cancer screening, mammography, clinical breast examination (CBE), and breast self-examination (BSE), among Korean immigrants in the United States. A telephone survey was conducted with 189 Korean women aged 40 and older in Cook County, Illinois. Of this group, 78% had had a mammogram at some point, and 38.6% had had one within the previous year. Fifty-three percent had had a CBE, while 26.1% had had one within the previous year. Whereas 58.1% had examined their breasts before, 46.3% did monthly BSE. Korean women's breast cancer screening rates are improving even though the rates are still lower than screening rates in the United States. Having a regular check-up and being married were strongly related to all three measures of cancer screening. Further in-depth research is suggested to understand KA women's perspectives on having access to care.

Keywords

breast cancer; cancer screening; mammography; clinical breast examination; breast self-examination; Korean American women

INTRODUCTION

Breast cancer is the most commonly occurring cancer, and the most common cause of cancer morbidity, among Korean American (KA) women (1). Breast cancer rates are expected to rise in the future as KA women adopt more Western life styles and as the average of age of KA women in the United States continues to rise (2). Furthermore, the number of Korean immigrants in the United States is steadily increasing. From 1990 to 2000, Korean community members increased by 35%, from 798,849 to 1,076,872 (3).

However, Asian American women, including KA women, have the lowest cancer screening and early detection rates of all ethnic groups (4). The screening rates vary from study to study, but 48–78% of the KA women had at some time had a mammogram, 47–59% of the women had had a mammogram within the previous 2 years, and 22% of the women had had a

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mammogram within the previous 1 year (4-11). The rates are far below the results from the 2002 California Behavioral Risk Factor Survey, which reports that 93% of Californian women had had mammograms, and 82% of them had had a mammogram during the preceding 2 years (8). The mammogram screening rates among Korean American women cited in the various studies are consistently far below the *Healthy People 2010* goal, which is that 70% of women aged 40 years and older will have received a mammogram within the preceding 2 years by the year 2010.

Korean women in the United States reported low rates of receiving clinical breast examinations (CBE) as well. About 56–66% of Korean women had previously had a CBE, and 41% of the women had had a CBE during the previous 2 years (3,7). However, 88% of Californian women had had a previous CBE at some point, and 75% of the women had had the examination during the preceding 2 years (8). Slightly more than 60% of Korean women had ever examined their breasts (7,8), and little more than one-quarter of the sample (26.6%) examined their breasts monthly (7,8).

Early breast cancer detection through mammogram, clinical breast examinations (CBE), and breast self-examination (BSE) is critical to reducing breast cancer-related morbidity and mortality. The American Cancer Society (ACS) recommends mammograms and CBE every year for women aged 40 and older for early breast cancer detection. Monthly BSE is now recommended as an option for women aged 20 and older. Although the efficacy of BSE as a breast cancer screening method is controversial, research suggests that the BSE is an efficient method of detecting cancerous lesions at an earlier stage, which leads to better outcomes, such as lower breast cancer-related mortality and morbidity (12,13).

Socio-demographic factors related to breast cancer screening behaviors among Korean American (KA) women are age, income, education, employment status, and marital status (6,10,14-16). In most studies examining cancer screening in minority women, the level of acculturation has been measured either by English proficiency or by the proportion of one's life spent in the United States. However, neither indicator has been consistently related to cancer screening behaviors in KA women (6,9-11,15). For KA women who have Korean-speaking providers or interpreters, proficiency in English may not be a crucial factor in use of health care services.

Factors related to access to care for Korean American women are health insurance, type of usual source of care, and routine check-ups. Having health insurance was related to having had a mammogram and CBE (6,9,15,16). However, in another study with KA women, cost and insurance were not primary reasons for not having had a recent Pap test (17). Similar findings were reported from a study of an HMO population. Asian American and KA women were less likely to be enrolled in the free screening program than the non-Asian control group (odds ratios of 0.53 and 0.62, respectively) who had the same HMO insurance plan ($N = 857$) (18). KA women who visited a Western-style physician's office as their usual source of health care were more likely to have had a mammogram or CBE than those who used traditional Eastern medicine as their usual source of care (16). Receiving routine checkups was a strong factor for breast cancer screening in many studies with Korean American women (10,11,14,16).

