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Age-Related Differences in Health Beliefs Regarding Cervical Cancer Screening Among Korean American Women

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Abstract

Cervical cancer screening rates among older Korean American (KA) women are much lower than the rates for younger KA women, even though the overall cancer screening rates in the population continue to have one of the lowest Papanicolaou (Pap) test adherence rates compared with non-Hispanic White women. Variables based on the Health Belief Model related to cervical cancer screening were compared by age group among KA women. A telephone survey was conducted with 189 KA women living in the midwestern United States. Perceived barriers to having a Pap test predicted the outcome variable of having had Pap tests in the preceding 3 years in older KA women who were 65 or older, but not in younger women who were between 40 and 64 years old. Having physical examinations without symptoms in the preceding 2 years predicted the outcome variable in both age groups. Intervention strategies for all KA women should focus on encouraging them to receive routine physical examinations. In addition, attempts should be made to reduce perception of barriers in older KA women to improve their cervical cancer screening behaviors.

Keywords

cervical cancer; cancer beliefs; Pap tests; Korean American older women

The incidence of cervical cancer in Korean American (KA) women in the United States between 1988 and 1992 (15.2/100,000) was almost double that of non-Hispanic White women at 8.7/100,000, according to the Surveillance, Epidemiology, and End Results (SEER) program (Miller et al., 1996). More recent data show that among women in California between 2000 and 2002, the cervical cancer incidence rate for KAs was 11.2/100,000, even higher than the rate for Asian American women in general (8.8/100,000), whereas the rate among non-Hispanic Whites was 7.3/100,000 (McCracken et al., 2007). Even though no national cancer mortality data are available for KAs, the mortality rate among KA women in California was high. The mortality rate among KA women is 3.0/100,000; for Asian American women, it is 2.7/100,000; and for non-Hispanic Whites, it is 2.0/100,000 (McCracken et al., 2007).

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To the best of our knowledge, no national data are available on KA women's cervical cancer incidence and mortality rates by age group, though they may be higher in older KA women than in younger KA women, based on rates for older women in the United States in general. Cervical cancer incidence and mortality rates in American women aged 65 years or older are much higher than for those who are younger than 65 years. According to the SEER report, in 2007, age-adjusted SEER incidence rates based on data collected from 13 states were 11.57/100,000 in women aged 65 years and older and 6.59/100,000 in women younger than 65 years. The incidence rate breakdown in women younger than 65 years was 9.32/100,000 in the age group of 20 to 49 years and 11.22/100,000 in the age group of 50 to 64 years. The age-adjusted U.S. cervical cancer mortality rates in the same year were 6.20/100,000 in women aged 65 years and older, whereas they were 1.87/100,000 in women younger than 65 years. Among women younger than 65 years, the age-adjusted mortality rates were 2.01/100,000 and 5.04/100,000 in the age groups of 20 to 49 and 50 to 64 years, respectively (National Cancer Institute [NCI], 2009).

Cervical cancer incidence and mortality rates have decreased by 67% in the United States over the past decades mostly because of the Papanicolaou (Pap) test, and cervical cancer is now one of the most successfully treated cancers (Schiffman, Brinton, Devesa, Faraumeni, & Joseph, 1996). Pap testing is critical to the early detection of cervical cancer and precancerous lesions, which leads to successful treatment and reduction of the incidence of cervical cancer (American Cancer Society, 2008). Cervical cancer screening recommendations by various professional organizations differ to some extent. The American Cancer Society recommends yearly Pap tests for women within 3 years of having vaginal intercourse, and no later than age 21, and then every 2 to 3 years for women 30 years and older if they have had three normal test results in a row (American Cancer Society, 2008). The U.S. Preventive Services Task Force (USPSTF) and the NCI recommend cervical cancer screening within 3 years of the onset of sexual activity or at age 21, whichever comes first, and screening at least every 3 years for women who have an intact cervix (USPSTF, 2003). NCI also recommends continuing screening of women who have had a hysterectomy if the surgery was for precancerous cells or cancer and suggests that regular screenings may decrease cervical cancer incidence and mortality by more than 80% (NCI, 2010).

