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Report of a National Heart, Lung, and Blood Institute Workshop: Heterogeneity in Cardiometabolic Risk in Asian Americans in the U.S.

Opportunities for Research

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The Asian and Pacific Islander population (Asian Americans) in the U.S. has increased dramatically in the last few decades. Yet, data on cardiovascular disease (CVD) in this population are scarce. The National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health conducted an Expert Workshop to: 1) assess the importance of studying CVD in Asian Americans in the U.S.; and 2) consider strategic options for further investigations of CVD in this population. There is considerable geographical, ethnic, cultural, and genetic diversity within this population. Limited data also suggest striking differences in the risk of CVD, obesity, type 2 diabetes mellitus, and other CVD risk factors across the Asian-American population. The Asian-American population is a new diverse pool with less contemporary genetic and cultural admixture relative to groups that have lived in the U.S. for generations, plus it is diverse in lifestyle including culture, diet, and family structure. This diversity provides a window of opportunity for research on genes and gene-environment interactions and also to investigate how acculturation/assimilation to U.S. lifestyles affects health and CVD risk among relatively homogenous groups of recent immigrants. Given the heterogeneity in body weight, body size, and CVD risk, the Asian-American population in the U.S. offers a unique model to study the interaction and relationships between visceral adiposity and adipose tissue distribution and beta cell function, insulin resistance, and atherosclerosis. (J Am Coll Cardiol 2010;55:966–73) © 2010 by the American College of Cardiology Foundation

Contributing to the rapidly expanding diversity of the U.S., the Asian and Pacific Islander population (Asian Americans) in the country grew 6 times faster than the general U.S. population in the 1990s (1). Considerable geographical, ethnic, cultural, linguistic, and genetic diversity exists within the Asian-American population in the U.S., with 60 different ethnicities that speak >100 different languages and dialects (1). Asian Americans represent 25% of all foreign-born people in the U.S., with 88% of Asian Americans being either foreign-born or having at least 1 foreign-born parent (2).

Striking differences in the risk of cardiovascular disease (CVD), obesity, type 2 diabetes mellitus, and other CVD risk factors across the Asian-American population, based on the limited data available, reflect their underlying diversity and heterogeneity (3,4). For example, Asian Indians, Japanese, and Filipinos have high rates of type 2 diabetes without correspondingly high rates of obesity (5–7), whereas Pacific Islanders have high rates of both diabetes and obesity (3,4). Asian Indians have proportionally higher

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cardiovascular mortality rates when compared with Caucasians, despite higher levels of education and income (8). Pacific Islanders in Hawaii have higher mortality rates compared with the general population of the state and to that of the U.S. overall (9).

Responding to the growing size and diversity of the Asian-American population in the U.S. and to the observed variations in the rates of CVD, diabetes, and body size across this population, the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH) held a workshop from August 7 to 8, 2008, in Bethesda, Maryland, to address the following 3 questions concerning Asian Americans in the U.S. 1) What is the population of interest? 2) Why should we study CVD in Asian Americans? 3) What are the strategic options for further investigations of CVD in this population?

What Is the Population of Interest?

The population of interest comprises persons living in the U.S. who identify themselves as Asian or Pacific Islander or using the U.S. Census definitions: an Asian being a person who has origins in the Far East, Southeast Asia, or the Indian subcontinent (10); and a Pacific Islander being a person with origins in Hawaii, Samoa, or any other Pacific Island (11). The term Asian refers to the definition of continents, and does not adequately differentiate across the diverse heritage and cultures of the peoples (e.g., Filipinos have a cultural history different from that of South Asians). Nevertheless, in 2000, there were 12 million Asians (10) and 874,000 Pacific Islanders (11) in the U.S., and in 2006, these numbers grew to 15.2 million and 1 million, respectively (12).

The major Asian groups, comprising >90% of the Asian population residing in the U.S., are Chinese, Filipino, South Asian, Korean, Vietnamese, and Japanese (Fig. 1), and the major Pacific Islander groups are Native Hawaiians and Samoans. The Asian population grew by 72% and Pacific Islanders by 140% between 1990 and 2000, while the total U.S. population grew by only 13% (1). In the 1990s, the Asian-Indian population doubled, the Vietnamese population increased by 80%, and the Filipino population increased by 50%, all mostly due to new immigration. Twenty-five percent or more of immigrant Chinese or Pakistanis arrived within the last 10 years (13–17).

Asian Americans comprise a very diverse group, with origins from >60 countries, representing several linguistic groups, and considerable cultural and genetic diversity. The demographic and socioeconomic profile of this population also shows diversity in age distribution, education, and income.

Age distribution. Although Asian Americans are similar in age structure (or distribution) to whites, blacks, American Indians, and Hispanics, there are a few exceptions. Compared with other Asian-American subgroups, Japanese have an older age distribution, with 31% over the age of 65 years compared with just 5% of the Asian Indian population.

Education. Adults in the Native Hawaiian or Other Pacific Islander (NOHPI) subgroup and the Vietnamese subgroup have the lowest proportion of adults with a bachelor's degree or higher (29%), whereas at least 45% of all other Asian subgroups have this level of education. Overall, Asians and NOHPI have higher proportions of adults with a bachelor's degree compared with white, black or African-American, American-Indian or Alaska-native, and Hispanic subgroups.

Income. More than 75% of Japanese, Filipino, and Asian Indian adults have higher average incomes (200% of the poverty threshold or greater), a higher proportion than black or African American, American Indian or Alaska native, and Hispanic subgroups (3). Grouping Asian and NHOPI populations in epidemiologic studies often masks important heterogeneity in these factors.

Abbreviations and Acronyms

- **BMI** = body mass index
- **CHD** = coronary heart disease
- **CVD** = cardiovascular disease
- **HDL** = high-density lipoprotein
- **LDL** = low-density lipoprotein
- **NHLBI** = National Heart, Lung, and Blood Institute
- **NIH** = National Institutes of Health
- **NHIS** = National Health Interview Survey
- **NOHPI** = Native Hawaiian or Other Pacific Islander

Why Should We Study CVD in Asian Americans?

What is the significance of studying this population to the general health and welfare of the U.S.? Asian Americans

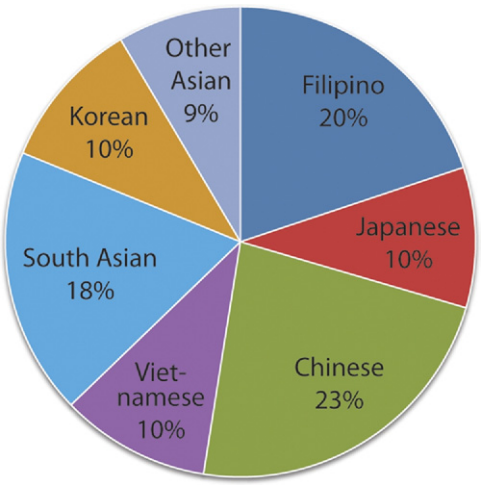

Figure 1 Asian Subgroups as Percentage of Total U.S. Asian Population

Asian subgroups as a percentage of the total U.S. Asian population, 2000. Data adapted from the U.S. Census Bureau (10). "South Asian" includes India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and Maldives; "Other Asian" includes Indonesian, Taiwanese, Thai, or unspecified Asian. Total Asian population = 11.9 million (4.2% of U.S. population).