Ethnicity Matters: The Socioeconomic Gradient in Health among Asian Americans

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This study examines the relationship between socioeconomic indicators and health status among Asian Americans using data from the 2001 California Health Interview Survey (CHIS), a population-based random-digit-dial survey with race-ethnic supplemental samples. Multivariate logistic regression analyses show that the inverse relationship between socioeconomic position and health status is similar for Asian Americans when measured as an aggregate group compared to Whites. However, when specific Asian American ethnic groups are examined, the relationship varies greatly. For example, among Chinese Americans and Vietnamese Americans, education is a significant predictor of poor health status, but household income is more significant among Korean Americans. The importance of disaggregation for subgroup populations in research and policy is discussed.

Key words: *Asian Americans; socioeconomic position; health status; health disparities; CHIS*

Socioeconomic indicators are among the strongest and most consistent determinants of variations in health status. Higher income, better education, and more prestigious occupations are associated with better health and decreased mortality. The

association between socioeconomic position and health has re-
mained robust across various measures of socioeconomic posi-
tion, time periods, countries, and most measures of health and
disease (Adler et al., 1994; Anderson & Armstead, 1995; Davey
Smith, Wentworth, Neaton, Stamler, & Stamler, 1996; Marmot,
1994; Marmot, Kogevinas, & Elston, 1987; Sorlie, Backlund, &
Keller, 1995; Williams, 1990). Despite the robustness of this as-
sociation, some researchers have found that the relationship
varies by race, ethnicity, gender, and age (Elo & Preston, 1996;
Feldman, Makuc, Kleinman, & Cornoni-Huntley, 1989; House
et al., 1990; House et al., 1994; Kimbro, Bzostek, Goldman, &
Rodriguez, 2008; Williams & Collins, 1995). Very few studies
have examined this association for specific Asian American
ethnic groups. This study seeks to better understand the rela-
tionship between socioeconomic position and health for Asian
Americans, one of the fastest growing racial/ethnic popula-
tions in the United States.

Although there is growing awareness of the heterogene-
ity of the Asian American population, the tendency remains
in research and policy to treat all Asian Americans as a mono-
lithic group despite distinct historical and social contexts. In
the absence of empirical data, common stereotypes associ-
ated with the "model minority" myth prevail, namely that
Asian Americans have good health, receive adequate health
care, and are not in need of social programs and services. This
population is comprised of people originating from at least 28
Asian countries (Lin-Fu, 1993), and these subgroups vary in
socioeconomic position, language, citizenship status, cultural
norms, religion, immigration history, generation, and other
characteristics. Aggregating distinctively different subgroups
into one classification is misleading because it masks the di-
versity among these ethnic groups and has important conse-
quences for program planning (Uehara, Takeuchi, & Smukler,
1994).

Research on the health of Asian Americans is relatively
scarce due to the lack of studies with sample sizes large enough
for inter- and intra-ethnic group analyses. When studied as an
aggregate group, Asian Americans appear to have better health
outcomes than other groups. For example, researchers have
found that overall mortality rates, infant mortality rates, and

other measures of health status are lower for Asian Americans
and Pacific Islanders than for any other racial or ethnic group
(Hummer, Rogers, Nam, & LeClere, 1999; Morrow, Chavez,
Giannonni, & Shah, 1994; Rogers, Hummer, Nam, & Peters,
1996; Singh & Yu, 1996). The conclusion that Asian Americans
and Pacific Islanders are healthier than any other racial or
ethnic group in the U.S. has been criticized, however, because
the data sets used have not contained sufficient information
about the heterogeneity of the population (Cho & Hummer,
2000; Takada, Ford, & Lloyd, 1998; Yu & Liu, 1992).

Specific subgroup populations have higher rates of mor-
bidity and mortality across a variety of health indicators,
however. For example, Native Hawaiians have the highest
death rates due to heart disease of any racial or ethnic group
in the United States (Chen, 1993). The incidence of liver
cancer in Chinese Americans is more than four times that of
the White population (Lin-Fu, 1988). Vietnamese American
women have cervical cancer rates that are five times greater
than those of White women, and Vietnamese Americans have
liver cancer rates that are more than 11 times greater than those
of Whites (Miller et al., 1996). In a study of disability status,
Cho and Hummer (2000) found that other Southeast Asians
(Cambodian, Laotian, and Hmong) had the highest rates of
disability, followed by Vietnamese and Pacific Islanders. Kuo
and Porter's (1998) study of the health status of seven Asian
American groups from 1992 to 1994 found that Vietnamese
and Korean Americans are more likely to report their health
status as fair or poor, compared to Whites.