Despite the benefits of having Pap tests, the higher incidence of cervical cancer and lower Pap test rates in KA women than in non-Hispanic White women in the United States puts them at greater risk for cervical cancer. Asian American women, including KA women, have much lower cervical cancer screening and earlier detection rates than non-Hispanic White women in the United States (Kagawa-Singer & Pourat, 2000). Compared with 84% of all women aged 18 years or older in the United States who had received a Pap test in the preceding 3 years (Coughlin, Uhler, Hall, & Briss, 2004), only 26% to 66% of KA women received Pap tests during the same period, and only 22% to 85% of KA women had ever had a Pap test in their lives (Centers for Disease Control and Prevention, 2004; Juon, Seung-Lee, & Klassen, 2003; K. Kim et al., 1999; Sarna, Tae, Kim, Brecht, & Maxwell, 2001; Wismer et al., 1998b). Furthermore, older KA women are much less likely to use Pap tests than younger KA women. A study conducted in Baltimore–Washington metropolitan area Korean churches and low-income senior housing reported that among 85 KA women aged 65 years and older, only 12% had ever had a Pap test, whereas 43% of 374 younger KA women aged 40 to 64 years had ever had the test (Juon et al., 2003). The Pap test rates among KA women are consistently far below the Healthy People 2010 goal—that 97% of women aged 18 years and older will receive a Pap test and 90% will have received Pap tests during the preceding 3 years.

The low Pap test utilization in KA women was associated with advanced, lack of knowledge, low level of education, low acculturation such as spoken English proficiency,

cultural barriers such as embarrassment, and lack of preventive orientation (Juon et al., 2003; Juon, Seo, & Kim, 2002; K. Kim et al., 1999). KA women have low levels of knowledge, and their knowledge is related to whether they receive cervical cancer screening or not (Juon et al., 2002; K. Kim et al., 1999; Sarna et al., 2001). Women who were knowledgeable about screening guidelines were three times more likely to receive regular Pap tests (Juon et al., 2003). Through focus groups, KA women were found to have very limited knowledge about cervical cancer and screening, and misconceptions about cervical cancer etiology, preventive strategies, and early-detection methods (H. Kim, Lee, Lee, & Kim, 2004; M. C. Lee, 2000). Knowing that not getting regular Pap tests would increase the risk of cervical cancer was also significantly associated with receiving Pap testing in the preceding 3 years in Vietnamese women (Do et al., 2007).

KA women often reported modesty and embarrassment (H. Kim et al., 2004), and older Korean women felt more embarrassed and were reluctant to expose their pubic area (Juon et al., 2002). Perceived benefits and barriers were significantly related to having had a Pap test and having had one in the preceding 3 years in KA women (E. E. Lee, Fogg, & Menon, 2008). Therefore, the lower cervical cancer screening rates among older KA women could be partly due to cultural barriers (e.g., English proficiency, embarrassment), and the different cervical cancer screening rates between older and younger women could be attributed to these differences in health beliefs.

The health belief model (HBM) has been used to explain and predict breast and colorectal cancer screening behaviors and various other health promotion behaviors but has rarely been used in cervical cancer screening research. Perceived susceptibility to developing a disease, perceived seriousness of the disease, perceived benefits of taking action to prevent the disease, perceived barriers to taking action, cues to action, perceived self-efficacy of executing action, and modifying variables of knowledge and sociodemographic characteristics constitute the HBM (Champion & Skinner, 2008). We examined only the four original constructs of perceived susceptibility, seriousness, benefits, and barriers. We did not measure the construct of cues to action and perceived self-efficacy because the construct of cues to action has not been identified clearly in research (Champion & Skinner, 2008) and not enough support for adding the construct of perceived self-efficacy related to cervical cancer screening is found in the literature. Furthermore, usually an intervention is considered as a cue to action, so there was no cueing to act in this descriptive study.

