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## Cancer Screening of Korean Americans in Los Angeles County: Adding Pieces to the Puzzle

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### Abstract

We compare and contrast three surveys that were conducted in the Korean American community in Los Angeles County and discuss the pros and cons of different sampling and survey strategies. We also look at predictors of breast and cervical cancer screening among Korean American women that were found in studies nationwide.

### Introduction

Data from the 1998 California Behavioral Risk Factor Survey indicate that Asian women and women of other ethnic backgrounds who are 40 years old or older have slightly higher rates of mammography screening in the past 2 years (close to 80%) than do African-American, Hispanic, and white women (70 to 75%, American Cancer Society 1999). Does that mean that Asian women have no problem accessing cancer screening? Several local studies conducted in California and in other parts of the United States suggest otherwise.

Amidst a variety of ethnic groups, Korean Americans constitute one of the most recent and rapidly growing subpopulations in the United States. According to census data, there were 1,076,872 Korean Americans living in the United States in the year 2000—a 134% increase since the 1990 census, in which 798,849 Korean Americans were reported (U.S. Bureau of the Census 1990,2000). Among those tallied in the 2000 census, 345,882 Korean Americans resided in California, with 186,350 living in Los Angeles County alone (about 54% of all Korean Americans in California). Including four counties (Riverside, San Bernardino, Orange, and Ventura) neighboring Los Angeles county, Southern California was home to 259,975 Korean Americans (75% of the California Korean American population and 24% of the Korean American population in the United States). This area comprises the largest Korean American population in the country.

Perhaps owing to their relatively recent arrival, Korean Americans have received little attention from the health-care system and policy makers, and little is known about their overall health status or the needs and factors that influence their health behaviors. The Korean Health Education, Information and Research (KHEIR) Center conducted two health surveys, in 1989 and 2000, among Korean Americans living in Los Angeles County. The objectives of these surveys were to assess their health status, a variety of health behaviors, and trends over the 10-year period. In 1996, Maxwell and colleagues collected detailed, face-to-face information on selected cancer-screening behaviors and related knowledge and attitudes in a convenience sample of Korean American women (Maxwell et al., 1998a, 1998b, 2000).

In this presentation, we compare and contrast three surveys that were conducted in the Korean American community in Los Angeles County and discuss the pros and cons of different

sampling and survey strategies. We also look at predictors of breast and cervical cancer screening among Korean American women.

## Methods

For both surveys conducted by the KHEIR Center, Korean American households with the common Korean surname of “Kim” were randomly selected from telephone directories covering Los Angeles County (Shin and Yu 1984) and were mailed a comprehensive questionnaire. After 2 weeks, nonrespondent households were contacted by phone to confirm whether this was a Kim household and, if possible, to solicit their responses. Up to four calls were made for each household. In 1989, we received information on 1,162 Korean Americans from 345 Korean households. In 2000, we received information on 1,660 Korean Americans from 539 households (see Figure 1).

The questionnaire was designed to have up to six family members respond on the same sheet by providing six columns on each page. Although we strongly recommended that all household members respond for themselves, it turned out that in many cases, one family member answered questions on behalf of others. Those proxy reports occurred mostly for young or old family members.

A third survey was one in which Maxwell and her group conducted face-to-face interviews in 1996 with a convenience sample of 229 predominantly low-income Korean American women aged 50 or older. This sample was recruited through churches and community-based organizations. About 10% of the women who were approached declined participation. The survey assessed screening behavior for breast, cervical, and colorectal cancer and selected knowledge, attitudes, and beliefs based on the theoretical framework of the Adherence Model (Maxwell 1998a, 1998b, 2000). In all three surveys, respondents were given the choice to complete the survey in the English or Korean language.

## Analysis

Both KHEIR surveys included Korean American women aged 18 and older to assess their utilization of Pap smears, clinical breast exams (CBE), and mammography (only in the KHEIR 2000 survey) and their awareness of breast self-exam (BSE). However, in this analysis, we included only Korean American women aged 50 or older. In all the surveys, demographic factors (including acculturation), access to care, and, in Maxwell’s survey, knowledge and attitudes were compared between Korean American women who had received and those who had not received cancer-screening tests within the past 2 years. A multivariate analysis model was constructed to predict receipt of a specific cancer-screening test within the past 2 years.