Researchers have also found that socioeconomic measures
are not equivalent across groups and available indicators
may not be adequate markers of current social circumstanc-
es (Braveman, Cubbin, Marchi, Egerter, & Chavez, 2001). For
example, Ren and Amick (1996) found that education account-
ed for health disparities between Whites and Hispanics, but
not between Whites and Blacks. The measurement and inter-
pretation of socioeconomic position may differ across groups,
due to the racialized meaning of education, income, and oc-
cupation (Williams, 1996). Commonly used socioeconomic in-
dicators also may not fully capture the economic status differ-
ences between households of different races. Racial differences

in wealth, for example, are much larger than those for income. Researchers have suggested that in addition to racial differences, there may also be ethnic group differences in the nature and experience of socioeconomic position. Anderson and Armstead (1995) suggest that research on the socioeconomic gradient in health should not stop at the level of explaining group differences, and should instead be designed to incorporate ethnic group-specific processes.

Educational attainment and income levels are often used as evidence for the success of this population. The prevailing image of Asian Americans as economically successful, however, is not supported by empirical research (Kim & Hurh, 1983). Socioeconomic indicators vary within and between ethnic groups and are concentrated on both the high and low end of education and income measures, which is not always evident in aggregated data. For example, in a study of Asian American and Pacific Islander groups in Los Angeles County using data from the 2000 Census, 42% of the aggregate group had at least a bachelor's degree, compared to 38% of Whites. Hmong and Tongans have the lowest rates of college degree attainment —4% and 6% respectively. Native Hawaiians, Vietnamese, Cambodians, Laotians, Guamanians, and Samoans are below the county average of 25% (Asian Pacific American Legal Center, 2004). Health surveys rarely capture these smaller populations without a concerted effort to do so.

Research has shown that Asian Americans do not receive the same returns on education in terms of income and occupational prestige as Whites. The common assumption is that high educational attainment leads to high-paying jobs, prestigious occupations, and better social status. Closer scrutiny reveals otherwise. For example, Barringer, Takeuchi, and Xenos (1990) found that Asian Americans do not enjoy the same returns on education that Whites receive. Japanese Americans were the only Asian American group with an association between education and status attainment that came close to Whites. Beyond a high school degree, Whites with four more years of education can expect to earn $2,088 per year more in salary. In contrast, returns on each additional year of education for Japanese Americans is only $438 and for Chinese Americans is only $320 per year (Barringer et al., 1990). For some

immigrants, high levels of education may not provide the same benefits, because it may not lead to high-paying jobs. Further, some employers may not value education gained in another country as much as education gained in the United States (e.g., medical profession).

Given the bimodal nature of socioeconomic indicators, this study hypothesizes that the relationship between socio-economic position and health status will remain a strong association for the aggregated group, but will vary for groups. This study compares results of this association among Japanese Americans, Chinese Americans, Korean Americans, Vietnamese Americans, Filipino Americans, and South Asian Americans.

Methods

Data

This study uses the adult component public-use files from the 2001 California Health Interview Survey (CHIS), a popu-lation-based random-digit-dial (RDD) household survey with race-ethnic supplemental samples. CHIS is one of the largest health surveys of its kind in the United States and is represen-tative of California's civilian non-institutionalized population. CHIS used a dual frame design to supplement the regular CHIS sample for selected race-ethnic subgroups. Approximately 2,100 Asian Americans were oversampled to reach the target sample sizes for five specific Asian American subgroups— Japanese, Korean, South Asian, Cambodian, and Vietnamese. Sufficient numbers of Chinese and Filipino households were interviewed through the RDD sampling process, and there-fore were not oversampled. The sample weights compensate for a variety of factors, including differential probabilities of selection of households and persons, biases that occur because nonrespondents may have different characteristics than re-spondents, and undercoverage in the sampling frames and in conducting the survey.

The analytic sample for this study is comprised of adults, age 25 and older, from two separate data files—the RDD file and the combined Asian file. The RDD analytic file includes 49,934 adults, age 25 and older, and is used for analyses of the

Asian population in the aggregate (n=3,536) compared to the non-Latino White population (n=34,768). Because different sampling and data protocols were used for the Asian supplemental samples, these data are not directly comparable to the data from the RDD sample (henceforth referred to as the main sample).