The purpose of this article is to compare factors based on the HBM (modifying variables of sociodemographic characteristics and health care–related characteristics and knowledge, and health beliefs) related to receiving cervical cancer screening services (obtaining Pap testing) between two age groups of KA women; KA women who are 65 years of age and older and younger KA women who are between 40 and 64 years of age, residing in Cook County, Illinois. Findings from this study are expected to help us understand the reasons for the different cervical cancer screening rates between the older and younger KA groups. This information could be used to develop tailored intervention strategies to improve KA women's cervical cancer screening behaviors based on their age groups.

The USPSTF (2003) does not recommend routine screening for women older than 65 years for cervical cancer if they have had adequate recent screening with normal Pap tests and are not otherwise at high risk for cervical cancer. However, older KA women are at high risk for cervical cancer and need to receive routine screening because they are much less likely to use Pap tests and have not had adequate screening, compared with younger KA women and women from different ethnic backgrounds.

Method

Sample and Procedures

KA women were recruited by telephone survey using a list of 2,200 common Korean surnames, such as Kim, Lee, and Park, listed in Web directories for Cook County, Illinois. Among those, only 630 (56%) households answered our phone calls, and 350 women (56% of those who answered) were found eligible to participate in this study. Inclusion criteria for this study were immigrant women who were 40 years or older. The reason for including women who were 40 years or older was because this study was originally conducted to study KA women's breast and cervical cancer screening behaviors, and routine mammogram screening is recommended only for women 40 years of age or older. Those 350 KA women who met the inclusion criteria and were eligible to participate in this study were invited to participate in the telephone survey after explanation of the purpose of this study was given. A total of 204 women, 58% of the 350 eligible KA women, agreed to participate. However, only 189 women were in the final sample because 15 respondents did not complete the survey. Verbal agreement from a participant on the phone was considered consent to participate in the study. Further details of the sampling and study procedures are reported elsewhere (E. E. Lee, Fogg, & Sadler, 2006). The telephone survey was conducted in Korean by a bilingual graduate research assistant and lasted about 20 to 30 minutes. All telephone interviews were conducted in Korean, because all the KA women preferred to speak Korean. This study was approved by the institutional review board at the University of Illinois at Chicago.

Survey Development

The survey instrument was developed in English, translated into Korean, back-translated into English, and revised as necessary by the team members in consultation with three experts in cancer screening, survey development, and/or Korean women's health issues. The survey included questions about cervical cancer screening behaviors, modifying factors (sociodemographic characteristics and health-related information and knowledge), and health beliefs about cervical cancer and cancer screening.

Measures

The outcome variables measured participants' self-reported receipt of Pap tests with two questions about receipt and currency of the Pap test: (a) Have you *ever had* a Pap test? and (b) If you ever had one, *when was the last time you had* the Pap test for the purpose of screening, without any symptoms? Women who had had a Pap test in the preceding 3 years were considered up to date on Pap testing.

Modifying variables—Sociodemographic variables such as age, marital status, education, employment status, household income, religion, and level of acculturation (years of residence in the United States, proportion of life spent in the United States, and English-speaking ability) and health-related questions about health insurance, usual source of care such as a regular physician or a place to go for health care, and number of checkups during the past 2 years were measured. From now on, having a usual source of care such as a regular physician or a place to go for health care, will be called "usual source of care," and having checkups during the past 2 years will be called "physical examinations."

Two items measured knowledge of cervical cancer and screening among KA women (E. E. Lee et al., 2008). Among 15 items originally developed to measure knowledge, only these 2 items were answered correctly by more than 40% of participants. One item asked about risk factor for cervical cancer ("Having a family history of breast cancer is related to developing breast cancer") and another item asked about knowledge of early-detection methods for

cervical cancer (“Which of the following techniques is the most effective way to detect breast cancer at an early stage?”). The item of knowledge of early-detection methods for cervical cancer predicted the outcome of having had a Pap smear (Lee et al., 2008).

