Title Page

Title:

Immigration and Health among Korean Americans

Authors:
Youngtae Cho, Ph.D.
School of Public Health, Seoul National University
Population Research Center, University of Texas-Austin

Soonim Huh, MPH, Ph.D. (Corresponding author)
Korea Institute for Health and Social Affairs

W. Parker Frisbie, Ph.D.
Department of Sociology, Population Research Center,
University of Texas-Austin.

Robert A. Hummer, Ph.D.
Department of Sociology, Population Research Center,
University of Texas-Austin.

Contact Information:

Dr. Soonim Huh

Korea Institute for Health and Social Affairs
        , Seoul 122-705 Korea
Tel: 82-2-380-8143
Fax: 82-2-382-4581
e-mail: soonim@kihasa.re.kr

Immigration and Health among Korean Americans

Abstract

We examined the health and health behaviors of Korean Americans, focusing on the effect of acculturation to US society and overall US health-related structural environments. A bi-national comparison is carried out, based on Koreans residing in the US and in Korea. Acculturation variables did not show any patterned effect on the health (self-rated health and BMI) and health behaviors (smoking and binge drinking) of Korean Americans. Overall, this population exhibited more advantaged health and more favorable behaviors than Koreans. However, health inequality across socioeconomic status groups was generally much greater among Korean Americans as compared to Koreans residing in Korea. Findings showed that socioeconomic status was the primary factor influencing health and health behaviors among the two groups of Koreans, indicating the influence of US health-related structural environments. Further, our results suggested that a multidimentional acculturation perspective should be employed in understanding the health/health behaviors of immigrant populations.

Key words: Korean-American; Health; Health behaviors; Socioeconomic status

Word counts:
Abstract (161 words)
Main text (3,409 words, including citations)
Number of tables: 4

Introduction

During the past two decades, the size of Korean population in the US has dramatically increased from about 800,000 in 1990 to over one million in 2000 and is expected to increase further (USCensusBureau 2001). Along with this demographic growth, interest in the health of this population has also increased (Cho and Juon 2006; Cho, Song and Frisbie 2005; Hill et al. 2006; Sohn 2004; Sohn and Harada 2005). However, Korean Americans and their health issues are understudied relative to other Asian-origin populations, such as Chinese, Japanese, and Filipinos. Various demographic and socioeconomic characteristics reveal the unique features of Korean Americans among immigrants to the U.S., i.e., a relatively short immigration history, strong presence of foreign-born immigrants, high geographic concentration, and high rates of self-employment (Min 1995; Yu, Choe and Han 2002). It is imperative that Korean Americans be analyzed separately from other Asian populations in order to better understand salient risk factors or barriers that influence health status and health behaviors for this unique and growing population.

A number of studies on immigrant health have paid close attention to the role of acculturation. In general, they have reported that the foreign-born enjoy more favorable health status and health behaviors as compared to their native-born counterparts, but this health advantage diminishes as their level of acculturation into US society increases. This inverse relationship between acculturation and immigrant health has been observed not only for the aggregated Hispanic and Asian immigrants (Klatsky and Tekawa 2005; Uppaluri, Schumm and Lauderdale 2001) but also for their sub-population groups,

including Korean Americans (Cho and Hummer 2001).   Recently, (Abraido-Lanza et al. 2006) argue that immigrant health research should consider the possibility of bicultural or even multicultural aspects of acculturation process. According to them, immigrants tend to acquire or adopt health related values, customs, beliefs, and behaviors of host society not necessarily losing those from their home society. Thus, when conditions allow, such as an access to information, financial resources, or time for exercise, immigrants may acculturate to health promoting US culture while simultaneously retaining health protective customs and behaviors from home country such as healthy diet and strong family ties. This argument seems to be contradictory to the main findings of aforementioned previous studies of which underlying assumption was that immigrants were acculturated only to 'unhealthy' or even 'toxic' US culture, customs, or behaviors. Although Cho and Hummer (2001) discovered deteriorating activity limitation status with a longer residential duration in the US among Korean Americans, we still think that there is a possibility that a multidimentional acculturation process takes place to this population, actually promoting their health. It is because Cho and Hummer's discovery (2001) was based on the 1990 PUMS data set that included Korean Americans immigrated to the US prior to 1990, and recent studies have empirically divulged that a bidimensional or multidimensional model better explains the acculturation process of Korean Americans than the unidimentional model (Jang et al. 2007; Lee, Sobal and Frongillo 2003). The growth of cultural or material exchange between Korean American community and Korea, structural settlement of Korean community in the US (e.g., increased political, economic, and academic achievements and/or physical enlargement of Korean enclaves), and increased racial/cultural pluralism in

US society in general have made it possible for this population to experience the bicultural acculturation process. Given the high aspiration of this population for entering mainstream US society and culture (Cho 2001), it is not hard to suppose that contemporary acculturation may take place in a direction that promotes, or at least does not deteriorate, the health of Korean Americans.