The Asian analytic file was created by merging the Chinese and Filipino respondents from the main sample to the supplemental Asian sample. The combined Asian file includes 4,716 adults, age 25 and older. The subgroups in this file are Chinese (n=1,029), Filipino (n=696), Japanese (n=747), Korean (n=717), South Asian, which includes Indian, Pakistani, Bangladeshi, and Sri Lankan (n=747), and Vietnamese (n=780). Respondents who reported more than one Asian ethnicity were coded as the ethnicity with which they most identify. Those whose ethnicity was not one of the six groups mentioned or who reported multiple ethnicities and did not identify most with an Asian ethnicity were not included in this file.

Measures

The dependent variable in this study is health status and is measured using self-rated general health. Respondents were asked, "In general, would you say your health is excellent, very good, good, fair, or poor?" Numerous studies have shown that this simple global question is a powerful and robust indicator of individual well-being and general health status (Fayers & Sprangers, 2002; Goldstein, Siegel, & Boyer, 1984; Wilson & Kaplan, 1995). This measure of self-rated health has been validated as a predictor of mortality (McGee, Liao, Cao, & Cooper, 1999), morbidity (Ferraro & Farmer, 1999; Ferraro, Farmer, & Wybraniec, 1997), and health care utilization (Malmstrom, Sundquist, & Johansson, 1999). In this study, self-rated health was treated as a dichotomous indicator (*0=excellent, very good, or good; 1=fair or poor*).

The main independent variables in the study are education and income. Education is the most commonly used indicator of socioeconomic position in psychiatric epidemiology and public health research (Liberatos, Link, & Kelsey, 1988). From an analytic viewpoint, measures of education are preferable as social position markers because it can be determined

for all individuals. In contrast, not everyone is employed or has an income (e.g., homemakers, retired persons). Education is also generally completed in early adulthood, and is easier to obtain in household surveys because the measure is less burdensome to respondents. One problem with measures of educational attainment is that they do not take into account individual and geographical variation in the quality of education received (Committee on National Statistics, 2004). Education in CHIS is a categorical variable and for this analysis, the variable was collapsed into five categories (*1=less than high school; 2=high school graduate; 3=some college, vocational school, or AA degree; 4=college graduate; and 5=graduate school or higher*).

Income can be an important indicator of the financial resources available to an individual or household. In CHIS 2001, household income was based on the sum of earnings of household members. Household income was collapsed into five categories (*1=less than $10,000; 2=$10,001-$20,000; 3=$20,001-$50,000; 4=$50,001-$80,000; 5=more than $80,001*). An important consideration is the number of people in the household. Therefore, household size was used as a control variable for analyses that included income.

Covariates included household size, employment status, sociodemographic variables, cultural factors, and access to health care. Household size is a continuous variable. Employment status was based on the respondent's main activity during the week preceding the interview. Those who reported not having or looking for a job and reported the reason as keeping house, caring for people, going to school, being retired, having a physical disability, and being unable to work were classified as not being in the labor force. Those looking for a job and who had no reported work hours were categorized as not working. This category included people who could not find a job or who were laid off or on strike. Those working up to 35 hours per week were categorized as working part-time, and those working 35 or more hours per week were categorized as working full-time.

Sociodemographic variables included in this study are age, sex, and marital status, which have been shown to be important covariates for the study of socioeconomic position and health. Evidence suggests that although many of the observed

disparities in health may be explained by socioeconomic differences, each of these demographic characteristics may also have an independent effect (Davey Smith, 2000; House et al., 1990; Krieger, Williams, & Moss, 1997).

Statistical Analysis

SAS statistical software (v. 8.1) was used for data transformations and SAS-callable SUDAAN (v. 9.01) was used for all other analyses to adjust for the effects of the complex survey design of CHIS 2001. All data were weighted to adjust for the sampling issues and for the unique set of person-level dimensions derived from Census 2000 data.

Logistic regression analysis was used to estimate models that predict poor or fair health status. Logistic models were fitted to examine the association between race/ethnicity, socioeconomic position, demographic factors and health status. The results of the model fitting provided information on specific racial and ethnic groups, and this information was used to conduct the stratified analyses. Stratified analyses of Asian Americans in the aggregate and Whites were conducted using the main sample, and analyses of Chinese, Filipinos, Japanese, Koreans, and Vietnamese were conducted using the Asian American sample. The results of these analyses provided information about the relationship between socioeconomic position and health for specific groups.