Most of the studies with Korean American women have not examined all three breast cancer screening methods, except two studies (5,7). However, comprehensive understanding of Korean women's breast cancer screening behaviors will be possible only when we have information about this population's use of all three breast cancer screening methods. Most published studies of Korean American women focused on mammogram screening in the previous 2 years, but a few studies (5,6) have examined mammogram screening in terms of the ACS guidelines, in the previous year.

The purpose of this paper is to describe breast cancer screening rates according to the ACS guidelines and to explore factors and predictors related to all three methods of breast cancer screening (obtaining mammography and clinical breast examination, as well as practicing breast self-examination) in order to provide a comprehensive picture of breast cancer screening behaviors among Korean immigrants residing in Cook County, Illinois. Information generated from this study could be utilized to develop intervention strategies for Korean immigrant women's breast cancer screening behaviors.

METHODS

This cross-sectional telephone survey was designed to collect information on breast cancer screening among Korean American women in Cook County, Illinois. The survey was conducted from December 2003 to March 2004 with 189 Korean American (KA) women.

Sample and Procedures

A list of KA residents' names, telephone numbers, and addresses in Cook County, Illinois, was developed using Web sites such as whitepages.com or switchboard.com to search for the most common Korean last names, for example, Choi, Han, Kim, Lee, Park, Rhee, Shin, and others. Cook County covers the greater metropolitan area of Chicago. According to the 2000 U.S. Census, 34,535 Koreans were living in Cook County (19). Over 2,200 Korean names were found using the Web sites. At the beginning of this study, a randomly chosen call list of 1,000 names was created in order to have about 200 subjects. However, because the response rate was very low, the whole list of names was exhausted to get the sample size.

After Human Subjects Review Approval was obtained, phone calls were placed to the telephone numbers on the list to find out whether any KA woman aged 40 or above and born in Korea was living in the household. If nobody answered the phone, at least three more calls were placed at different times and on different days of the week. Among the 2,200 names with telephone numbers, more than half of them did not answer the calls (59.3%, $n = 1,305$), and many phones had been disconnected (12.1%). The higher rate of not answering the telephone could be due to 1) the busy life among Koreans, or 2) not picking up the phone when they could not recognize the caller's number on the caller identification screen.

After the phones were answered ($n = 630$), many households did not have Korean American women older than 40 years of age who were born in Korea (44.4%, $n = 280$). Among those who were eligible ($n = 350$), 42.3% of them ($n = 148$) refused to participate, 58.3% of the eligible subjects ($n = 204$) participated in this study, and 15 responses were excluded later because they did not complete the survey ($n = 189$).

Once a KA woman had been contacted and met the inclusion criteria, the project was explained and she was then invited to participate in this survey. When the prospective subject verbally agreed to participate on the phone, she was considered to have given her consent to participate in this study. The telephone survey was conducted by a bilingual Korean American graduate student. All the telephone interviews were done in Korean because all of the subjects were born in Korea. The telephone survey lasted 20–30 min. The subject received a \$10 gift certificate by mail as compensation for her time.

Survey Development

The survey instrument was developed in English, translated into Korean, back-translated into English, and revised. Three experts in cancer screening, survey-instrument development, and/or Korean women's health care were consulted during the survey development. The questionnaire asked about breast cancer screening behaviors, socio-demographic information,

health care access, and other health-related topics. Some items in this study were from other health behavior surveys, including the 1990 National Health Interview Survey and the 1994 Behavioral Risk Factor Surveillance Survey.

