



Published in final edited form as:

*J Immigr Minor Health*. 2012 October ; 14(5): 890–894. doi:10.1007/s10903-011-9552-8.

## Health Risk Behaviors among Five Asian American Subgroups in California: Identifying Intervention Priorities

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### Abstract

This analysis assessed the prevalence of excess body weight, physical inactivity and alcohol and tobacco use in Asian American subgroups. Using 2005 California Health Interview Survey data, we estimated the prevalence of body mass index (BMI) categories using both standard and World Health Organization-proposed Asian-specific categories, physical inactivity, and alcohol and tobacco use for Chinese (n=1285), Japanese (n=421), Korean (n=620), Filipino (n=659) and Vietnamese (n=480) Americans in California. About 80% of Japanese and Filipino American men and 70% of Korean American men were “increased/high risk” by Asian-specific BMI categories. Most Asian American subgroups were more likely to walk for transportation than non-Hispanic whites, but less likely to report other physical activities. Highest smoking and binge drinking prevalences were among Korean, Vietnamese and Filipino American men and Japanese and Korean American women. These results suggest risk profiles for each Asian American subgroup to consider when setting priorities for health promotion programs.

### Keywords

Asian American subgroups; California Health Interview Survey; Body Mass Index; Health risk behaviors

### Introduction

Health risk behaviors including excess weight gain, physical inactivity, and alcohol and tobacco use are responsible for a large proportion of deaths in the United States (1). These risk factors vary by racial/ethnic group (2–4); however, prevalences among Asian American subgroups are not well characterized. While Asian Americans are the U.S. population group least likely to be overweight/obese by standard body mass index (BMI) categories (2), the World Health Organization (WHO) has suggested lower BMI categories for Asians to reflect their higher chronic disease risk at lower BMI levels than persons of European descent (5–6). Furthermore, Asian subgroups are usually combined in analyses reporting risk behaviors, which may mask differences among subgroups. The purpose of this analysis was to estimate the prevalence of BMI risk categories and health risk behaviors for disaggregated Asian American subgroups.

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## Methods

### Participants and Data Collection

We use data from the 2005 California Health Interview Survey (CHIS), a population-based random digit dial telephone survey designed to provide statewide estimates of health indicators for all major racial/ ethnic groups as well as several Asian American subgroups (<http://www.ucla.chis.edu>). The 2005 survey was used because it provided detailed information on physical activity and food intake. The overall response rate for adults was 26.9%. Special weighting procedures were used to account for the 10% of households that were not sampled because they had only cellular telephones. Since Asian Americans make up 12.7% of the California population, which is a much larger percentage than the national average of 4.6% (<http://quickfacts.census.gov/qfd/states/06000.html>, accessed 6/10/2011), and since CHIS oversampled several Asian American groups and conducted interviews in Chinese, Korean and Vietnamese, CHIS data are well suited to examining health risk behaviors among Asian American subgroups.

Inclusion criteria for the analysis were self-reported Asian ethnicity, age 18 years or older and non-pregnant at time of survey. Due to lack of sufficient sample size for other subgroups, we confined our analyses to Chinese, Filipino, Japanese, Korean and Vietnamese Americans and to non-Hispanic whites as a comparator.

### Measures

We calculated BMI based on self-reported height and weight ( $BMI = \text{weight in kilograms} / [\text{height in meters}]^2$ ). We categorized participants using standard BMI cutoffs and, for Asian subgroups, Asian cutoffs proposed by WHO (see Table 1).

Physical activity was assessed using responses to four yes/no questions about walking for transportation, walking for fun, moderate exercise other than walking, and vigorous exercise done in the past 7 days for at least 10 minutes, Alcohol use was assessed as at least one drink of any alcoholic beverage in the past month, and binge drinking, defined as men consuming 5 alcoholic beverages or women consuming 4 alcoholic beverages on one occasion. Respondents who reported smoking some days or every day were categorized as a smoker. Consumption of 5 or more fruits and vegetables per day was assessed using a CHIS-constructed variable based on frequency of consumption of seven categories of fruits and vegetables.

### Analysis

We obtained estimates of proportions using the survey proportion command in Stata 11 (Stata Corporation. Statistical Software: Release 11.1. *Stata Corporation*. College Station, TX 2009), using the CHIS-provided replicate weights in order to obtain estimates applicable to the California population. Analyses were stratified by sex and race, and all estimates were standardized to the 2005 California age distribution as obtained from AskCHIS (<http://www.chis.ucla.edu/main/default.asp>, accessed 5/20/2011). We compared proportions between the five Asian American subgroups combined and non-Hispanic whites and among the five Asian American subgroups using linear hypothesis tests.