Limitations of the Study

This study provides baseline information about the relationship between socioeconomic position and health for Asian Americans in California. However, the study has several limitations. First, the data are only generalizable to the state of California. Although Asian Americans are concentrated in this state, the results of the study may not be applicable to Asian Americans residing in other regions of the country. Second, the cross-sectional nature of the data only provides estimates for one point in time. Ideally, studies of socioeconomic position and health are best conducted with longitudinal data in order to test for the causal direction of the association. Third, other socioeconomic indicators, such as wealth, are not collected in CHIS. Data on wealth provides a more complete picture

of the economic resources available to a household. Fourth, Native Hawaiian/Other Pacific Islanders and other smaller Asian American subgroups were not included in the study. Although CHIS collected information from Pacific Islanders and Cambodians, the sample sizes of these groups were small and could not provide reliable estimates.

Results

Descriptive Findings

The main sample, which is representative of the California population, is comprised of 49,934 respondents, age 25 and older. Just over half of Californians are non-Latino White (58%), with the remainder comprised of Latinos (22%), Asian Americans (11%), African Americans (6%), and other (3%). Comparing Asian Americans to non-Latino Whites in the aggregate using the main sample, significant associations are found between race/ethnicity and most demographic, health, and cultural characteristics (χ^2 p-value $\leq$ .001). Greater proportions of Asian Americans have attained high levels of education—35% of Asians have a college degree compared to 24% of Whites. Rates of post-college education are similar for Asians and Whites (19% and 17%, respectively). Almost 10% of Asians do not have a high school diploma, compared to only 5% of Whites. Asian Americans are more likely than Whites to have household incomes of less than $20,000 (20% compared to 15%), and less likely to have household incomes of greater than $50,001 (52% compared to 56%). The average household size is larger for Asian American households than White households. Greater proportions of Asian Americans rate their health as fair or poor (18%), compared to 14% of Whites.

In the Asian sample, significant associations were found between Asian ethnicity and most demographic, health, and cultural characteristics (χ^2 p-value $\leq$ 0.001). Educational attainment was unevenly distributed for all groups. Among Chinese Americans, 13% did not finish high school, 29% graduated from college, and 25% received post-college graduate education. This is consistent with the diversity expected with two distinct waves of immigration among Chinese Americans. Vietnamese Americans have greater proportions in the lower end of

educational attainment (28% do not have a high school diploma and 31% are high school graduates), which is consistent with their refugee status. Almost half of South Asians have post-college graduate education, and less than one percent have not graduated from high school. The majority of Filipinos, Japanese, and Koreans are college graduates. The majority of South Asians (67%), Japanese (59%), and Filipinos (54%) rate their health as excellent or very good. Self-rated fair or poor health ranges from 5% for South Asians to 45% for Vietnamese.

Table 1. Stratified logistic regression models: Socioeconomic and demographic predictors of self-rated health, RDD sample

Variables	Asian					White				
				95% CI					95% CI	
	Beta	SE	OR	Lower	Upper	Beta	SE	OR	Lower	Upper
Socioeconomic										
Education (postgraduate)										
less than H.S.	1.48	0.28	4.40***	2.54	7.60	1.44	0.11	4.24***	3.43	5.24
H.S. graduate	1.18	0.25	3.24***	1.97	5.34	0.66	0.08	1.93***	1.63	2.28
Some college	0.97	0.24	2.65***	1.66	4.24	0.58	0.09	1.79***	1.51	2.12
College graduate	0.49	0.22	1.64*	1.05	2.54	0.18	0.10	1.20	0.99	1.45
Income (> $80,001)										
< $10,000	1.31	0.26	3.71***	2.19	6.28	1.38	0.11	3.97***	3.18	4.95
$10,001-20,000	0.94	0.20	2.56***	1.73	3.79	1.13	0.10	3.09***	2.56	3.73
$20,001-50,000	0.48	0.17	1.61**	1.14	2.28	0.65	0.08	1.92***	1.64	2.25
$50,001-80,000	0.11	0.19	1.12	0.77	1.62	0.30	0.09	1.35***	1.14	1.61
Household size	0.08	0.05	1.08	0.97	1.20	0.01	0.02	1.01	0.97	1.05
Work status (Working FT)										
Not in labor force	0.63	0.18	1.88***	1.32	2.67	1.33	0.06	3.77***	3.33	4.26
Not working	0.91	0.26	2.47***	1.49	4.12	0.86	0.14	2.37***	1.80	3.11
Working part-time	-0.04	0.19	0.96	0.66	1.38	0.28	0.07	1.32***	1.15	1.52
Demographic										
Age (25-34)										
35-44 years	0.44	0.21	1.55*	1.02	2.36	0.44	0.10	1.55***	1.28	1.88
45-54 years	0.84	0.18	2.31***	1.61	3.33	0.92	0.09	2.52***	2.10	3.01
55-64 years	1.03	0.21	2.79***	1.85	4.20	0.68	0.09	1.98***	1.67	2.36
65+ years	0.71	0.23	2.04**	1.29	3.22	0.50	0.09	1.64***	1.37	1.98
Male	0.22	0.12	1.25	0.98	1.60	0.34	0.04	1.41***	1.29	1.53
Married	-0.05	0.19	0.96	0.66	1.39	-0.17	0.06	0.84**	0.75	0.94