Measures

The dependent variables measured participants' self-reported awareness of, receipt of, and currency in mammogram, CBE, and BSE based on three questions: 1) Have you *ever heard* about the mammogram/BSE? 2) Have you *ever had* the mammogram/CBE? Have you *ever examined* your own breasts? and 3) If you ever had one, when was the last time you had the mammogram/CBE? How often do you do breast self-examination?

Age, marital status, education, employment status, household income, and religion were included in the analysis as demographic characteristics. Age was categorized into three groups, 40–49, 50–64, and older than 65 years of age. Marital status (married, not married), education (12 years or less or more than 12 years), employment status (employed, unemployed), household income (less than \$55,000, equal to or greater than \$55,000), and religion (Christian, non-Christian) were measured for socioeconomic characteristics.

Level of acculturation was measured by years of residence in the United States (less than 20 years, 20 years or longer), proportion of life spent in the United States (less than 25%, more than 25%), English-speaking ability (none/little, some, well/fluent), and language spoken in family (mostly/all Korean, some English/all English). Both acculturation indicators (years of residence in the United States and the proportion of life spent in the United States) were asked in this survey because it is unclear which indicator is a more appropriate measure of acculturation in the Korean population. Health-related questions included whether they had used traditional treatment in the past 5 years (yes, no), have health insurance (yes, no), insurance coverage for mammograms if they had had one (entire cost, some coverage, no coverage, don't know), health status (poor/fair, good/excellent), usual source of care (having a regular doctor or place to go for health care: yes, no), and having regular check-ups within the previous 2 years even when they were not sick (yes, no).

Data Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS 12.0). Descriptive statistics, a series of Chi-square analyses and bivariate analyses, were performed to describe variables and to determine the effect of all the outcome variables on mammogram, CBE, and BSE utilization. Stepwise logistic regression analysis was conducted where the full model had all predictors included. Wald statistics were used to determine what variables significantly predict each outcome variable of “ever having mammogram,” “ever having clinical breast examination,” and “ever performing breast self-examination.” Having mammography or CBE within the past 1 year were not used as outcome variables in this study due to the small number of subjects who had received screening within the past 1 year. Income was not included in the analyses as 46% of the data were missing. Statistical differences were reported in this paper only when p was less than 0.05.

RESULTS

Sample Characteristics

The participants' demographic and other characteristics are shown in Table I. The sample consisted of 189 Korean American women age 40 and older residing in Cook County, Illinois. The mean age of the women was 60 years, ranging from 40 to 90 years. The majority of the women were married (71%), and a quarter of the women (26%) were widowed. Half of the women (51%) had had more than 12 years of schooling. The majority of the women were

housewives (66%), and the rest were working full- or part-time. Only 57% of the women responded to the annual household income question ($n = 109$). Among those responses, 62% ($n = 67$) reported an annual household income of more than \$ 55,000. The majority of women were Christians (93%), either Protestants or Catholics.

The average length of residence in the United States was 18.9 years, ranging from 1 year to 35 years. More than half (55%) of the women had lived in the United States longer than 20 years, and about two-thirds of the women (69%) had spent more than 25% of their lives in the United States. More than half of the women (51%) spoke little or no English, and 86% spoke Korean at home with their family members.

In regards to factors related to the women's health, slightly more than one-third of the women (37%) had been treated by a traditional healer in the preceding 5 years. Most of the sample (82%) claimed their health was fair (75%) to poor (7%), and only 18% of them claimed their health was good (16.5%) to excellent (1.5%). Among the 77% of the women who had health insurance, more than half (57%) had private insurance, and the rest had Medicare, Medicaid, or both. Among those who had health insurance, only 60% said their insurance paid the entire cost of their mammograms. About two-thirds of the women (69%) had a regular doctor or place to go for health care, and 71% said they had seen their physicians just for check-ups in the past 2 years.