## Results

Demographic characteristics and screening behaviors of Korean American women aged 50 or older who participated in the three studies are shown in Table 1. Despite the different sampling methods, two of the samples appear very similar (the KHEIR 2000 and Maxwell 1996 samples). Almost all women in the three samples were born in Korea, and all surveys were completed in the Korean language. Screening rates were also quite similar in the two more recent samples (KHEIR 2000 and Maxwell) and showed an increase from the 1989 survey. About 40% of Korean American women aged 50 and older reported receipt of a Pap smear, a CBE, and a mammogram within the past 2 years. Those rates are considerably lower than the Healthy People 2010 goal of regularly screening 70% of all women 40 years of age and older.

While there were almost no missing data in the face-to-face survey conducted by Maxwell and colleagues, a substantial portion of respondents did not complete the screening information in

the two KHEIR surveys. As shown in Table 2, 11% of women aged 40 or older who reported having had a Pap smear did not provide this information. However, if the survey was completed by a spouse or other family member, a 19 to 23% nonresponse rate was observed. The nonresponse rate by type of respondent was almost identical for all screening behaviors reported. We took the most conservative approach and coded missing information as “not screened.”

Although the three Los Angeles surveys were quite different with respect to sampling and survey administration, some of the same predictors emerged. Korean American women who received cancer screening within the past 2 years or were aware of BSE appeared to be relatively younger, better educated, and more likely to have health insurance than those who received screening more than 2 years ago or never. They were also more acculturated based on several measures, including age at immigration to the United States, percent of lifetime spent in the United States, and English language proficiency. Visiting a physician for a regular checkup appeared to be a strong predictor for getting cancer screening and for BSE awareness.

Correlates of increased breast and cervical cancer screening among Korean American women are presented in Table 3, together with findings from other studies that have been conducted in other parts of the United States. More detailed information on studies that have assessed breast and cervical cancer screening among Korean American women is included in Table 4.

## Conclusion

Studies conducted to assess cancer screening among Korean Americans have used a variety of sampling methods and modes of administration. While a population-based sample is often considered the gold standard, it can be biased if the response rate is low or if participation is limited for other reasons. For example, the Behavioral Risk Factor Surveillance System (BRFSS) is a telephone survey that is conducted in 50 states, the District of Columbia, and Puerto Rico, yet it has a relatively low response rate. The median response rate was 53% in 2000, with a range of 35 to 77% among different states (<http://www.cdc.gov/brfss>). Additionally, this survey was not administered in any Asian language. The high mammography screening rate that was found among Asian women who participated in this survey (American Cancer Society 1999) has to be interpreted with these limitations in mind. Such a survey does not represent the screening experience of non-English speaking women. Women with low levels of education and income are usually also under-represented in telephone surveys. On the other hand, local surveys with convenience samples are often criticized for lack of generalizability. While this is true, they are often able to capture underserved populations, non-English speaking subjects, and those who respond better to personal contacts than to more impersonal telephone requests. Many Korean Americans who will refuse to participate in a telephone or mailed survey will consider participating if they learn about a survey from a friend or another community member. The mode of administration (mail, telephone, or face-to-face) affects response rates, the amount of missing information, the number of questions that can reasonably be asked without losing respondents, and the target group that can participate (for example, subjects with a low level of literacy can participate in a telephone or face-to-face survey but not in a mail survey). The surveys themselves differ in that some include a broad assessment of many different health concerns (such as the BRFSS or KHEIR surveys), which can help in the prioritizing of future health programs. Others are limited to an in-depth assessment, for example, of knowledge, attitudes, and beliefs related to a single screening test, which can provide valuable information for intervention development.

Screening rates that have been found in surveys such as those listed in Table 4 should be considered in light of the limitations that each particular study has. Additionally, there may be regional differences that can only be detected if similar studies are conducted in different parts

of the country. Taken together, these studies contribute to our understanding of cancer screening among Korean Americans like pieces of a puzzle. Every single piece is needed to contribute to the whole picture. In putting the puzzle together, it would be helpful if information that is collected across all studies, such as demographic characteristics, access to health, and acculturation, was assessed in a uniform way. The core questionnaire that is currently being developed by the Asian American Network for Cancer Awareness, Research and Training (AANCART) will assist greatly in comparing the different study samples and will help explain some of the differences in screening rates that are being found in different studies.