SOURCE: California Health Interview Survey, 2001
NOTE: SE=Standard error; OR=Odds ratio; * p < 0.05, ** p < 0.01, *** p < 0.001

Table 2. Stratified logistic models: Socioeconomic and demographic predictors of self-rated health for Chinese, Koreans, and Vietnamese, Asian sample

| | Chinese | | | 95% CI | | Korean | | | 95% CI | | Vietnamese | | | 95% CI | |
Variables	Beta	SE	OR	Lower	Upper	Beta	SE	OR	Lower	Upper	Beta	SE	OR	Lower	Upper
Education (postgraduate)															
less than H.S.	1.58	0.44	4.87***	2.05	11.60	-0.03	0.52	0.97	0.34	2.74	1.30	0.42	3.67**	1.60	8.40
H.S. graduate	1.42	0.34	4.14***	2.11	8.11	0.22	0.47	1.24	0.49	3.14	1.33	0.45	3.80**	1.56	9.24
Some college	1.20	0.42	3.31**	1.44	7.63	-0.43	0.63	0.65	0.19	2.26	1.29	0.43	3.65**	1.56	8.55
College graduate	0.77	0.33	2.15*	1.12	4.13	-0.01	0.44	0.99	0.41	2.39	0.79	0.40	2.19*	1.00	4.82
Income (> $80,001)															
<$10,000	0.25	0.40	1.29	0.59	2.84	1.47	0.57	4.33*	1.40	13.42	1.37	0.42	3.93**	1.70	9.11
$10,001-20,000	0.21	0.40	1.24	0.56	2.74	1.04	0.49	2.83*	1.07	7.51	1.01	0.43	2.73*	1.16	6.45
$20,001-50,000	-0.03	0.30	0.97	0.50	1.88	0.88	0.44	2.41*	1.00	5.81	0.49	0.38	1.63	0.77	3.43
$50,001-80,000	-0.17	0.36	0.84	0.41	1.72	0.43	0.45	1.54	0.63	3.76	0.33	0.41	1.39	0.61	3.13
Work status (Working FT)															
Not in labor force	0.35	0.30	1.42	0.78	2.58	0.14	0.39	1.16	0.53	2.50	0.70	0.29	2.02*	1.14	3.58
Not working	0.43	0.57	1.53	0.49	4.78	-0.24	0.85	0.79	0.15	4.28	0.45	0.37	1.57	0.75	3.27
Working part-time	-0.59	0.41	0.55	0.24	1.27	-0.26	0.33	0.77	0.39	1.49	0.17	0.29	1.18	0.66	2.11
Age (25-34)															
35-44 years	0.05	0.38	1.05	0.50	2.23	0.60	0.46	1.83	0.72	4.61	0.53	0.27	1.70	0.99	2.93
45-54 years	0.57	0.38	1.77	0.82	3.80	1.49	0.47	4.43**	1.73	11.31	0.90	0.30	2.47**	1.35	4.50
55-64 years	0.61	0.41	1.85	0.82	4.17	1.52	0.53	4.57**	1.58	13.24	1.48	0.33	4.38***	2.25	8.50
65+ years	1.22	0.41	3.40**	1.50	7.71	1.25	0.52	3.49*	1.24	9.85	1.15	0.41	3.16**	1.40	7.16

SOURCE: California Health Interview Survey, 2001
NOTE: SE=Standard error; OR=Odds ratio; * p < 0.05; ** p < 0.01; *** p < 0.001; Models adjusted for sex, marital status, and household size.