Table II summarizes results pertaining to screening rates of mammograms, clinical breast examination, and breast self-examination. Most of the Korean women had heard about mammograms (94%), and 78% of the total sample of women reported ever having had a mammogram in their lives ($n = 146$). While only 39% of the total sample ($n = 73$) had had the test within the preceding year, 61% of the women ($n = 115$) had had the test within the preceding 2 years.

Slightly more than half of the women had ever had a CBE (53%, $n = 100$), while 26% ($n = 49$) reported having had a CBE within the previous year, and the rate of having the CBE within the previous 2 years was 35% ($n = 65$). Whereas most of the women had heard about BSE (88%), only a little more than half had ever examined their breasts (58%), and 46% of the sample examined their breasts once a month or more often. More than half of the participants (57%) had never learned about BSE.

Factors Associated with Mammography

Table III illustrates the results pertaining to socioeconomic status, acculturation, health insurance, health status, having a usual source of care, and receiving a routine check-up, and bivariate relations between those variables and the mammogram-related dependent variables of having heard of mammograms, ever having had one, and having had one within the previous year. The variables of having received traditional treatments in the past 5 years, language spoken in the family, and degree of insurance coverage for mammograms are not included in Tables III and IV because none of the variables showed a statistically significant relation with mammograms, CBE, or BSE.

The independent variables, age and having had a routine check-up, were associated with ever having heard of mammograms. Variables associated with ever having had a mammogram were age, marital status, having a usual source of care, and receiving routine check-ups. Having had a mammogram within the 12 months was related to length of time spent in the United States, having a usual source of care, and receiving a routine-check-up.

Using forward Wald procedures, the final model retained the variables marital status and receiving a routine check-up (Table V). KA women who had had a routine check-up in the past

2 years had more than four times greater odds of ever having had a mammogram (OR = 4.45, 95% CI 1.999, 9.090). Those women who were married were more likely to have had a mammogram than those who were not married (single, divorced, or widowed) (OR = 2.61, 95% CI 1.769, 5.872).

Factors Associated with Clinical Breast Examination (CBE) and Breast Self-Examination (BSE)

The independent variables of age, marital status, education, employment status, proportion of life spent in the United States, and health status were related to ever having had a CBE (Table IV). However, only length of residence in the United States, having a usual source of care, and receiving a routine checkup were related to having had a CBE within the previous 12 months. The final logistic regression model included marital status and education as strong predictors for ever having had a CBE (Table VI). Those women who had had more than 12 years of education were more likely to have had a CBE at some point than those women who had had a high school education or less (OR = 2.306, 95% CI 1.149, 4.623). KA women who were married had more than two times greater odds of ever having had a CBE (OR = 2.172, 95% CI 1.028, 4.586).

The independent characteristics of age, marital status, education, proportion of life spent in the United States, and English-speaking ability were related to having heard about BSE. Characteristics related to examining their breasts once a month were age, marital status, education, employment status, English-speaking ability, health insurance, and health status. Marital status was the only predictor remaining in the final logistic regression model for ever examining their breasts (Table VII). Women who were married had more than six times greater odds of ever examining their breasts (OR = 6.667, 95% CI 3.208, 13.855).

DISCUSSION

Unlike most studies, which examine only one or two of the breast cancer screening methods, this paper examined all three measures of breast cancer screening—mammogram, CBE, and BSE—in relation to the screening prevalence rates as well as factors that predict the screening behaviors among Korean American women. This study is also unique in reporting annual mammogram and CBE screening rates according to the ACS guidelines. This study supports the previously reported findings of low participation in breast cancer screening among Korean American women (5,7,9-11,15,16,20). The 61% rate of receiving mammography in the past 2 years among Korean American women in this study is far below the rate of 71% among white women and 68% among black women in the United States. (21). The gap is even wider for annual mammography, 39% among Korean women in this study versus 52% in whites, 50% in blacks, and 51% in Hispanic women (22), demonstrating the need for focused intervention to encourage annual mammography among Korean American women.