Although screening rates vary in different studies, some consistent determinants of screening behavior are emerging: In general, more acculturated women who have health insurance and who report having routine checkups are more likely to obtain cancer-screening tests than their peers who are less acculturated and have no health insurance. As in many other populations, a physician's recommendation to obtain a cancer-screening test is one of the strongest predictors of screening. Thus, strategies to increase cancer screening among Korean American women should target physicians as well as the Korean American population. Screening should be especially encouraged among recent immigrants. For women who lack health insurance, free programs such as the Breast Cancer Early Detection Program and the Breast and Cervical Cancer Control Program should be encouraged. Future research should focus on designing culturally appropriate intervention programs to increase screening rates and on testing these interventions in randomized trials. Community-university partnerships such as those supported by AANCART are crucial in advancing this work.

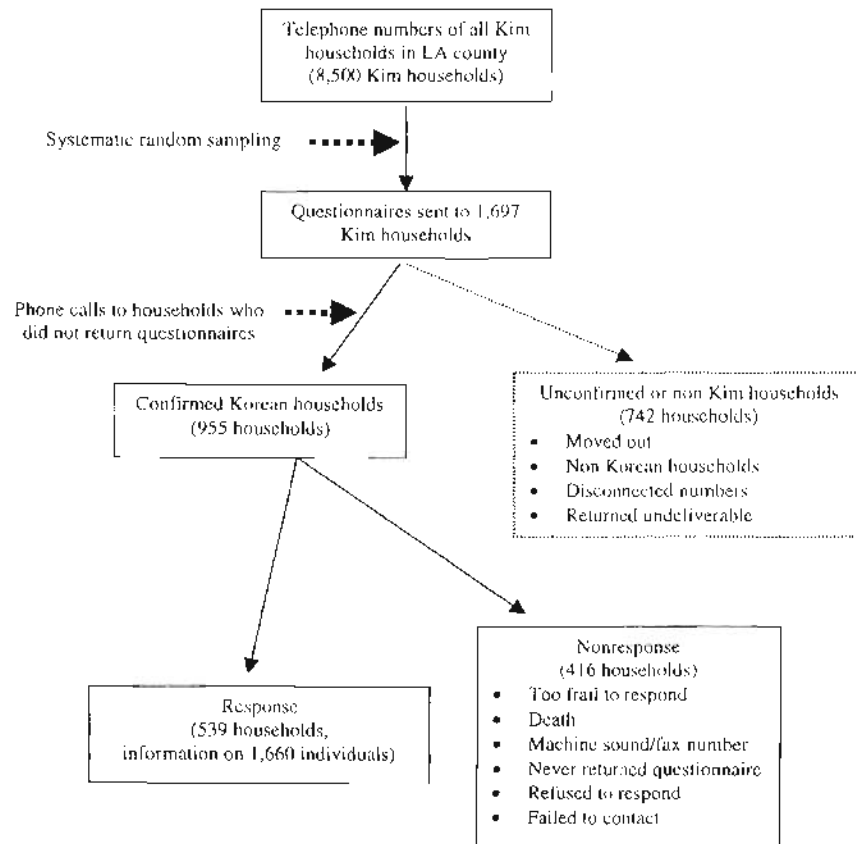
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**Figure 1.**

Sampling process for the KHEIR 2000 survey.

Note: Among 1,697 households, 56% were confirmed to be KA households during telephone follow up, and out of these, 56% completed questionnaires.

**Table 1**  
 Characteristics of Korean American Women Aged 50 or Older from Three Studies.

	KHEIR 1989 N=116	KHEIR 2000 N=267	Maxwell 1996 N=229
<b>Demographic variables</b>			
Age			
average	61 yr	64 yr	61 yr
50–64 yr	72%	56%	66%
65+ yr	28%	43%	34%
Currently married	74%	69%	68%
Education			
less than high school	39%	27%	31%
high school	28%	30%	32%
college or more	31%	38%	37%
Annual family income			
less than \$20,000	38%	37%	-
\$20,000–\$39,999	31%	30%	-
more than \$40,000	31%	32%	-
Employment	37%	33%	34%
Health insurance	35%	61%	65%
<b>Acculturation variables</b>			
% of lifetime in the US	19%	29%	25%
Age at immigration	49.7 yr	45.9 yr	-
Birth in Korea	95%	91%	-
Length of residency in the US			
0–10 yr	53%	17%	-
11–20 yr	38%	42%	-
21+yr	8%	39%	-
English proficiency			
good or better	21%	40%	-
poor or worse	75%	53%	-
<b>Cancer screening behavior</b>			
Pap smear within past 2 yr	20%	36%	41%
CBE within past 2 yr	23%	40%	36%
Mammogram within past 2 yr	-	39%	40%
BSE awareness	19%	41%	-

Blank cell: not reported or not assessed.