Another important determinant of immigrant health, in addition to acculturation, is a health-related structural environment in host society including the health care system. If the structural environment of host society is quite different from that of home society, the difference itself, not to mention the magnitude of acculturation to new society, can affect the health and health behaviors of immigrant population. Certainly, the health-related structural environments of the US and Korea are very different, particularly the health insurance system. Korea has implemented universal health care system since 1989. Korean Americans, at least who arrived at the US after 1990, may feel the US health care system challenging. A large number of Korean Americans are self-employed small business owners (Yu et al. 2002). A high medical insurance premium makes them be reluctant to maintain a comprehensive insurance coverage, which functions as a barrier of health service access (Ryu, Young and Park 2001). One may consider English proficiency and oriental belief of health are also structural barriers of health service access to Korean Americans. However, we suppose that these factors are not as substantial structural barriers as a US health insurance system regarding health and health behaviors of this population, since Korean physicians and oriental clinics can be easily located in large cities where most Korean Americans reside. It is reported that ninety-six percent of Koreans in the US are

found in metropolitan areas from the 2000 US census (Yu et al. 2002). Further, modern Korean medical system has been developed largely based on the Western medicine rather than the oriental medicine, and most Koreans in Korea have belief on health and illness not much different from that in the US **(need reference)**. Compared to the amount of research that focuses on acculturation based only on the immigrant populations already residing in the US, there have been relatively few attempts to study immigrant health from a bi-national perspective, paying attention to the function of general US health care systems. Indeed, there have been a few studies on the health and health behaviors of Korean Americans conducted from a bi-national perspective (Lim and Zebrack 2008; Song et al. 2004). However, these studies are based on hospital data or non-population based small scale survey data, which makes it hard to generalize their findings to a population level.

Thus, this study aims to examine the health status and health behaviors of Korean Americans, focusing on the effect of acculturation and of general US health care environment different from Korea. We employ a bi-national perspective here, since to compare the health status and related risk factors of immigrant populations with those of their counterparts in sending countries can effectively explore the role of different social or structural environments, particularly when two populations are biologically or genetically similar but reside in different countries like Korean Americans and Koreans.

Methods

Our study used two separately collected data sets for Korean Americans and Koreans. For Korean Americans, we extracted a sample of 485 adult Koreans (aged 19 and over) representative of Koreans in California from the 2003 California Health Interview

Survey (CHIS) Public Use File. The CHIS is one of the few data sets that includes a large representative sample of Koreans in California, where about 35% of Koreans in the US are reported to reside according to the 2000 census. For Koreans, we used data from the 2005 Korea National Health and Nutrition Survey (KNHNS), a triennial national survey that provides information on health status, health behaviors and attitudes, health care utilization, and nutritional intake. Although 25,487 adult individuals were surveyed in 2005, sample sizes included in our analyses were different for each outcome variable because several questions were asked of only a fraction of respondents. For self-rated health status, 25,196 respondents were queried, for body weight, 5,526 respondents, for smoking, 7,802 respondents, and for binge drinking, 5,945 respondents who reported drinking in the past month were analyzed in this study.

In this study, we focused on health status (self-rated health status and body weight problem) and health behaviors (smoking and binge drinking) that were commonly available in both data sets. The usefulness of self-rated health status as a measure of one's global health has been reported for both Koreans (Ahn and Joung 2006; Park 2005) and Korean Americans (Lee, Sobal and Frongillo 2000; Sohn 2004). Although self-rated health status is subject to culturally embedded interpretation bias (Menec, Shooshtari and Lambert 2007; Wiseman 1999), we believe the control for acculturation should make this health outcome comparable for both populations. The KNHNS and the CHIS used the same 5-level response scales of self-rated health (very good, good, fair, poor, and very poor). We combined responses very good, good, and fair together for "good" health and poor and very poor for "poor" health. With regard to body weight problems, we identified both persons

who were overweight and those who were obese as "weight problems (BMI>25)," and compared it with no weight problems (BMI<25) since the rate of obesity among Koreans (3.3 %) and Korean Americans (3.9%) was low. We also dichotomized two health behavior variables (smoking and drinking). For smoking status, we focused on current smoking behaviors, since it was not possible to chronologically sort past smoking experience and migration to the US for Korean Americans using a cross-sectional data set. For drinking status, we focused on binge drinking as a strong proxy for identifying present and future alcohol-related health outcomes. Both data sets provided information on binge drinking experiences in the past month. Since non-drinkers could not be binge drinkers, they were omitted from the analysis, so that 244 Korean American and 5,945 Korean drinkers were included in the analysis.