A higher percentage of women (78%) reported ever having had a mammogram in this study than in other studies of Korean women aged 40 years and older (48–58%) (7,11). The reported rate of having received mammography within the past 2 years in this study (61%) is similar to another study conducted in Michigan (56%) (9) and a little higher than other studies conducted in Maryland with Korean American women aged 40 years and older (47%) (10) or in California with Korean women 50 years and older (25–36%) (15,16,20). The rate of having received mammography in the previous year in this study (39%) is also higher than the studies of Korean women in California with women 40 and older (22%) and 50 and older (27%) (5).

The higher mammogram utilization rates in this study of Korean American women compared to findings from other studies could be a reflection of Korean Americans' increasing access to information and screening and providers' efforts to increase screening rates among the

population. Our screening rates are similar to findings from a study with Korean women in Santa Clara County in California (8), where survey data gathered in 1994 were compared with survey data gathered in 2002. The rate of ever having had a mammogram increased from 43 to 78%, and the rate of having had a mammogram during the preceding 2 years increased from 29 to 59% (8).

The 35% rate of having received a CBE in the past 2 years among Korean American women is far below the rate of 75% among white women and 74% among black women in the United States (21). Further, considering that the ACS recommends an annual CBE, the rate of CBE among Koreans in this study sample (26%) signals the need for intervention.

More socio-demographic variables were related to BSE than to mammogram or CBE utilization. As might be expected, women who were older, not married, had had less than a high school education, were unemployed, had less English-speaking ability, and had poorer health were less likely to report regular BSE. However, women with health insurance were also less likely to report BSE. The relationship between having health insurance and not examining their own breasts could be explained by the fact that those who have health insurance may be less concerned about their breasts because they have access to other breast cancer screening measures, such as mammogram or CBE.

Among the demographic variables, age was related to awareness of mammograms and BSE, and having received all three measures of screening. Age was not strongly related to receiving the breast screening measures within the previous year, but this could be because there was only a small sample of women who had received the test within the previous 1 year. The lowest rates of women ever having heard of or ever having had the screening was among the women 65 years of age or older, suggesting that they are less likely to have been exposed to screening. This might be a result of their language barrier or level of acculturation. Further study is needed to establish the reason for their low rates of exposure to and receipt of the screening and to develop appropriate interventions for these women.

Consistent with findings from other studies (10,11,14,16), receiving a routine check-up was a significant predictor for breast cancer screening in this study. In bivariate analyses, having had a routine check-up was related to all three aspects of mammograms: ever heard of; ever had one; and having had one within the preceding 1 year. As with mammography, having received a routine check-up was also a strong predictor for having had a CBE within the previous year. Having a regular doctor or a regular place to go for health care was also strongly related to KA women's breast cancer screening behaviors: ever having had a mammogram ($p = .024$), having had a mammogram in the preceding 1 year ($p = .000$), and having had a CBE within the past 1 year ($p = .038$). Logistic regression analysis also indicated that women who had a routine check-up were more than four times more likely to ever have had a mammogram. The findings confirm the idea that the issue of access to health care plays an important role in health disparities among Korean women. Therefore, breast cancer screening interventions that have components that assist KA women with accessing the health care system and developing the habit of receiving routine check-ups that include other screening measures could be more effective than interventions that only focus on breast cancer screening. Further research is suggested.

Women in this study who were married were more than two times more likely ever to have had a mammogram and CBE and more than six times more likely ever to have had a BSE. The women who were married might have had more resources, either instrumental or emotional, than those who were widowed or single, which enabled them to receive the screening. In a study with Mexican American women, those women who had stronger traditional attitudes toward family were more likely to have received mammograms (23,24). Support provided by

KA women's families might have positively influenced KA women's screening behaviors. In fact, one study found that encouragement from family members was a significant predictor of mammography and CBE utilization among KA women (11).