The HBM Scale for Cervical Cancer Screening–Korean version (HBMSCC-K) was developed by adapting Champion’s Breast Health Survey on breast cancer screening (Champion, 1993, 1999) to measure health beliefs about cervical cancer and cancer screening among KA women. There were no published, existing instruments that were developed based on a theory/theories to measure beliefs related to cervical cancer screening, especially using the HBM. Therefore, the wording of Champion’s survey was changed from “breast” to “cervix” as appropriate in the HBMSCC-K. Some items were added based on our previous studies with KA women because Korean women’s beliefs/perceptions about breast and cervical cancer are influenced by their familial context (E. E. Lee, Reimer, Miller, Sadler, & Lee, 2007). Korean women also believe that as long as they are free of symptoms, cancer screenings are not necessary (E. E. Lee et al., 2007). Therefore, items such as “If I had cervical cancer, it would disrupt the harmony in my family” were added on the seriousness subscale and “I don’t have any symptoms, so I don’t need a Pap smear” on the barrier subscale.

The 18-item HBMSCC-K instrument has four subscales: perceived susceptibility to (3 items) and seriousness of (6 items) having cervical cancer, perceived benefits of taking action to prevent the disease (4 items), and perceived barriers to having cervical cancer screening (5 items). Scoring for the HBMSCC-K is the same as for Champion’s original scale, using Likert-type scale responses ranging from *strongly disagree* to *strongly agree*, with higher scores indicating higher levels of beliefs in each subscale. Cronbach’s alpha for the susceptibility, seriousness, benefits, and barriers subscales are .91, .85, .64, and .63, respectively. The concepts of perceived benefits and barriers in the subscales consist of various domains that could have resulted in relatively lower Cronbach’s alpha of the subscales.

Data Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS 16.0). Descriptive statistics were used to describe sociodemographic and health-related characteristics and cervical cancer screening utilization. Chi-square statistics were used to compare sociodemographic and health-related characteristics, knowledge, health beliefs, and cervical cancer screening utilization between the older and younger KA groups. Older and younger KA women were not compared on the outcome variable of having had a Pap test because of the small sample size of younger women who had never had a test (4%). Therefore, we compared the two groups on the outcome of having up-to-date Pap tests.

Measures of association such as point biserial correlation coefficients were used to assess the nature and strength of the association between the outcome variable and the modifying variables of sociodemographic and health-related characteristics, knowledge, and perceived susceptibility, seriousness, benefits, and barriers. Stepwise logistic regression analysis was used to create a predictive model for the outcome of having a recent Pap test; predictors included variables that were associated with the outcome at the .15 level in preliminary analyses; they were retained if they were significant at the .10 level.

Results

Sample Characteristics

The mean age of the women in the older age group was 75 years ($SD = 6.8$, range = 65–90 years), and the mean age of the women in the younger age group was 51 years ($SD = 7.1$,

range = 40–64 years). Overall, the majority of the women in the sample were married (71%), had finished high school (51%), and were Christian (93%). The average length of residence in the United States was 19 years (range = 1–35 years); 54% of the women had lived in the United States longer than 20 years, and 69% of the women had spent more than 25% of their lives in the United States. In all, 52% of the women reported that they spoke little or no English. Seventy-seven percent of the women had health insurance, 67% had a usual source of care, and 70% reported that they had received routine checkups during the preceding 2 years.

When comparing sociodemographic and health-related characteristics between the two groups, older women were less likely to be married, educated, or employed; were less fluent in English; had less income; spent less of their lives in the United States; were more likely to have health insurance and a usual source of care; and reported poorer health than younger KA women. Detailed sociodemographic and health-related characteristics that compare older and younger KA women are reported elsewhere (Eun, Lee, Kim, & Fogg, 2009).