## Results

The sample sizes ranged from 421 for Japanese Americans to 1285 for Chinese Americans (Table 2); there were 27,400 non-Hispanic whites in the comparison group. When using standard BMI categories, Asian Americans are significantly less likely to be overweight or obese than non-Hispanic whites (men 45% versus 64%, women 22% versus 43%). When

using the proposed Asian-specific categories for the Asian American groups, 67% of Asian American men and 41% of Asian American women are categorized as increased or high risk, which was similar to the percentage categorized as overweight or obese among non-Hispanic whites. Japanese and Filipino American men had the highest proportion of increased/high risk individuals, followed by Korean, Chinese and Vietnamese American men. Among women, Filipino Americans had a significantly higher proportion of increased/high risk individuals than all other Asian American groups.

Table 3 displays self-reported physical activity. The five Asian American groups combined were significantly more likely to walk for transportation than non-Hispanic whites, with highest percentages of walking for transportation reported by Vietnamese Americans and the lowest percentage among Japanese Americans. Several statistically significant differences were found among the Asian American subgroups. With respect to walking for fun, moderate physical activity and hard or vigorous exercise, the five Asian American subgroups combined reported lower levels of physical activity than non-Hispanic whites. Vietnamese and Japanese Americans reported the highest prevalence of walking for fun, while Chinese American reported the lowest prevalence. Vietnamese and Filipino American men reported the highest prevalence of moderate physical activity (but a lower prevalence than non-Hispanic White men), while Chinese American men and women and Vietnamese American women reported the lowest prevalences. There was little variation in the prevalence of hard or vigorous exercise among the Asian American subgroups.

Table 4 displays self-reported food and alcohol intake and smoking. The five Asian American groups combined reported a lower prevalence of consuming 5 or more fruit and vegetables per day than non-Hispanic whites. Korean and Vietnamese American men reported the highest prevalence and Korean, Filipino and Vietnamese American women the lowest prevalence. Binge drinking in the past 30 days was reported by fewer Asian Americans than non-Hispanic whites, and there were large variations among Asian American subgroups, ranging from 8% among Chinese American men to 23% among Filipino American men, and from 3% among Chinese American women to 15% to Japanese American women. Smoking prevalence, on the other hand, was significantly higher among Asian American men than among non-Hispanic white men, but lower among Asian American women than among non-Hispanic white women. The highest smoking prevalences were reported by Korean, Vietnamese and Filipino American men and Japanese and Filipino American women, and the lowest by Chinese and Japanese American men and Chinese and Filipino American women.

## Discussion

Using survey data from a large population-based sample, we provide information on health risk factors in the 5 largest Asian American populations in California. Our report adds to the literature in several ways. It disaggregates Asian Americans into subgroups and shows differences and similarities among the five largest subgroups, it uses Asian-specific categories for BMI in classifying Asian Americans as high/increased risk, and it reports the proportions of the populations engaging in several different health-related behaviors.

Many publications reporting health risk behaviors exclude Asian Americans (4) or combine all Asian American subgroups (7–8). We were able to disaggregate Chinese, Japanese, Korean, Filipino and Vietnamese Americans and find statistically significant differences among these subgroups in the prevalence of almost all health risk factors examined. We found the largest differences with respect to BMI between Vietnamese American men (lowest proportion at increased or high risk) and Japanese and Filipino American men (highest proportion), with a difference of 29 percentage points. Walking for transportation

was much more common among Vietnamese than among Japanese Americans. Binge drinking was reported by 2–3 times as many Korean and Filipino American men as Chinese American men, and by 4–5 times as many Korean and Japanese American women as Chinese American women. Current smoking was twice as high among Korean and Vietnamese American men as among Chinese and Japanese American men. These results demonstrate the importance of disaggregating Asian Americans to assess their health needs..

BMI levels have been reported for Chinese and Filipino Americans (3), Korean American (9) and for Asian Americans as a whole (8). Our findings add information on other Asian American subgroups and provide sex-specific estimates, in addition to using Asian-specific BMI categories. When proposed Asian-specific BMI risk categories are used, the proportion of Asian Americans at increased or high risk for chronic diseases increased substantially, as much as 100% among Chinese American men and even more among Chinese, Korean and Vietnamese American women. Our findings suggest that several Asian American populations have proportions with increased or high risk BMI that are similar to the general US population.

