

Heterogeneity in Cardiovascular Risk Factors Among Asian American Subgroups

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BACKGROUND

- Asian Americans are rapidly growing in numbers and diversity.
- In epidemiologic and health services research, Asian American subgroups are often aggregated in data collection.
- Limited information is available about cardiovascular risk among Asians, and there is limited evidence on how Asian subgroups compare with each other and to other groups.

OBJECTIVE

To compare cardiovascular disease risk factors among Asian subgroups and to Non-Hispanic Whites in a single, U.S. setting.

METHODS

- Setting: The Palo Alto Medical Foundation is an outpatient, multispecialty series of clinics in the San Francisco Bay Area, CA with over 300 physicians, serving more than 200,000 active patients.
- Eligibility criteria:
 - Active patients (clinic-enrolled from April 1, 2005 – March 31, 2007)
 - Age 35 years and older
 - Persons of Asian Indian, Chinese, Filipino, Japanese, Korean and Vietnamese descent and Non-Hispanic Whites were identified using a validated name analysis [1-3]. Those with discordant first and last name classifications were excluded (1.5%). A total of 19,894 persons of Asian descent were identified, and a 10% subsample of Non-Hispanic Whites (10,946) were used.
- Once identified the following cardiovascular risk factors were determined:
 - Diabetes (ICD-9 250.X or fasting glucose \geq 126 mg/dL twice)
 - Hypertension (ICD-9 401.0, 401.1, 401.9 or BP \geq 140/90 mm Hg)
 - High Triglycerides (\geq 150 mg/dL)
 - Overweight / Obesity (BMI: <23, 23-25, 25-30, and \geq 30 kg/m²)
 - Low HDL-C (<40 mg/dL men, <50 mg/dL women)
 - Impaired Fasting Glucose (IFG) (ICD-9 790.2, 790.21, 790.22, 790.29 or fasting glucose \geq 100 mg/dL; and no previous diagnosis of diabetes)
 - Metabolic Syndrome (ATP III criteria [4]; with obesity as defined by BMI instead of weight circumference)
- Statistical Analysis:
 - Age-and-BMI adjusted continuous prevalence rates are presented for IFG, diabetes, hypertension, low HDL-C, high triglycerides, and metabolic syndrome.
 - Age adjusted prevalence rates are presented for BMI categories.
 - 95% confidence intervals are presented for all prevalence rates.
 - Prevalence rates are compared with Asians as an aggregate Asian (all) and Non-Hispanic Whites (NHW) at the alpha=0.0001 level.

RESULTS

DEMOGRAPHICS	NHW	Asian (all)	Asian Indian	Chinese	Filipino	Japanese	Korean	Vietnamese
N								
Total	10946	19894	4613	10228	911	2150	802	1190
Men	45% (4946)	44% (8812)	56% (2580)	42% (4249)	41% (376)	36% (772)	43% (346)	41% (489)
Women	55% (6000)	56% (11082)	44% (2033)	58% (5979)	59% (535)	64% (1378)	57% (456)	59% (701)
Age (mean, sd)								
Total	53.4 (13.7)	48.4 (12.5)	45.3 (10.7)	48.9 (12.6)	49.9 (11.8)	52.8 (14.6)	48.1 (13.0)	47.5 (11.7)
Men	53.1 (13.4)	48.6 (12.8)	44.9 (10.2)	49.5 (12.6)	49.6 (11.3)	52.8 (14.3)	47.4 (12.7)	47.6 (11.0)
Women	53.7 (14.0)	48.2 (12.2)	45.9 (11.2)	48.5 (12.6)	50.1 (12.2)	52.9 (14.8)	48.7 (13.1)	47.4 (12.1)

RESULTS

Sometimes Differences in Asian Americans as an Aggregate are Driven by Specific Asian Subgroups

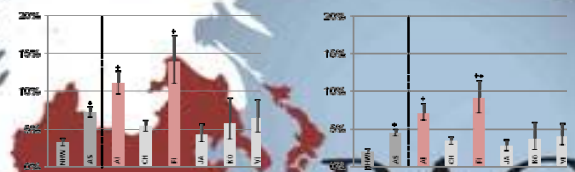


Figure 1: Age-and-BMI-adjusted Prevalence of Diabetes for Men (left) and Women (right) with 95% Confidence Intervals. NHW=Non-Hispanic White; AS=Asian (all); AI=Asian Indian; CH=Chinese; FI=Filipino; JA=Japanese; KO=Korean; VI=Vietnamese. +, * = statistically significantly different at the 0.0001 level from NHW or Asian (all) respectively.