Demographic profiles (age, sex, marital status) and socioeconomic status (educational attainments, employment status, family income) available from the two data sources were included. Classifications of most variables were straightforward, except for family income where the classification was based on the distance from the poverty line in order to control for the differing economic scales of the two countries. For Korean Americans, degree of acculturation was measured by both the percent of lifetime spent in the US and the major language spoken at home. In particular, prior studies report that limited English proficiency is a barrier to both health care access and medical comprehension (Ayanian et al. 2005; Flores, Abreu and Tomany-Korman 2005; Ponce et al. 2006a; Ponce, Hays and Cunningham 2006b; Wilson et al. 2005; Yeo 2004), although we hypothesized that it would not be the case for Korean Americans. Thus, we consider

language spoken at home not as a proxy of access to health services but of the level of acculturation. Our preliminary analysis including these two variables simultaneously in a multivariate model did not present a multicollinearity problem. Since self-rated health status can be largely affected by chronic illness, three major chronic conditions (diabetes, hypertension, and asthma) were additionally considered.

Our two data sets were analyzed separately using STATA (version 9.2) in order to incorporate the multistage stratified sampling designs of both data sets. For the CHIS in particular, STATA syntax provided by the UCLA Center for Health Policy Research was used to takes into account its unique weighting and estimation of variance schemes (www.chis.ucla.edu/methods). Weights provided by the KNHNS were also applied for population parameter estimates. In the multivariate analyses, we present two models for Korean Americans (Model 1 included all demographic and SES variables, and Model 2 included acculturation variables in addition to the risk factors in Model 1). Only Model 1 was employed for Koreans. Since the CHIS and the KNHNS used different sampling frames and designs, it was not possible to conduct multivariate analyses by combining them. Logistic regression analyses were conducted separately to investigate factors associated with health and health behavior in the two populations. We paid attention to the predicted probability of each outcome variable which allowed us to makes comparisons across models and between the two populations from different data sources to single out the sources of health and health behavior differences between the two populations. In this way, we were able to investigate the role of different social or structural environments on health status and health behaviors of Korean Americans, after simultaneously considering

demographic and socio-economic factors for two populations.

Results

Table 1 presents weighted percentage distributions of all independent variables for both populations. Notable differences between the two populations were found for several variables. The proportion female was higher for Korean Americans than for Koreans. Korean Americans appeared to have much higher levels of educational attainment, occupational status, and relative family income as compared to their Korean counterparts. Distributions of age, marital status and major chronic illness were almost equal between the two populations. Overall, Korean Americans experience health-favorable demographic and SES conditions more often than do Koreans.

-- Table 1 about here --

Descriptive results of acculturation-related variables for Korean Americans are also presented in Table 1. Lifetime spent in the US is almost evenly distributed across four categories, showing that slightly over half of Korean Americans have spent 40% or less of their lifetime in the US. Almost half of Korean Americans used both English and Korean at home, while 38.8% and 8.0% spoke Korean only and English only, respectively.

Table 2 provides the weighted predicted probability of each dependent variable. The predicted probability of the null model equals to the percentage of sample respondents for each outcome variable. The predicted probabilities of Model 1 and 2 can be interpreted as the same percentage but adjusted for independent variables included in each model. From the null model, Korean Americans seem to have slightly inferior self-rated health status compared to Koreans. Regarding body weight, however, Korean Americans are less

likely to have problems than are Koreans. Further, Korean Americans appear to enjoy more favorable health behaviors than do Koreans regarding smoking and binge drinking. The predicted probability of Koreans' binge drinking experience during the past month is extremely high (46%) in the null model.

-- Table 2 about here --

Model 1 controls for demographic and socioeconomic characteristics. Compared to the null models, predicted probabilities of most outcome variables decrease in Model 1 for both populations, except for the case of Korean Americans' binge drinking status, and the differences between two populations become much smaller as well. Comparison of predicted probabilities across models for binge drinking suggests that social risk factors are a major determinant of binge drinking for Koreans only, while acculturation factors determine much of the variation in binge drinking of Korean Americans. Inclusion of acculturation to US society for Korean Americans in Model 2 results in only marginal changes in predicted probabilities compared to the previous model, except for binge drinking.

Table 3 presents the results of weighted multivariate logistic analyses for self-rated health status and weight problems. In Model 1 for self-rated health of Korean Americans, the direction and the magnitude of odds ratios are not much different from the general expectation, although some estimates are not statistically significant. Adding acculturation in Model 2 slightly increases the advantage of having no major chronic illnesses. The likelihood of "poor" self-rated health decreases with more lifetime spent in the US. Odds ratios for Koreans are also consistent with general expectations, but several interesting

points are found relative to Korean Americans. The relative disadvantage of being old

(aged 65 and over) is much greater for Koreans than for Korean Americans. The negative

effects of disadvantaged education and employment status are greater for Korean

Americans than for Koreans.