Comparisons of Pap Test Utilization Between the Two Groups

There were significant differences in cervical cancer screening utilization between the older and younger women ($p < .0001$; Table 1). Older women were significantly less likely to have ever had a Pap test and to have had the test during the preceding 3 years. Only 67% of the older women had ever had a Pap test, compared with 96% of the younger women who had had one. The percentage of older KA women who had had the test during the preceding 3 years was only 44, whereas 79% of their younger counterparts had had the test during the same period ($p < .0001$; Table 1).

Comparisons of Health Beliefs and Modifying Factors Associated With Pap Test Utilization Between the Two Groups

When sociodemographic and health care–related characteristics associated with having had a Pap test during the preceding 3 years in each group were examined, older women who had had physical examinations were significantly more likely to have done so during the preceding 3 years, whereas younger women who were more educated, had access to a usual source of care, and had had physical examinations were more likely to have had the test than those women who were less educated, did not have access to a usual source of care, and had not had physical examinations (Table 2).

Overall, regardless of cancer screening utilization patterns, there were significant differences in health beliefs between the older and younger groups of women (Table 3). Older KA women had significantly higher perceptions of seriousness, barriers, and benefits than younger KA women. However, when health beliefs about cervical cancer and screening associated with having had a Pap test in the preceding 3 years were examined for each age group, in older women, perceived benefits and barriers were significantly related to cervical cancer screening utilization, whereas in younger women, only perceived barriers were significantly related (Table 4); that is, older women who had fewer perceived barriers and more perceived benefits were more likely to have had a Pap test during the preceding 3 years, and younger women who had fewer perceived barriers were more likely to have had the test during the preceding 3 years.

When bivariate correlation analyses of the influence of outcome variables on having had a Pap test during the preceding 3 years were examined for each age group, the variables of having routine physical examinations, knowledge of early-detection methods for cervical cancer, and all four areas of health beliefs were significantly positively correlated to the outcome variable in older KA women, whereas having higher education, a usual source of

care, and routine physical examinations, and all four areas of health belief were significantly positively correlated to the outcome variable in younger KA women. These variables were included in the initial logistic regression models for each age group. Using a stepwise procedure, the final model for older KA women having had a Pap test in the preceding 3 years consisted of predictors such as perceived barriers and routine physical examinations (Table 5). Among older women, number of perceived barriers was negatively associated with having had a Pap test. Those who perceived more barriers were less likely to have had a Pap test in the preceding 3 years than those who perceived fewer barriers. In particular, with a one-unit increase in the number of perceived barriers, we expect to see about a 90% decrease in the odds of having had a Pap test. Older women who had routine physical examinations in the past 2 years without symptoms had 7 times the odds of having had a Pap test than those women who did not have screening. The odds were almost 6 times greater in younger women who had routine physical examinations in the past 2 years without symptoms compared with women who did not have routine physical examinations (Table 5).

Discussion

This study compared health beliefs related to cervical cancer screening utilization between older (65 years or older) and younger (between 40 and 64 years old) KA women to understand older KA women's lower screening rates. Based on the HBM, we assumed that variables related to health beliefs would differ between the two age groups because older KA women's health beliefs might be more influenced by their traditional cultural beliefs and attitudes. They might feel that having a Pap test is embarrassing or think that there is no need for screening if there are no symptoms. Indeed, we found that older KA women's cervical cancer screening behaviors were influenced by their perception of barriers, whereas younger KA women's behaviors were not. Therefore, the lower cervical cancer screening rates among older KA women could be partly because of cultural barriers (e.g., lack of proficiency in English, embarrassment), and the different cervical cancer screening rates between older and younger women could be attributed to these differences in health beliefs.

It is well documented in the literature that overall KA women's cervical cancer screening rates are low, and older KA women's cervical cancer screening rates are even lower than the rates for women in the United States in general (Juon et al., 2002; Juon et al., 2003; K. Kim et al., 1999). Our findings that only 67% of older women had ever had a Pap test and that just 44% of their tests are updated confirmed the findings in the literature, so older KA women are at higher risk for cervical cancer than their younger counterparts.