Sometimes Differences in Asian American Subgroups are Masked When Asians are Aggregated



Figure 2: Age-and-BMI-adjusted Prevalence of Hypertension for Men (left) and Women (right) with 95% Confidence Intervals. NHW=Non-Hispanic White; AS=Asian (all); AI=Asian Indian; CH=Chinese; FI=Filipino; JA=Japanese; KO=Korean; VI=Vietnamese. +, * = statistically significantly different at the 0.0001 level from NHW or Asian (all) respectively.

Consistency in Differences in Asian American Subgroups are Noticed when Disaggregated

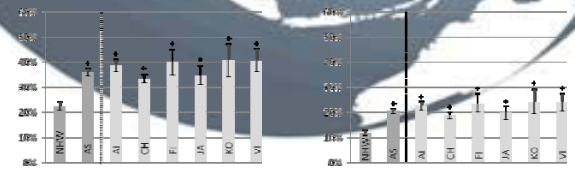
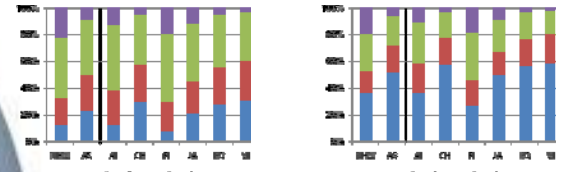


Figure 3: Age-and-BMI-adjusted Prevalence of High Triglycerides for Men (left) and Women (right) with 95% Confidence Intervals. NHW=Non-Hispanic White; AS=Asian (all); AI=Asian Indian; CH=Chinese; FI=Filipino; JA=Japanese; KO=Korean; VI=Vietnamese. +, * = statistically significantly different at the 0.0001 level from NHW or Asian (all) respectively.

Figure 4: Age-Adjusted Prevalence Rates of BMI Categories



Age Adjusted Prevalence for Men (left) and Women (right). NHW=Non-Hispanic White; AS=Asian (all); AI=Asian Indian; CH=Chinese; FI=Filipino; JA=Japanese; KO=Korean; VI=Vietnamese.

ADDITIONAL RESULTS

- Some classes show a difference between aggregated Asian Americans and Non-Hispanic Whites (e.g. Figure 1: Diabetes), but in fact, these differences are largely driven by specific Asian subgroups (e.g. Asian Indians and Filipinos).
- In other cases, there is no difference between aggregated Asian Americans and Non-Hispanic Whites (e.g. Figure 2: Hypertension), but in fact important differences exist and are overlooked (e.g. Filipinos).
- Sometimes, aggregated Asian Americans are different than Non-Hispanic Whites (e.g. Figure 3: High Triglycerides) and are consistently different across subgroups.
- These patterns are also found in age-and-BMI adjusted prevalence of impaired fasting glucose, metabolic syndrome, and low HDL-C (all not shown).

CONCLUSIONS

- Heterogeneity in cardiovascular risk factors exist among Asian subgroups.
- Important subgroup-specific risks can be overlooked by aggregating Asians.
- Future studies should strive to disaggregate these subgroups to better understand and define risk.

REFERENCES

- Lauderdale DS, Kestenbaum B. Asian American ethnic identification by surname. *Population Research and Policy Review*. June 2000;19(3):283-300.
- Word D, Perkins C. *Building a Spanish Surname List for the 1990's - A New Approach to an Old Problem*. Washington DC: U.S. Census Bureau; March 1996.
- Palaniappan LP, Wong E, Fortmann SP, Lauderdale DS. Positive Predictive Values of Name Lists to Identify Persons of Asian Descent in a Clinical Population in Northern California. Paper presented at: American Heart Association - Joint Conference - 48th Cardiovascular Disease Epidemiology and Prevention Annual Conference, and Nutrition, Physical Activity and Metabolism Conference, March 16, 2008, Colorado Springs, CO. Presentation: 417, Abstract P326.
- National Cholesterol Education Program (NCEP) Expert Panel. *Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) Final Report*. National Institutes of Health: National Heart, Lung, and Blood Institute; 2002.