From the right panel of Table 3, male or low-family-income Korean Americans

experience substantially higher risks of weight problems, which become more pronounced

with the inclusion of acculturation in Model 2. Although lower percentages of lifetime

spent in the US seem to protect Korean Americans from weight problems, the effect is not

statistically significant. For Koreans, males are at higher risk of weight problems than are

females, consistent with Korean Americans, but no effect is found for family income.

Rather, a low level of education significantly increases the risk of being overweight or

obese for Koreans, which is not observable for Korean Americans. Overall, the influence

of SES on adverse health outcomes is greater for Korean Americans than for Koreans.

-- Table 3 about here --

Table 4 documents the multivariate logistics analyses results for two health

behaviors. Model 1 shows that young, male Korean Americans are at high risk of current

smoking, while SES variables seem to have no effect. Additional consideration of

acculturation in Model 2 does not make notable changes compared to Model 1, and none of

acculturation variables are significant or substantial. As observed among Korean

Americans, young, male Koreans are more likely to be current smokers, compared to their

older and female counterparts. Although the pattern is congruent, odds ratios for Koreans

are greater in their value than those for Korean Americans. An SES gradient appears for

Koreans, but not for Korean Americans.

From the right panel of Table 4, Korean Americans are substantially less likely to binge drink as they age. Being male, employed in the manual sector, and of low family income are associated with the increased odds of binge drinking. Although not statistically significant, odds ratios for acculturation variables show that greater acculturation to the US discourages Korean Americans from being binge drinker, as discussed earlier in Table 2. Age diminishes the odds of binge drinking for Koreans too, but the magnitude of the effect is much smaller, compared to the case of Korean Americans, as was also observed for smoking. Odds ratio of binge drinking for Korean males is much greater than that of Korean American males. Being married and highly educated protect Koreans from binge drinking, while employment status and family income have little or no effect. Overall, the protective effects of age and being female are much greater for Korean Americans than for Koreans. Although not observed in the case of smoking, Korean Americans who have inferior SES conditions are substantially more inclined toward binge drinking. There seem to be few patterns of association between acculturation and health behaviors for Korean Americans.

Discussion

This study aims to examine the effects of acculturation and US structural environments on the health and health behaviors of Korean Americans, utilizing a bi-national perspective. Among the numerous findings presented above, three are worthy of additional discussion. First, we were not able to find any notable or patterned effects of acculturation on health or health behaviors for Korean Americans, which is not consistent

with the general knowledge on immigrant health and health behaviors vis-à-vis acculturation. Earlier, we introduced a recent discussion on the bidimensional or multidimensional acculturation experience of Korean Americans. Our findings suggest that longer lifetime spent in the US or English proficiency does not simply make this population be acculturated to health-deteriorating or 'toxic' US culture. In other words, the multidimensional acculturation process actually takes place on health-related customs, belief, values, and behaviors among Koreans Americans, or at least those residing in the state of California. Then how does the multidimensional acculturation influence the health or health behaviors of this population? If results were to show a promoting health and health behaviors with more acculturation, we would have concluded that a strong aspiration for mainstream US society and high culture and retaining of health protective culture from Korea synergistically functioned for the beneficial health of this population. But no patterned association between acculturation variables and health/health behaviors found from this study makes it also possible to suppose that Korean Americans tend to retain their health protective customs and behaviors from Korea regardless of their level of acculturation, which offsets the adverse effect of acculturation to general US culture. Unfortunately, we do not have enough information to conclude which is more probable or if there are other explanations. Indeed, multidimensional acculturation is a very complicated process of which dimension is even different across migration generations of Korean Americans (Lee et al. 2003). A more sophisticated examination on the multidimensional acculturation process will help better understand the health and health behaviors of immigrant populations in the US (Abraido-Lanza et al. 2006).

Second, multivariate results from the bi-national comparisons in Table 2 showed that the differences in predicted probabilities of four health/health behavior outcomes between two populations became very small when demographic and SES characteristics are adjusted. However, Table 3 showed that health inequality across SES groups was much greater among Korean Americans, compared to Koreans. That is, individuals of low education, working in a manual sector, and with low family income tended to be more strongly related to disadvantaged relative health status among Korean Americans than among Koreans. We believe that the structural differences in the health care system between the US and Korea may contribute to this result. A universal health insurance system in Korea, although not completely comprehensive, is known to promote the health of low SES people with few barriers to health care access (Jeong and BK 2006; Kim, Jeong and Lee 2006). In the US, on the contrary, people of low SES have difficulties in acquiring adequate access to health care services and related information. Further, as mentioned earlier, Korean Americans are a race/ethnic group with one of the highest proportions lacking health insurance, which may be attributable to a high rate of self-employment (Ryu et al. 2001; Shin et al. 2005). Thus, the US health system is disadvantageous for the socioeconomically deprived. Also, the lack of health insurance coverage among Korean Americans may generate wider SES health disparities among Koran Americans relative to Koreans.