Other than the differences in the outcome variable of cervical cancer screening utilization, there were also significant differences in beliefs of perceived seriousness, benefits, and barriers between older and younger women. Older women had significantly higher awareness of the seriousness of the consequences of having cervical cancer compared with younger women, regardless of their Pap test utilization. However, the perception of seriousness was not different related to the up-to-date Pap test utilization in each group, nor did it predict Pap test utilization. In contrast, for breast cancer, older KA women also had higher levels of perceived seriousness than younger KA women and were almost five times more likely to have had a mammogram (Eun et al., 2009). Older women who perceived having breast cancer as serious, in that if they had breast cancer, their whole life would change, were much more likely to have had a mammogram. The much lower level of knowledge about cervical cancer and screening in our study could have made KA women unaware of the seriousness of having cervical cancer. Further research is warranted.

When health beliefs associated with the outcome variable of having had a Pap test in the preceding 3 years were examined, there were significant differences found in perceived

benefits and barriers between older women whose Pap tests were current and those whose Pap tests were not. Older women who had higher levels of perceived benefits were more likely to have had their Pap tests updated than those women who had a lower level of perceived benefits. Among younger women, significant differences were also found in perceived barriers between women whose Pap tests were updated and those whose Pap tests were not. In a study of breast cancer screening behaviors based on the HBM, KA women who had never had a mammogram also reported much lower perceived benefits and higher barriers than those who had had one (Han, Williams, & Harrison, 2000).

Even though perceived barriers were associated with having updated Pap tests in both older and younger women, the perceived barriers to receiving a Pap test were a robust predictor for only older KA women in logistic regression analysis. Not much information is available in terms of the relationship between perceived barriers and Pap test utilization among KA women, but perceived barriers have been found to strongly predict breast cancer screening behaviors in Koreans (Han et al., 2000; Han, Williams, & Harrison, 1999; Hur, Kim, & Park, 2005; Y. W. Lee, Lee, Shin, & Song, 2004). KA immigrants, especially older women, may retain traditional cultural beliefs and attitudes that prevent them from receiving cancer screening services. Cervical cancer screening rates among Korean women living in Korea are even lower than in Korean women in the United States. Only 21% to 56% of women in Korea have ever had a Pap test (Y. B. Kim, Noh, Lee, Park, & Mang, 2000; Park, Chang, & Chung, 2005; Sarna et al., 2001). KA women's perceived barriers to having a Pap test could be partly because of cultural values and attitudes that make them feel embarrassed, shameful, and shy about exposing their genitalia to the health care provider, especially male doctors (Im, 2000; Im & Meleis, 2000; H. Kim et al., 2004; Lee, 2000). Other studies of KA women report that the major reason they do not receive Pap tests is the absence of symptoms, which makes them believe that receiving screening is unnecessary (Juon et al., 2003; H. Kim et al., 2004; K. Kim et al., 1999), which is also one of the barriers in this study. The absence of symptoms was the most frequently reported reason for not having breast, colorectal, and cervical cancer screening among Asian American women, including KA women, at more than twice the rate of non-Hispanic White women (Kandula, Wen, & Jacobs, 2006).

Having physical examinations in the preceding 2 years without symptoms was a robust predictor for both the age groups. Korean women who had at some point had physical examinations were 5 to 7 times more likely to receive screening. Having physical examinations without symptoms has been found to consistently and strongly predict breast and cervical cancer screening behaviors in Asian women, including Chinese, Filipino, and Korean women in the United States (Han et al., 2000; Juon et al., 2000; Juon et al., 2002; Y. W. Lee et al., 2004; Maxwell, Bastani, & Warda, 2000; Su, Ma, Seals, Tan, & Hausman, 2006; Tang, Solomon, & McCracken, 2000; Wismer et al., 1998a, 1998b). However, no studies examined the mechanism of the variables (e.g., having health insurance, level of acculturation, language barriers, etc.) that contribute to having physical examinations, which ultimately seem to influence KA women's breast and cervical cancer screening behaviors. Korean women who immigrated from Korea, where preventive medicine is not emphasized, may be less likely to receive physical examinations without symptoms and may also be less likely to receive cancer screening services such as mammography and Pap tests. Our post hoc analyses found that physical examinations were significantly positively correlated with having a usual source of care, having health insurance, and number of years spent in the United States ($p < .01$). Therefore, Korean women who do not have a usual source of care, do not have health insurance, and are newer immigrants specifically need to be educated about the importance of receiving routine physical examinations, which will eventually improve their cervical cancer screening behaviors.