### Limitations

Our results are limited to health risk behaviors assessed by CHIS and to California residents. The response rate is a concern, but other data suggest that the CHIS samples provide reliable statewide estimates (10). All data were self-report. Only 4 questions were asked regarding physical activities, which did not capture complete information, and the accuracy of reporting may vary among racial/ethnic groups. The variable “Consumption of 5 or more fruits and vegetables per day” was constructed by estimating median age- and sex-specific portion sizes that were not based on typical Asian diets. We used uniform cut-off points for Asian BMI classifications for all Asian American subgroups although cut-off points may be slightly different for different subgroups (5–6).

### Conclusion

Results for 5 Asian American subgroups from a population-based survey suggest different risk profiles for each population, which should be considered when setting priorities for future health promotion programs.

### Acknowledgments

The preparation of this paper was funded in part by P01 CA109091 from the National Cancer Institute and National Center on Minority Health and Health Disparities. C.M.C. was supported by NIH/NCI grant P30 CA16042 and R.E.A. was supported by NIH/NCI grant 5R25CA078583.

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**Table 1**

Standard and proposed Asian-specific categories for body mass index (5–6)

Standard BMI Categories (kg/m <sup>2</sup> )		Asian-Specific BMI Categories (kg/m <sup>2</sup> )	
Underweight	< 18.5	Underweight	< 18.5
Normal weight	18.5 – 24.9	Increasing but acceptable risk	18.5 – 22.9
Overweight	25 – 29.9	Increased risk	23 – 27.5
Obese	30	High Risk	27.5

Table 2

Body mass index (BMI) based on self-reported weight and height in five Asian American subgroups and non-Hispanic whites, using standard and Asian-specific BMI categories (2005 California Health Interview Survey data)

	Chinese N=1285	Japanese N=421	Korean N=620	Filipino N=659	Viet- namese N=480	Differ- ences among Asian subgroups (p < 0.05)	5 Asian Groups N=3465	White N=27400	5 Asian Groups versus White p-value
<b>Standard BMI Categories: % Overweight or Obese (95% confidence interval)</b>									
<b>M</b>	29 (24–34)	60 (49–70)	46 (38–53)	66 (59–72)	33 (24–42)	CJ, CK, CF, JK, IV, KF, KV, FV	45 (42–49)	64 (62–65)	<0.001
<b>W</b>	16 (12–19)	21 (14–29)	15 (11–20)	36 (30–42)	16 (11–22)	CF, JF, KF, FV	22 (20–25)	43 (41–44)	<0.001
<b>Asian-specific BMI Categories: % at Increased or High Risk (95% confidence interval)</b>									
<b>M</b>	58 (53–64)	79 (70–88)	70 (62–77)	80 (74–85)	51 (41–60)	CJ, CK, CF, JV, KF, KV, FV	67 (64–70)	64 <sup>a</sup> (62–65)	0.63
<b>W</b>	36 (31–40)	37 (29–45)	35 (29–42)	55 (48–61)	34 (26–42)	CF, JF, KF, FV	41 (38–44)	43 <sup>a</sup> (41–44)	0.14

Analyses were conducted using proportion estimation with CHIS survey replicate weights and standardization to the 2005 California population age distribution. Comparisons between groups were conducted using linear hypothesis tests.

Asian American subgroups are indicated by their initials: (C)hinese, (J)apanese, (K)orean, (F)ilipino, (V)ietnamese

M=Men, W=Women

<sup>a</sup> only standard BMI categories were used for Whites.

**Table 3**

Self-reported physical activities for at least 10 minutes in the past 7 days in five Asian American subgroups and non-Hispanic whites (2005 California Health Interview Survey data)