Lastly, our descriptive analyses indicate that Korean Americans were more advantaged than Koreans on three out of four outcome variables. One exception was self-rated health, but when demographic and SES characteristics were controlled, this exception

disappeared. This result provides an important piece of information on the health of Korean Americans relative to Koreans. By comparing the mortality experiences of two populations, (Cho, Ahn and Jung 2001) documented that the age-specific life expectancy was higher for Korean Americans than for Koreans and in particular, the difference was much greater among men in their 40s through 60s. They speculated that Korean Americans had more favorable health status and health behaviors than Koreans. Our results provide empirical evidence supporting this point. One possible explanation is that the superior socioeconomic profiles of Korean Americans, compared to Koreans, may act to improve health, as shown in Table 1. A highly selective visa screening system for Koreans, particularly for immigrant visa applicants, has raised the qualification standards. Korean Americans, regardless of their occupational positions in the US, are a select group among Koreans. Reduced superiority of health and health behaviors among Korean Americans as compared to Koreans after adjustment for demographic and SES characteristics in Table 2 support this explanation.

This research has several limitations. First, it was not possible to disentangle the time order of migration and health outcomes, due to the cross-sectional nature of the data sets employed. Although we assumed that migration to the US occurred prior to the incidence of outcome variables in many instances of this research, we do not have sound evidence on the time sequence of events. Second, we were not able to directly compare the risk factors between the two populations by combining our two data sources. Our discussion would have been much richer and sounder if the two populations were compared within one data set. Third, findings for Korean Americans in this study are not generalized

to the entire Korean American population in the US, although results provide notable implications. However, the advantages of the CHIS data collection efforts to utilize Asian languages in order that less-acculturated Asian subjects were included in the survey may offset this limitation.

Despite these and other limitations, we believe this research delivers very useful information in better understanding the health of Korean Americans regarding the effect of acculturation. Further, the comparison of the predicted probability of outcome variables, although indirect, has allowed an investigation of the sources of discrepancies in health status and health behaviors between Koreans and Korean Americans. The size of the Korean American population is expected to grow greatly in the coming decades. Our research clearly suggests that more public health policy attention should be paid to socioeconomically disadvantaged Korean Americans from a multidimensional perspective of acculturation.

Reference

Abraido-Lanza, A.F., A.N. Armbrister, K.R. Florez, and A.N. Aguirre. 2006. "Toward a Theory-Driven Model of Acculturation in Public Health Research." *American Journal of Public Health* 96(8):1342-1346.

Ahn, B.C.and H. Joung. 2006. ""Self-rated Health and Its Indicators – A Case of the 2001 Korea National Health and Nutrition Examination Survey."" *Journal of Community Nutrition* 8:38-43.

Ayanian, J.Z., A. Zaslavsky, E. Guadagnoli, C. Fuchs, and a.e. al. 2005. ""Patients' perceptions of quality of care for colorectal cancer by race, ethnicity, and language." " *Journal of Clinical Oncology* 23(27):6576-6586.

Cho, B.-H. 2001. "The Relationships Between Immigrant Korean-American Parents' Aspirations for Children's Educational Attainment and Their Parenting Styles." *Journal of Korean Home Economics Association English Edition* 2(1):111-121.

Cho, J.and H.S. Juon. 2006. "Assessing overweight and obesity risk among Korean Americans in California using World Health Organization body mass index criteria for Asians." *Preventive Chronic Diseases* 3(3):A79.

Cho, Y., H.S. Ahn, and S.W. Jung. 2001. "Migration and Health: A Comparative Study of Korean Americans and Koreans' Mortality Profiles." *Korea Journal of Population Studies* 24(2):207 ~ 234

Cho, Y.and R.A. Hummer. 2001. "Disability status differentials across fifteen Asian and Pacific Islander groups and the effect of nativity and duration of residence in the U.S." *Soc Biol* 48(3-4):171-195.

Cho, Y., S.E. Song, and W.P. Frisbie. 2005. "Adverse birth outcomes among Korean Americans: The impact of nativity and social proximity to other Koreans." *Population Research and Policy Review* 24:263-282.

Flores, G., M. Abreu, and S.C. Tomany-Korman. 2005. "Limited english proficiency, primary language at home, and disparities in children's health care: how language barriers are measured matters." *Public Health Rep* 120(4):418-430.

Hill, L., C.R. Hofstetter, M. Hovell, J. Lee, V. Irvin, and J. Zakarian. 2006. "Koreans' use of medical services in seoul, Korea and california." *Journal of Immigrant Health [NLM – MEDLINE]* 8(3):273.