In addition to receiving physical examinations in the preceding 2 years, younger women who had Pap tests in the preceding 3 years were more likely to be educated and to have had a usual source of care. Education was associated with breast and cervical cancer screening utilization in KA women (Juon et al., 2002; K. Kim et al., 1999). Older KA women in this study had less than a high school education, and most of them had a source/place for routine care, which may cause no difference in the variables on Pap test utilization behaviors.

Knowledge of the early-detection facet of cervical cancer screening was related to the outcome variable of having had a Pap test in the preceding 3 years among older KA women, but it did not predict screening behaviors. Knowledge of the importance of early detection predicted having had a Pap test in KA women older than 40 years, but not having had a Pap test in the preceding 3 years (E. E. Lee et al., 2008). However, having knowledge of Pap test guidelines was a strong predictor of having regular Pap tests in KA women in Maryland (Juon et al., 2003). It is well documented that KA women have very limited knowledge about cervical cancer screening (K. Kim et al., 1999; E. E. Lee et al., 2008). Therefore, different levels of knowledge may not have much direct influence on their cancer screening behaviors. Rather, the limited knowledge may more influence their beliefs about receiving screening.

This study has several limitations in its design and sampling. First, the findings of this study may not be generalizable to Korean immigrants living in rural areas of the United States or where culture-specific resources are not readily available. Second, data were collected over the telephone, which may have introduced sample selection bias. Additionally, those who participated may have been more interested in cervical cancer screening than those who chose not to participate. Furthermore, KA 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. Our findings also may not be generalizable to KA women who are younger than 40 years because they may have different beliefs and behaviors about cervical cancer and screening than the KA women in our study. Finally, there might have been measurement error in the self-reported information about cancer screening in this study. Self-reported cancer screening frequency may differ from information obtained from the records of health care providers because self-reported cancer screening tends to overestimate its prevalence (Gordon, Hiatt, & Lampert, 1993; McPhee et al., 2002; Suarez, Goldman, & Weiss, 1995).

Despite these limitations, this study has several important implications for improving cervical cancer screening among KA women. The rate of cervical cancer screening among older KA women is lower than in younger KA women and much lower than for the general population of women in the United States. More attention needs to be given to increasing KA women's cancer screening rates to meet the Healthy People 2010 objectives. Interventions to promote cervical cancer screening should be within the context of culturally specific beliefs, especially for older KA women. The significantly different health beliefs between the two age groups could explain the difference in screening rates between them, especially the perception of benefits and barriers. That perceived barriers predicted older KA women's screening behaviors suggests that interventions focusing on decreasing barriers for the subpopulations of older KAs could be effective in increasing their cervical cancer screening rates. Regardless of the age group, having physical examinations in spite of a lack of symptoms predicted KA women's cervical cancer screening behaviors. Therefore, interventions to promote cervical cancer screening for KA women who are 40 years and older should focus more on assisting them to make taking care of themselves a priority even when they do not have any symptoms.