**Table 2**  
Cancer Screening among Korean American Women Aged 40 or Older by Type of Respondent.

		KHEIR 2000 survey			
		Total (n=424)	Self (n=191)	Spouse* (n=184)	Other (n=48)
<b>Pap smear</b>	<2 yr	43%	51%	40%	27%
	≥2 yr	18%	21%	17%	13%
	never	23%	17%	24%	38%
<b>Mammogram</b>	nonresponse	16%	11%	19%	23%
	< yr	40%	45%	41%	21%
	≥2 yr	17%	19%	17%	10%
	never	27%	26%	23%	46%
	nonresponse	16%	10%	19%	23%

**Table 3**  
Correlates of Increased Breast and Cervical Cancer Screening among Korean American Women.

Reference	Breast Cancer Screening		Pap Test
	Mammogram	CBE	
Wisner et al., 1998a,b	<ul style="list-style-type: none"> <li>• married × not employed</li> <li>• unmarried × employed</li> <li>• routine checkup ≤ 2 yr</li> </ul>	<ul style="list-style-type: none"> <li>• 25% of lifetime in US</li> <li>• MD visits in past year</li> <li>• routine checkup ≤ 2 yr</li> </ul>	<ul style="list-style-type: none"> <li>• married × not employed</li> <li>• unmarried × employed</li> <li>• married × employed</li> <li>• routine checkup ≤ 2 yr</li> </ul>
	not assessed		<ul style="list-style-type: none"> <li>• health insurance</li> <li>• no predictors emerged</li> <li>• regular checkup</li> <li>• English proficiency</li> </ul>
	<ul style="list-style-type: none"> <li>• health insurance</li> <li>• regular checkup</li> <li>• younger age at immigration</li> <li>• MD recommendation</li> <li>• # friends/relatives who have mammograms (group norms)</li> <li>• comfortable requesting mammogram</li> <li>• of lifetime in US</li> </ul>	<ul style="list-style-type: none"> <li>• younger age at immigration</li> <li>• health insurance</li> <li>• regular checkup</li> <li>• English proficiency</li> <li>• not reported</li> </ul>	<ul style="list-style-type: none"> <li>• no predictors emerged</li> <li>• regular checkup</li> <li>• English proficiency</li> <li>• younger age</li> <li>• % lifetime in the US</li> <li>• ever had a checkup</li> </ul>
Juon et al., 2000	<ul style="list-style-type: none"> <li>• no transportation problem</li> <li>• &gt;high school education</li> <li>• 25% of lifetime in US</li> <li>• routine checkups</li> </ul>	<ul style="list-style-type: none"> <li>• not reported</li> </ul>	<ul style="list-style-type: none"> <li>• &gt;25% of lifetime in US</li> <li>• read English newspapers regularly</li> <li>• routine checkups</li> </ul>
Kim et al., 2000	<ul style="list-style-type: none"> <li>• private health insurance</li> <li>• age, education, years in US, source of medical care, and knowledge of cancer risk did not emerge as predictors</li> </ul>	<ul style="list-style-type: none"> <li>• &gt;10yr in US</li> </ul>	<ul style="list-style-type: none"> <li>• private health insurance</li> <li>• &gt; 6 yr of education</li> <li>• use of western clinic/physician</li> </ul>
Han et al., 2000	<ul style="list-style-type: none"> <li>• MD recommendation</li> <li>• regular checkup</li> <li>• support from family members</li> </ul>	<ul style="list-style-type: none"> <li>• support from family</li> <li>• Caucasian husband</li> <li>• MD recommendation</li> </ul>	<ul style="list-style-type: none"> <li>• not assessed</li> </ul>

Table 4  
 Studies Assessing Breast and Cervical Cancer Screening among Korean American Women.