Jang, Y., G. Kim, D. Chiriboga, and B. Kallimanis. 2007. "A Bidimensional Model of Acculturation for Korean American Older Adults." *Journal of Aging Studies* 21(3):267-275.

Jeong, H.S.and S. BK. 2006. "Time-series change in benefit coverage of Korean health insurance and cross-country variation in public financing share of personal health care expenditure." *Social Security Research* 22(4):27-48.

Kim, J.H., J.C. Jeong, and H. Lee. 2006. "Cost-sharing of enrollees of National Health Insurance in 2005." *National Health Insurance Corporation*.

Klatsky, A.L.and I. Tekawa. 2005. "Health problems and hospitalizations among Asian-American ethnic groups." *Ethn Dis* 15(4):753-760.

Lee, S.-K., J. Sobal, and E.A. Frongillo. 2003. "Comparison of Models of Acculturation: The Case of Korean Americans." *Journal of Cross-cultural Psychology* 34(3):282-296.

Lee, S.K., J. Sobal, and E.A. Frongillo, Jr. 2000. "Acculturation and health in Korean Americans." *Soc Sci Med* 51(2):159-173.

Lim, J.-w.and B. Zebrack. 2008. "Different Pathways in Social Support and Quality of Life between Korean American and Korean Breast and Gynecological Cancer Survivors." *Quality of Life Research* 17:679-689.

Menec, V.H., S. Shooshtari, and P. Lambert. 2007. "Ethnic differences in self-rated health among older adults: a cross-sectional and longitudinal analysis." *J Aging Health* 19(1):62-86.

Min, P.G. 1995. *Asian Americans: Contemporary Trends and Issues*: Sage Publications.
Park, H. 2005. "Age and Self-Rated Health in Korea." *Social Forces* 83:1165-1182.

Ponce, N.A., N. Chawla, S.H. Babey, M.S. Gatchell, D.A. Etzioni, B.A. Spencer, E.R. Brown, and N. Breen. 2006a. "Is there a language divide in pap test use?" *Med Care* 44(11):998-1004.

Ponce, N.A., R.D. Hays, and W.E. Cunningham. 2006b. "Linguistic disparities in health care access and health status among older adults." *J Gen Intern Med* 21(7):786-791.

Ryu, H., W.B. Young, and C. Park. 2001. "Korean American health insurance and health services utilization." *Res Nurs Health* 24(6):494-505.

Shin, H., H. Song, J. Kim, and J.C. Probst. 2005. "Insurance, acculturation, and health service utilization among Korean-Americans." *J Immigr Health* 7(2):65-74.

Sohn, L. 2004. "The health and health status of older Korean Americans at the 100-year anniversary of Korean immigration." *J Cross Cult Gerontol* 19(3):203-219.

Sohn, L.and N.D. Harada. 2005. "Knowledge and use of preventive health practices among Korean women in Los Angeles county." *Prev Med* 41(1):167-178.

Song, Y.J., C.R. Hofstetter, M.F. Hovell, H.Y. Paik, H.R. Park, J. Lee, and V. Irvin. 2004. "Acculturation and health risk behaviors among Californians of Korean descent." *Prev Med* 39(1):147-156.

Uppaluri, C.R., L.P. Schumm, and D.S. Lauderdale. 2001. "Self-reports of stress in Asian immigrants: effects of ethnicity and acculturation." *Ethn Dis* 11(1):107-114.

USCensusBureau. 2001. "Profiles of General Demographic Characteristics."

Wilson, E., A.H. Chen, K. Grumbach, F. Wang, and A. Fernandez. 2005. "Effects of limited English proficiency and physician language on health care comprehension." *J Gen Intern Med* 20(9):800-806.

Wiseman, V.L. 1999. "Culture, self-rated health and resource allocation decision-making." *Health Care Anal* 7(3):207-223.

Yeo, S. 2004. "Language barriers and access to care." *Annu Rev Nurs Res* 22:59-73.

Yu, E.-Y., P. Choe, and S.I. Han. 2002. "Korean Population in the United States, 2000: Demographic Characteristics and Socio-Economic Status." *International Journal of Korean Studies* VI(1):71-107.