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Table 1
Utilization of Pap Tests in Older and Younger Korean Immigrants in the United States (N= 189)

Characteristics	Age		χ^2	p
	65 Years; n (%)	<65 Years; n (%)		
Pap test				
Have had one	48 (66.7)	112 (95.7)	28.977	<.0001
Never had one	24 (33.3)	5 (4.3)		
Pap test in the preceding 3 years				
Yes	32 (44.4)	92 (78.6)	23.088	<.0001
No	40 (55.6)	25 (21.4)		

Table 2
Comparisons of the Sociodemographic and Health Care–Related Factors Associated With Having Had a Pap Test in the Preceding 3 years in Older Women and Younger Women (*N* = 189)

Characteristics	Pap Test Preceding 3 Years in Older Age; <i>n</i> (%)		Pap Test Preceding 3 Years in Younger Age; <i>n</i> (%)		χ^2 (<i>p</i>)
	Yes (<i>n</i> = 32)	No (<i>n</i> = 40)	Yes (<i>n</i> = 92)	No (<i>n</i> = 25)	
Education					
High school	25 (83.3)	30 (83.3)	64 (73.6)	11 (47.8)	5.554 (.018)
>High school	5 (16.7)	6 (16.7)	23 (26.4)	12 (52.2)	
Usual source of care					
Yes	30 (93.8)	32 (80.0)	55 (61.8)	8 (32.0)	7.010 (.008)
No	2 (6.3)	8 (20.0)	34 (38.2)	17 (68.0)	
Physical examinations					
Yes	28 (90.3)	24 (60.0)	66 (75.0)	10 (40.0)	10.830 (.001)
No	3 (9.7)	16 (40.0)	22 (25.0)	15 (60.0)	

Note: The demographic variables of marital status, employment, household income, religion, length of residence in the United States, proportion of life spent in the United States, English-speaking ability, health insurance, and health status were not statistically significant as predictors of Pap test utilization.

Table 3

Comparisons of the Health Beliefs About Cervical Cancer and Screening in Older and Younger Korean American Women ($N = 188$)

Group	Age (Years)	<i>n</i>	Mean	<i>SD</i>	<i>t</i>	<i>p</i>
Susceptibility	65	71	2.267	.427	0.673	.502
	<65	117	2.313	.484		
Seriousness	65	71	3.622	.514	-3.492	.001
	<65	117	3.338	.577		
Benefits	65	71	3.545	.366	4.412	<.0001
	<65	116	3.793	.380		
Barriers	65	71	2.878	.475	-11.295	<.0001
	<65	117	2.198	.347		

Comparisons Between Older and Younger Women's Health Beliefs About Cervical Cancer and Screening Associated With Having Had a Pap Test in the Preceding 3 years ($N=188$)

	Pap Test Preceding 3 Years in Older Age						Pap Test Preceding 3 Years in Younger Age					
	Yes (<i>n</i> = 32)			No (<i>n</i> = 39)			Yes (<i>n</i> = 92)			No (<i>n</i> = 25)		
Health Beliefs	Mean	SD		Mean	SD	<i>t</i> (<i>p</i>)	Mean	SD		Mean	SD	<i>t</i> (<i>p</i>)
Susceptibility	2.273	.429		2.260	.431	.127 (.899)	2.329	.507		2.253	.388	-.697 (.487)
Seriousness	3.625	.542		3.619	.498	-.043 (.996)	3.316	.481		3.420	.601	.792 (.430)
Benefits	3.679	.382		3.435	.317	2.935 (.005)	3.821	.378		3.690	.376	1.538 (.127)
Barriers	2.625	.418		3.087	.417	4.638 (<.0001)	2.128	.275		2.456	.456	4.512 (<.0001)

Predictors of Having Had a Pap Test in the Preceding 3 Years in Older and Younger Korean Immigrants in the United States (*N* = 189)

Table 5

	Variables	B	SE	Wald	df	Significance	Exp(B)	Odds Ratio	Confidence Interval	
									Lower Bound	Upper Bound
Older women	Barriers	−2.375	.987	5.786	1	.016	.093	.093	.01	.64
	Physical examinations	1.983	.906	4.787	1	.029	7.263	7.264	1.37	38.36
	Constant	5.775	2.724	4.494	1	.034	—	—	—	—
Younger women	Physical examinations	1.719	.610	7.954	1	.0005	5.579	5.570	1.68	18.44
	Constant	.642	.391	2.699	1	.001	—	—	—	—