The proxy measures of acculturation (number of years and proportion of life spent in United States, English-speaking ability) or health insurance status (having health insurance, insurance coverage of mammograms) were not significantly correlated to mammogram utilization. Considering that the mean length of residency in the United States in this study sample is 18.9 years, which is longer than length of residency in previously published studies (13.9–17.0 years (7,10,11,14)), it could be speculated that Korean immigrant women are now more acculturated to U.S. society and the variable does not produce much variance in the population's mammogram utilization behavior. As these women become more acculturated to the United States, it is speculated that they become more familiar with health resources, including how to access services for low-income women. Therefore, extrinsic factors, such as having insurance or length of time in the United States, do not seem to play important roles in the mammogram utilization rates for Korean immigrants who have extended U.S. residency. On the other hand, intrinsic factors, such as culture-specific beliefs of fate or destiny, or other factors that they do not have much control of, such as "health care provider characteristics" or "influence/support from others/family members" might be related to Korean American women's mammogram utilization.

Consistent with findings from other studies, 82% of participants in this study rated their health from fair to poor. A relatively high percentage of KA women in other studies also reported their health from fair to poor (61–70%) (6,10). Considering that the mean age of our sample is older ($M = 60$ years old) than mean ages from the other studies ($M = 50$ and 54), our finding appears generalizable. However, the question remains why most KA women rate their health from fair to poor. It could indicate either a high actual co-morbidity rate or possibly a unique response bias among KA women to certain items because, based on the traditional doctrines of Confucian and Taoist philosophies, Koreans may be reluctant to express their positive feelings. Further research is needed to understand the relationships among health status, co-morbidity, and cancer screening utilization in the population.

This study has several limitations in study design and sampling. First, findings of this study may not generalizable to Korean immigrants who are living in rural areas of the United States. This study sample lived in Cook County, Illinois, where a larger population of Korean immigrants resides. They might have had different resources of health care than Korean immigrants living in rural areas where such resources are scarce. Second, this study was a telephone survey, which may have been influenced by selection bias: Prospective subjects who decided to participate in this study may have been more involved/interested in breast cancer screening than who chose not to participate. Furthermore, Korean immigrant women who do not have common Korean surnames, or who are married to non-Koreans and have changed their last names, could have different responses to this survey because Korean women with Caucasian husbands were four times more likely to have CBE than women married to Korean husbands (11). Koreans who do not have a telephone or have only a cellular phone were not included in this study and that could have produced bias in this study results. Finally, measurement error of self-reported information about cancer screening rates, as well as English-speaking ability and health status might have happened with this study. Self-reported cancer screening rates may differ from information obtained from the records of health care providers because self-reported cancer screening rates tend to overestimate cancer screening prevalence (23,25,26). Self-reported data about English-speaking ability or health status may be also biased and reported as better than their actual English-speaking ability or health status. However, our findings of English speaking ability or health status are similar to findings from other studies (6,14).

Despite the limitations, this study has several important implications for improving breast cancer screening among Korean American immigrant women. 1) Even though this study found higher rates of breast cancer screening rates than earlier studies, the rates are still lower than their counterparts among U.S. women. More attention needs to be given to increasing their cancer screening rates to meet the *Healthy People 2010* objective of 70% women 40 years of age and older having had a mammogram within the past 2 years. 2) Interventions to promote breast cancer screening should be within the context of encouraging Korean immigrants to establish a routine source of care, thereby increasing the likelihood that they will receive routine breast cancer screening. 3) Research is needed to develop interventions that are specifically targeted for Korean women 65 years of age or older or who are not married.