Table 1. Weighted Percentage Distributions of Risk Factors and Health Outcomes for Korean Americans residing in California and Koreans

	Korean Americans[1]	Koreans[2]
Age		
19-44	38.0	52.1
45-64	43.7	33.3
65 and over	16.9	14.7
(Mean age)	45.8	45.4
Sex		
Male	38.4	46.6
Female	61.6	53.4
Marital Status		
Currently married	66.1	67.6
Ever married	14.6	12.8
Never married	19.3	19.6
Educational Attainments		
Less than high school grad	8.9	33.1
High school graduation	22.4	34.1
College and more	68.7	32.8
Employment Status		
Non-manual labor	29.1	18.7
Manual labor	21.6	40.6
Not in labor force or unemployed	49.3	40.7
Family Income from Poverty Line		
Lower than poverty line	16.5	15.0
100-199%	23.0	31.3
200-299%	15.9	26.8
300% and over	44.7	27.0
Major Chronic Illness		
Diabetes	6.6	5.9
Hypertension	17.7	14.9
Asthma	5.2	2.7
Lifetime in the US		
0-20%	26.8	–
21-40%	27.4	–
41-60%	25.2	–
61% and over	20.5	–
Language at Home		
English only	8.0	–
English and Korean	48.3	–
Korean	38.8	–
Other	5.0	–
Unweighted N	485	25196

Source:

[1] 2003 California Health Interview Survey

[2] 2005 Korea National Health and Nutrition Survey

Note:

Please read text for detailed information for variable classifications

Table 2. Weighted and Predicted Probabilities of Dependent Variables
Assuming Independent Variables being Zero.

	Korean Americans[1]			Koreans[2]	
	Null Model	Model 1	Model 2	Null Model	Model 1
Self-rated Health					
Poor	0.25	0.06	0.01	0.19	0.04
Body Size by BMI					
Overweight or obese	0.25	0.18	0.22	0.31	0.25
Smoking					
Currently smoking	0.19	0.09	0.10	0.29	0.03
Binge Drinking					
At least once in the last month	0.18	0.19	0.07	0.46	0.23

Source:

[1] 2003 California Health Interview Survey

[2] 2005 Korea National Health and Nutrition Sruvey

Note:

Please read texts for the specifications of each model.

Table 3. Multivariate Logistic Analyses for Self-rated Health and Weight Problems in Odds Ratios

	"Poor" self-rated Health			Overweight or Obese		
	Korean Americans		Koreans	Korean Americans		Koreans
	Model 1	Model 2	Model 1	Model 1	Model 2	Model 1
Age [19-44]						
45-64	1.76 (0.85-3.62)	1.58 (0.72-3.51)	1.97 (1.75-2.21)	2.06 (0.98-4.31)	2.22 (0.89-5.48)	1.23 (1.02-1.50)
65 and over	1.77 (0.59-5.32)	1.55 (0.44-5.46)	2.75 (2.37-3.19)	1.96 (0.81-4.71)	2.27 (0.78-6.61)	0.88 (0.67-1.16)
Sex [Female]						
Male	0.69 (0.37-1.32)	0.71 (0.38-1.35)	0.82 (0.75-0.88)	2.88 (1.64-5.04)	2.95 (1.68-5.17)	1.50 (1.28-1.77)
Marital Status [Currently married]						
Ever married	0.90 (0.39-2.08)	1.16 (0.47-2.86)	1.21 (1.08-1.36)	1.41 (0.70-2.86)	1.20 (0.57-2.54)	0.91 (0.73-1.12)
Never married	0.32 (0.11-0.91)	0.61 (0.21-1.73)	0.88 (0.76-1.03)	0.57 (0.27-1.21)	0.40 (0.19-0.85)	0.54 (0.43-0.69)
Educational Attainments [College or more]						
Less than high school grad	3.73 (1.13-12.25)	3.52 (1.00-12.38)	2.68 (2.32-3.10)	0.68 (0.24-1.89)	0.75 (0.25-2.24)	1.60 (1.20-2.12)
High school graduation	1.67 (0.83-3.33)	1.85 (0.91-3.77)	1.28 (1.12-1.46)	0.93 (0.43-2.00)	0.88 (0.40-1.97)	1.18 (0.96-1.47)
Employment Status [Non-mannual labor]						
Manual labor	3.81 (1.49-9.76)	3.01 (1.16-7.78)	1.22 (1.03-1.44)	0.71 (0.37-1.35)	0.74 (0.39-1.42)	0.96 (0.75-1.24)
Not in labor for or unemployed	2.80 (1.10-7.11)	2.26 (0.90-5.68)	1.71 (1.45-2.01)	0.40 (0.20-0.80)	0.47 (0.23-0.94)	0.90 (0.71-1.13)
Family Income from Poverty Line [300% and over]						
Lower than poverty line	1.61 (0.72-3.60)	1.20 (0.53-2.72)	2.61 (2.27-3.00)	3.84 (1.74-8.45)	5.40 (2.20-13.30)	1.06 (0.83-1.36)
100-199%	1.22 (0.59-2.55)	0.98 (0.47-2.08)	1.61 (1.42-1.84)	1.08 (0.51-2.27)	1.41 (0.64-3.11)	0.98 (0.79-1.21)
200-299%	2.57 (1.00-6.64)	2.36 (0.92-6.04)	1.18 (1.03-1.35)	0.99 (0.38-2.54)	1.15 (0.44-3.06)	1.04 (0.85-1.28)
Major Chronic Illness [No]						
Diabetes	2.64 (0.88-7.87)	3.75 (1.12-12.55)	2.88 (2.50-3.32)			
Hypertension	3.82 (1.86-7.86)	4.00 (1.80-8.92)	1.99 (1.82-2.19)			
Asthma	1.37 (0.45-4.16)	1.82 (0.51-6.49)	2.80 (2.26-3.46)			
Lifetime in the US [61% and over]						
0-20%		9.27 (2.30-37.33)			0.43 (0.14-1.35)	
21-40%		7.44 (1.64-33.78)			0.85 (0.38-1.94)	
41-60%		7.13 (1.74-29.20)			0.73 (0.27-1.99)	
Language at Home [English only]						
English and Korean		0.92 (0.16-5.37)			1.18 (0.36-3.86)	
Korean		1.58 (0.25-9.86)			0.47 (0.14-1.64)	
Other		0.44 (0.06-3.21)			0.64 (0.14-2.98)	