	Chinese	Japanese	Korean	Filipino	Vietnamese	Differences Among Asian subgroups (p < 0.05)	5 Asian Groups	White	5 Asian Groups versus White p-value
<b>% Walk for transportation (95% confidence interval)</b>									
<b>M</b>	53 (48-58)	44 (32-55)	51 (43-59)	59 (51-67)	74 (68-81)	CV, JF, JV, KV, FV	57 (53-61)	48 (47-50)	<0.001
<b>W</b>	56 (52-61)	46 (38-55)	56 (50-62)	56 (49-62)	68 (60-75)	CJ, CV, JV, KV, FV	57 (54-60)	44 (42-45)	<0.001
<b>% Walk for fun (95% confidence interval)</b>									
<b>M</b>	42 (38-47)	57 (45-69)	49 (43-56)	48 (41-56)	58 (50-65)	CJ, CV	49 (45-52)	55 (54-57)	<0.001
<b>W</b>	50 (46-55)	58 (50-66)	55 (49-62)	56 (49-64)	61 (53-69)	CV	54 (51-57)	62 (61-63)	<0.001
<b>% Moderate physical activity (95% confidence interval)</b>									
<b>M</b>	42 (37-48)	46 (36-56)	45 (38-52)	52 (44-59)	53 (45-60)	CF, CV	48 (44-52)	60 (58-61)	<0.001
<b>W</b>	42 (38-47)	51 (43-60)	48 (42-55)	56 (50-62)	38 (31-45)	CJ, CF, JV, KV, FV	48 (45-51)	58 (57-60)	<0.001
<b>% Hard or vigorous exercise (95% CI)</b>									
<b>M</b>	28 (24-33)	32 (22-43)	28 (20-35)	30 (24-36)	32 (24-40)		30 (27-33)	39 (37-40)	<0.001
<b>W</b>	19 (15-23)	22 (15-29)	16 (12-21)	26 (20-31)	17 (11-23)	CF, KF, FV	22 (19-24)	27 (26-28)	<0.001

Analyses were conducted using proportion estimation with CHIS survey replicate weights and standardization to the 2005 California population age distribution. Comparisons between groups were conducted using linear hypothesis tests.

Asian American subgroups are indicated by their initials: (C)hinese, (J)apanese, (K)orean, (F)ilipino, (V)ietnamese

M=Men, W=Women



**Table 4**

Self-reported health risk behaviors in five Asian American subgroups and non-Hispanic whites (2005 California Health Interview Survey data)

	Chinese	Japanese	Korean	Filipino	Vietnamese	Diff-erences among Asian subgroups (p < 0.05)	5 Asian Groups	White	5 Asian Groups versus White p-value
<b>% Consume 5 or more fruits and vegetables per day (95% confidence interval)</b>									
<b>M</b>	47 (42-52)	52 (42-63)	59 (51-66)	48 (40-55)	58 (50-66)	CK, CV	50 (47-54)	59 (57-60)	<0.001
<b>W</b>	38 (35-42)	43 (33-54)	32 (26-38)	29 (22-36)	31 (25-37)	CV, JK, JF	34 (32-37)	41 (39-42)	<0.001
<b>% Had any alcoholic beverage in past month (95% confidence interval)</b>									
<b>M</b>	58 (52-63)	65 (54-76)	65 (56-73)	55 (47-63)	65 (58-72)		60 (56-63)	73 (72-74)	<0.001
<b>W</b>	37 (32-42)	52 (44-60)	55 (49-61)	38 (33-43)	27 (20-35)	CJ, CK, CV, JF, IV, KF, KV, FV	40 (37-42)	66 (65-67)	<0.001
<b>% Binge drink in past 30 days (95% confidence interval)</b>									
<b>M</b>	8 (5-11)	20 (11-29)	21 (15-28)	23 (16-30)	17 (11-24)	CJ, CK, CF, CV	17 (14-19)	26 (25-27)	<0.001
<b>W</b>	3 (2-4)	15 (8-22)	12 (7-17)	7 (3-11)	4 (1-6)	CJ, CK, JV, KV	6 (4-8)	15 (14-16)	<0.001
<b>% Current smoker (95% confidence interval)</b>									
<b>M</b>	15 (11-18)	13 (4-23)	30 (22-37)	25 (18-32)	31 (23-38)	CK, CF, CV, JK, JV	22 (19-25)	18 (17-19)	0.014
<b>W</b>	3 (2-5)	16 (9-23)	12 (6-18)	6 (3-8)	----	CJ, CK, JF	6 (4-7)	16 (15-17)	<0.001

----could not be reliably determined

Analyses were conducted using proportion estimation with CHIS survey replicate weights and standardization to the 2005 California population age distribution. Comparisons between groups were conducted using linear hypothesis tests.

Asian American subgroups are indicated by their initials: (C)hinese, (J)apanese, (K)orean, (F)ilipino, (V)ietnamese

M=Men, W=Women