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Table I

Socio-Demographic and Health-Related Characteristics (Independent Variables) of the Korean American Women ($n = 189$ unless otherwise specified)

Characteristics	<i>n</i>	(%)
Age (years)		
40–49	54	28.6
50–64	65	34.4
≥65	70	37.0
Marital status		
Not-married	55	29.1
Married	134	70.9
Education ($n = 177$)		
≤High school graduate	90	50.8
>High school graduate	87	49.2
Employment status		
Unemployed	127	67.2
Employed	62	32.8
Household income ($n = 109$)		
<\$55,000	42	38.5
≥\$55,000	67	61.5
Religion ($n = 185$)		
Christians	172	93.0
Non-Christians	13	7.0
Length of residence in the United States (years)		
<20	86	45.5
≥20	103	54.5
Proportion of life spent in the United States		
<25% in life	59	31.2
≥25% in life	130	68.8
English speaking		
None/little	97	51.3
Some	52	27.5
Well/fluently	40	21.2
Language in family		
Mostly/all Korean	162	85.7
Some Korean and some English/all English	27	14.3
Traditional treatment in the past 5 years ($n = 185$)		
Yes	68	36.8
No	117	63.2
Health insurance		
Yes	146	77.2
No	43	22.8
Insurance coverage/mammogram ($n = 146$)		
Entire cost	87	60.0
Some coverage	39	26.7
No coverage	7	4.8
Don't know	13	8.9
Health status ($n = 179$)		
Poor/fair	147	82.1
Good/excellent	32	17.9
Usual source of care ($n = 199$)		
No	62	31.2
Yes	137	68.8
Regular check-up (Within the previous 2 years) ($n = 185$)		
No	54	29.2
Yes	131	70.8

Table II

Mammogram, Clinical Breast Examination, and Breast Self-Examination Among the Korean American Women ($n = 189$ unless otherwise specified)

Characteristics	<i>n</i>	(%)
Heard about mammogram		
Yes	178	94.1
No	11	5.9
Mammogram ($n = 188$)		
Ever had one	146	77.7
Never had one	42	22.3
Mammogram in the preceding 1 year ($n = 146$)		
Yes	73	50.0
No	73	50.0
Clinical breast examination (CBE) ($n = 188$)		
Ever had one	100	53.2
Never had one	88	46.8
CBE updated (in the preceding 1 year) ($n = 98$)		
Yes	49	50.0
No	49	50.0
Heard about breast self-examination (BSE) ($n = 187$)		
Yes	164	87.7
No	23	12.3
Learned about BSE ($n = 182$)		
Yes	78	42.9
No	104	57.1
BSE ($n = 186$) in the past		
Ever had one	108	58.1
Never had one	78	41.9

Table III

Relationships Between Independent Variables and Mammogram

Demographic characteristics	Heard about mammogram (%)	Ever had mammogram (%)	Mammogram in previous year (%)
Age (years)	<i>P</i> = 0.023	<i>P</i> = 0.002	
40–49	93.8	70.8	42.9
50–64	100.0	92.4	55.7
≥65	89.0	68.9	48.0
Marital status		<i>P</i> = 0.045	
Not married	92.9	68.4	43.6
Married	94.7	81.7	52.3
Education			
≤High school graduate	92.5	74.2	47.1
>High school graduate	95.1	80.2	54.5
Employment status			
Unemployed	93.7	76.6	51.5
Employed	95.0	80.0	46.9
Household income			
<\$55,000	97.5	75.6	40.6
≥\$55,000	96.9	80.0	61.5
Length of residence in the United States (years)			<i>P</i> = .030
<20	92.9	75.3	40.0
≥20	95.1	79.6	58.0
Proportion of life spent in the United States			
<25% in life	91.4	74.1	38.6
≥25% in life	95.3	79.7	55.4
English speaking			
None/little	91.9	73.0	43.8
Some	94.2	78.8	58.5
Well/fluently	100.0	88.9	53.1
Health insurance			
Yes	95.1	80.0	50.4
No	90.7	69.8	48.4
Insurance coverage/mammogram			
Entire cost	96.6	80.5	52.9
Some coverage	91.9	76.3	53.6
No coverage	100.0	85.7	16.7
Don't know	92.3	84.6	45.5
Health status			
Poor/fair	93.6	75.8	47.1
Good/excellent	96.7	86.7	61.5
Usual source of care		<i>P</i> = .024	<i>P</i> = .000
No	90.7	82.3	33.3
Yes	95.4	67.3	73.3
Regular check-up	<i>P</i> = .001	<i>P</i> = .000	<i>P</i> = .000
No	85.2	57.4	16.1
Yes	97.7	85.5	59.8