Table 4. Multivariate Logistic Analyses for Smoking and Binge Drinking in Odds Ratios

	Current Smoking			Binge Drinking		
	Korean Americans		Koreans	Korean Americans		Koreans
	Model 1	Model 2	Model 1	Model 1	Model 2	Model 1
Age [19-44]						
45-64	0.39 (0.18-0.86)	0.39 (0.17-0.90)	0.63 (0.53-0.75)	0.24 (0.06-0.87)	0.21 (0.05-0.80)	0.77 (0.66-0.91)
65 and over	0.20 (0.05-0.86)	0.16 (0.04-0.74)	0.37 (0.28-0.49)	0.12 (0.01-1.70)	0.13 (0.01-2.54)	0.40 (0.30-0.53)
Sex [Female]						
Male	7.01 (3.18-15.45)	7.31 (3.45-15.48)	21.0 (17.7-25.0)	2.37 (0.94-5.95)	2.05 (0.92-4.56)	5.50 (4.81-6.30)
Marital Status [Currently married]						
Ever married	1.26 (0.30-5.20)	1.26 (0.29-5.55)	2.71 (2.11-3.49)	0.67 (0.21-2.18)	0.73 (0.21-2.48)	1.38 (1.11-1.71)
Never married	0.99 (0.38-2.62)	1.08 (0.43-2.73)	1.29 (1.07-1.56)	1.20 (0.44-3.29)	1.16 (0.37-3.63)	1.39 (1.17-1.65)
Educational Attainments [College or more]						
Less than high school grad	0.85 (0.11-6.26)	0.81 (0.10-6.48)	1.28 (1.17-1.87)	1.13 (0.10-12.53)	1.57 (0.12-20.20)	1.15 (0.92-1.44)
High school graduation	1.06 (0.45-2.49)	1.06 (0.44-2.55)	1.83 (1.53-2.19)	0.47 (0.11-2.07)	0.50 (0.12-2.05)	1.27 (1.07-1.50)
Employment Status [Non-mannual labor]						
Manual labor	1.66 (0.66-4.20)	1.67 (0.65-4.32)	1.39 (1.14-1.69)	5.30 (1.36-20.69)	3.88 (1.14-13.14)	1.19 (0.98-1.43)
Not in labor for or unemployed	1.48 (0.59-3.73)	1.49 (0.57-3.86)	0.90 (0.73-1.11)	0.88 (0.34-2.30)	0.76 (0.29-2.01)	0.74 (0.61-0.89)
Family Income from Poverty Line [300% and over]						
Lower than poverty line	0.54 (0.20-1.45)	0.52 (0.19-1.41)	1.26 (0.99-1.60)	5.61 (1.04-30.34)	6.44 (1.24-33.46)	0.85 (0.67-1.07)
100-199%	1.25 (0.53-2.98)	1.17 (0.47-2.91)	1.25 (1.04-1.51)	0.92 (0.29-2.91)	1.05 (0.30-3.67)	0.94 (0.79-1.11)
200-299%	0.43 (0.15-1.28)	0.43 (0.15-1.28)	1.07 (0.89-1.29)	1.32 (0.42-4.13)	1.39 (0.41-4.69)	1.06 (0.90-1.25)
Lifetime in the US [61% and over]						
0-20%		1.07 (0.38-3.02)			0.79 (0.19-3.23)	
21-40%		1.25 (0.45-3.49)			1.25 (0.35-4.39)	
41-60%		1.03 (0.33-3.22)			1.82 (0.31-10.75)	
Language at Home [English only]						
English and Korean		0.71 (0.19-2.65)			4.14 (0.97-17.69)	
Korean		0.97 (0.20-4.59)			2.59 (0.52-12.82)	
Other		1.19 (0.09-15.15)			0.42 (0.03-6.86)	