Logistic regression analysis was conducted on the main sample and the Asian sample using poor or fair self-rated health as the outcome variable and three sets of predictors —race/ethnicity, socioeconomic position, and demographic factors. Hierarchical model fitting provided information about the best fitting models for Asian Americans in the aggregate in the main sample, and for specific Asian American ethnic groups in the Asian sample.

In the main sample, as shown in Table 1, compared to non-Latino Whites, Asian Americans are significantly more likely to report fair or poor self-rated health status. Those who have not graduated from high school are four times more likely than those with a graduate-level education to report poor health. The odds ratios decrease with higher levels of education. The relationship between education and self-rated health is different for Asian Americans compared to Whites. For example, although both Asian Americans and Whites who have not graduated from high school are more than four times as likely to report poor health status, Asian Americans have a higher likelihood of reporting poor health status regardless of the level of education. Asian Americans who have graduated from high school are three times as likely to report poor health and Whites who have graduated from high school are two times as likely.

Level of education is a significant predictor of self-rated health for three Asian American subgroups when ethnicity was used as a covariate. In order to better understand the relationship for these groups, separate analyses were conducted for Chinese, Koreans, and Vietnamese. As shown in Table 2, these results are different in the stratified analyses. All levels of education are statistically significant for Chinese Americans. Those with less than a high school education are almost five times more likely than those with some graduate school education of rating their health as fair or poor. Similarly, level of education is statistically significant for Vietnamese Americans. Those with lower levels of education are almost four times as likely as those with high levels of education to report poor health. The relationship between education and health is not significant for Korean Americans.

Discussion

This study found that while the socioeconomic gradient in health is a robust finding for Asian Americans in the aggregate compared to non-Latino Whites, the steepness and significance of the gradient varies greatly for different ethnic groups. The stratified analyses show that the socioeconomic indicator used is also important. Education shows a strong gradient effect for Chinese Americans, but less so for Vietnamese Americans, and none for Korean Americans. Income shows a strong gradient effect only for Korean Americans.

There are several possible explanations for these varying effects. These different patterns may be a reflection of these specific measures of health status, or may signify distinct pathways through which socioeconomic position affects health status. Self-rated health is the respondent's perception of his or her overall health. Although this measure has been validated in different populations as a reliable measure of health status, Asian Americans in this sample may have different conceptualizations of health and illness. For example, Asian Americans may not define their health as poor if they are still able to function at work and at home.

These patterns may also reflect differing historical, cultural, and economic contexts of these population groups, as indicated by the very different results for the specific Asian American groups in the stratified models. For example, income may be a better predictor for Korean Americans because education does not accurately capture their social position within society. Those who are highly educated but who immigrated to the U.S. at an older age may have limited English proficiency and therefore cannot reap the benefits of their higher education in this country. As a result, they may be forced to work in lower-wage jobs, which may explain the finding that income is a better predictor of poor health status. The high percentage of Korean Americans operating small businesses is largely due to barriers in the labor market, lack of English fluency, persistent discrimination, and barriers to White-collar occupations (Hing, 1993). The high number of Korean Americans without health insurance also reflects this occupational pattern.

Vietnamese Americans often have poor socioeconomic and

health outcomes. The fact that the findings for Vietnamese Americans in this study are not as robust provides some evidence that socioeconomic factors may have a differing effect on the health of Vietnamese Americans. Socioeconomic position should be understood within the context of a group's experience within the United States. For example, the first wave of Vietnamese refugees were well educated and had relatively good English proficiency. The second wave of Vietnamese refugees was not as well-educated, and many continue to face economic, social, and linguistic hardships even years after immigrating to the United States. The long-term effects of war, torture, starvation, and exposure to toxins in Vietnam are not well understood, and many Vietnamese Americans continue to struggle with poverty, language, and post-traumatic stress in the United States (Takaki, 1989).