Table IV

Relationships Between Independent Variables and Clinical Breast Examination (CBE) and Breast Self-Examination (BSE)

Demographic characteristics	Ever had a CBE (%)	CBE in previous year (%)	Heard about BSE (%)	Ever had a BSE (%)
Age (years)	<i>P</i> = 0.000		<i>P</i> = 0.000	<i>P</i> = 0.000
40–49	54.2	38.5	95.8	72.3
50–64	75.8	59.2	98.5	74.2
≥65	32.4	43.5	71.6	34.2
Marital status	<i>P</i> = 0.001		<i>P</i> = 0.000	<i>P</i> = 0.000
Not married	35.1	42.1	73.7	32.1
Married	61.1	51.9	93.1	69.2
Education	<i>P</i> = 0.000		<i>P</i> = 0.001	<i>P</i> = 0.014
≤High school graduate	39.8	50.0	79.6	49.5
>High school graduate	67.9	48.1	96.3	67.9
Employment status	<i>P</i> = 0.004			<i>P</i> = 0.013
Unemployed	46.1	48.3	84.4	52.0
Employed	68.3	52.5	93.3	71.2
Household income				
<\$55,000	41.4	37.5	90.2	56.1
≤\$55,000	60.0	57.9	96.9	65.6
Length of residence in the United States (years)		<i>P</i> = 0.041		
<20	49.4	38.1	85.9	59.0
≥20	56.3	58.9	88.4	57.3
Proportion of life spent in the United States	<i>P</i> = 0.023		<i>P</i> = 0.035	
<25% in life	41.4	39.1	79.3	53.6
≥25% in life	59.4	53.3	91.4	60.9
English speaking			<i>P</i> = 0.019	<i>P</i> = 0.029
None/little	48.0	44.7	81.0	50.0
Some	51.9	61.5	92.3	61.5
Well/fluently	69.4	48.0	97.2	75.0
Health insurance				<i>P</i> = 0.046
Yes	54.5	47.4	86.9	54.2
No	48.8	60.0	88.4	71.4
Health status	<i>P</i> = 0.041			<i>P</i> = 0.032
Poor/fair	49.7	51.3	86.0	54.5
Good/excellent	70.0	42.9	93.3	75.9
Usual source of care		<i>P</i> = .038		
No	47.3	30.8	90.9	66.7
Yes	55.4	57.1	86.2	54.3
Regular check-up		<i>P</i> = 0.004		
More than 2 years ago (No)	44.4	25.0	85.2	62.3
Within past 2 years (Yes)	51.8	59.2	87.8	56.9

Table V

Logistic Regression Analysis: Predictors of Ever Having Had a Mammogram

Variables	B	Wald test	Significance	Odds ratio	Odds ratio (95% confidence interval)	
					Upper	Lower
Married	.960	5.401	0.020	2.61	5.872	1.769
Screening	1.492	13.370	0.000	4.45	9.090	1.999
Constant	.334	.647				

Logistic Regression Analysis: Predictors of Ever Having Had a Clinical Breast Examination (CBE)

Table VI

Variables	B	Wald test	Significance	Odds ratio	Odds ratio (95% confidence interval)	
					Upper	Lower
Married	.775	4.137	0.042	2.172	4.586	1.028
Education	.835	5.541	0.019	2.306	4.623	1.149
Constant	1.653	10.298				

Logistic Regression Analysis: Predictor of Ever Practicing Breast Self-Examination (BSE)

Table VII

Variables	B	Wald test	Significance	Odds ratio	Odds ratio (95% confidence interval)	
					Upper	Lower
Married	1.896	25.796	0.000	6.667	13.855	3.208
Constant	.903	8.700				