Reference	Sampling Method/Location	Characteristics of Women	Screening Rates	
			Breast	Cervix
Wisner et al. (1998a,b)	Population-based telephone survey using Korean surname telephone lists (10,900 numbers were purchased). <b>Northern CA, Alameda, Santa Clara.</b>	N=424 women aged 50+ Median age=60 (50 to 92) 99% immigrants 99% surveyed in Korean 73% health insurance 70% married 36% employed 70% < 12 yr education N=116 women aged 50+ Mean age=61 Mean U.S. residency=11 yr 97% immigrants 100% surveyed in Korean 35% health insurance 74% married 37% employed N=267 women aged 50+ Mean age = 64 Mean U.S. residency = 18 yr 95% immigrants 100% surveyed in Korean 61% health insurance 69% married 33% employed N=229 women aged 50+ Mean age 61 =(50 to 75) Mean U.S. residency =15 yr 100% immigrants 100% surveyed in Korean 65% health insurance 68% married 34% employed 31% < 12 yr education N=69 women aged 40+ Mean U.S. residency=15 yr 100% surveyed in Korean 86% married 11% 12 yr education	N=424 women aged 50+ 48% ever had mammo 34% mammo ≤ 2yr 32% CBE ≤ 2 yr	N=424 women aged 50+ 63% ever had Pap 50% pap ≤ 2 yr
KHEIR 1989	Telephone listing of Korean surname "Kim" in <b>Los Angeles County</b> . Total of 6,076 numbers. Mailed survey with some telephone follow up. Some proxy reporting by house hold members. Sample included 116 women aged 50+.		N=116 women aged 50+ 23% CBE ≤ 2 yr 19% aware of how to do SBE	N=116 women 50+ 36% Pap ≤ 2 yr
KHEIR 2000	Telephone listing of Koreasurname "Kim" in <b>Los Angeles County</b> . Total of 8,500 numbers. Mailed survey with sme telephone follow-up. Some proxy reporting by household members. Sample included 267 women aged 50+.		N=267 women aged 50+ 39% mammo ≤ 2 yr 40% CUE ≤ 2 yr 41% aware of how to do SBE	N=267 women aged 50+ 36% Pap ≤ 2 yr
Maxwell et al. (1998a, 2000)	Convenience sample of 229 women aged 50+ recruited through a community-network approach in <b>Los Angeles County</b> , 1996. Face-to-face interviews.		N=229 women aged 50+ 49% ever had mammo 36% mammo ≤ 2 yr 53% ever had CBE 36% CBE ≤ 2 yr	N=229 women aged 50+ 77% ever had Pap 41 % Pap ≤ 2 yr
Sarna et al. (2001)	Convenience sample of 69 women aged 40+ recruited at 4 churches in <b>Los Angeles County</b> . Self-administered questionnaire, with assistance available. Winter 1998.		N=69 women aged 40+ 33% ever had mammo	N=69 women aged 40+ 15% ever had Pap

Reference	Sampling Method/Location	Characteristics of Women	Screening Rates	
			Breast	Cervix
Juon et al. (2000)	771 immigrant Korean Americans aged 18+ recruited at 6 Korean churches and 2 Korean grocery stores in <b>Maryland</b> . 86% self-report questionnaires, 14% face-to-face surveys.	N=438 women aged 18+ Mean age=50 (18 to 89) Mean U.S. residency=14 yr 100% immigrants 100% surveyed in Korean 55% health insurance 80% married 66% employed 24% < 12 yr education N=159 women aged 40+ Mean age=56 (40 to 69) Mean U.S. residency=8 yr	N=307 women aged 40+ 47% mammo ≤ 2 yr	N=69 women aged 40 + 15% ever had Pap
Kim et al. (1998, 1999)	List from sampling firm Korean telephone book, subscribers of a Korean newspaper, Korean community center in <b>Chicago</b> . Face-to-face interviews at respondents homes.	100% surveyed in Korean 67% married	N=159 women aged 40+ 10% ever had mammo (7% for screening)	N=159 women aged 40+ 34% ever had Pap
Han et al. (2000)	107 Korean women aged 40+ recruited from 2 Korean churches followed by snowball sampling in a <b>mid-sized southeastern U.S. city</b> . Mailed questionnaire.	80% < 12 yr education N=107 women aged 40+ Mean age=48 (40 to 80) Mean U.S. residency=17 yr 100% immigrants 56% Caucasian husband 85% health insurance 47% CBE ≤ 2 yr	N=107 women aged 40+ 58% ever had mammo 67% ever had CBE 45% mammo ≤ 2 yr	Not assessed/reported
Hong and Yu (2000)	88% married 67% < 12 yr education Probability sample of 67 Korean women residing in an urban area in <b>Michigan</b> . Pilot study.	Not reported	N=67 women (age not reported) 48% mammo ≤ 1 yr 47% CBE ≤ 1 yr	Not assessed/reported