Another case in which educational level may not accurately capture socioeconomic position is that of individuals who received their education in another country or who predominantly speak a different language. Educational philosophies and curricula differ by country. Twelve years of education in another country may not be equivalent to the same number of years of education in the United States. Education may also not reap the same economic returns in income if those educated in another country are unable to obtain a job in the U.S. because of language barriers. In such cases, there may be negative health effects that emerge as the result of being underemployed.

The findings from this study show the importance of disaggregating data on Asian Americans to begin to disentangle the complex relationships among ethnicity, socioeconomic position and health status. It is also important to consider the choice of socioeconomic measure, which may be shaped by historical, cultural, and economic circumstances and can be better understood within these contexts. Finally, including ethnicity as a covariate in multivariate models may not always identify key differences among Asian ethnic groups. Stratified analyses provided very different results, indicating the importance of examining the association by ethnic subgroup. Future research should also include variables to capture the experience of immigration for Asian American subgroups.

The evolving multi-racial and multi-ethnic diversity of the

nation presents both challenges and opportunities for policy makers, researchers, and practitioners. By 2050, almost half of the total U.S. population will be of African American, Asian American, Latino/Hispanic, Native American, or Native Hawaiian/Other Pacific Islander descent; Latinos and Asian Americans are expected to have the highest rates of increase (Day, 1996). Moreover, the availability of adequate data for American Indians/Alaska Natives, Asian Americans, Native Hawaiians/Pacific Islanders, and Latinos is a major problem. Some of these population groups are relatively small and concentrated in certain geographic regions. Therefore, standard sampling strategies for national populations do not produce adequate sample sizes to explore the heterogeneity within a given racial group. There is also a critical need for the inclusion of identifiers on all surveys and forms for subgroups of the Asian American, Pacific Islander, and Latino populations (Williams, 1996).

Typically, Asian Americans and Pacific Islanders are excluded from studies or relegated to the "Other" category due to lack of power in the sample size. The Asian American population is projected to be one of the fastest growing minority groups in the U.S. over the next two decades. In this context, the lack of empirical attention to and consequent limitations in the ability to design effective health interventions for this population is a significant public health and social policy issue. Deficient health data mask the needs of the Asian American and Pacific Islander community as a whole and within individual ethnic groups, and provide few meaningful strategies to target policies for specific communities. This population faces similar barriers as other populations in the health care system, including the high cost of health care, fragmentation of the health care system, and inadequate health care facilities in urban and rural areas. Some studies have documented the urgent need for cultural competence and specific services for linguistic minorities to address the inequities in the quality of care some populations receive. These are important considerations for health care reform. Continued efforts to collect disaggregated data on a state and national level will increase our understanding of the critical factors needed to address the needs of specific communities.

Beyond specific health care reform options, however, are larger societal issues that continue to be problematic. Inequities in health reflect fundamental inequities in societal conditions. The causes of these inequities, namely the social determinants of health, are essential to address in efforts to eliminate health disparities. Socioeconomic factors are thought to be "fundamental causes" of disease because they represent access to important resources—broadly defined to include knowledge, money, power, prestige, and social connections—that help individuals avoid diseases and minimize negative consequences once illness occurs. Variables such as race/ethnicity and gender are closely tied to such resources, and should also be considered as potential fundamental causes of disease (Link & Phelan, 1995). This theory recognizes that patterns of disease are shaped by societies and reflect the distribution of advantage and disadvantage in those societies. A person's ability to navigate those risks and avoid the negative consequences of disease is directly related to his or her socioeconomic position and the fundamental social causes of disease.

Policy makers have the ability to affect the health of population groups by identifying ways to improve access to these resources and increasing opportunities for vulnerable populations. As evidenced by this study, Asian American subgroups have very different patterns of socioeconomic position and health. Despite stereotypes of a model minority, many subgroups have poor socioeconomic and health outcomes, and interventions that target the distal forces may be appropriate. For some subgroups, education may be an important avenue to target, but for other groups, income may be a more significant pathway. Examples of non-health policy interventions may include early childhood education, support for small business owners, increasing labor market opportunities, and providing a living wage for workers.

The findings from this study show that many differences exist within subgroup Asian American populations and provide evidence for the importance of disaggregating data whenever possible. The landscape of Asian America will continue to change rapidly in the future, and a comprehensive understanding of the complexity of the relationships between socioeconomic position, race, ethnicity, and health will not be

achieved without an active and dynamic research agenda. Such information can ultimately inform policymakers, researchers, and program planners in their efforts to create more culturally responsive health care and social service systems.

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