

Early Stage Investigator Lecture

Cardiovascular Disease Prevention in Asian Americans

Presented by:

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National Institutes of Health
Office of Disease Prevention

Cardiovascular Disease Prevention in Asian Americans

June 4, 2025

NIH ODP Early Stage Investigator Award Lecture

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DISCLOSURES

Nilay S. Shah, MD, MPH

Title: Cardiovascular Disease Prevention in Asian Americans

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KEY QUESTIONS: CVD PREVENTION IN ASIAN AMERICANS

1.

How are cardiovascular health and disease experienced by Asian American populations?

2.

What upstream social and structural factors influence CVD risk in Asian Americans?

3.

What intervention strategies may effectively and equitably prevent CVD for Asian American patients?

KEY QUESTIONS: CVD PREVENTION IN ASIAN AMERICANS I

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HEALTH DATA IN ASIAN AMERICANS

Where we started



Where we are



Asian

- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese

HEALTH DATA IN ASIAN AMERICANS

“Aggregated” vs. “Disaggregated”

ASIAN	{		Bangladeshi
			Burmese
		Asian Indian	Cambodian
		Chinese	Hmong
		Filipino	Indonesian
		Japanese	Malaysian
		Korean	Nepalese
		Vietnamese	Laotian
			Pakistani
			Sri Lankan
			Thai

Nationally representative surveys

- Behavioral Risk Factor Surveillance System (BRFSS)
- National Center for Health Statistics (NCHS)
- National Health and Nutrition Examination Survey (NHANES)
- National Health Interview Survey (NHIS)

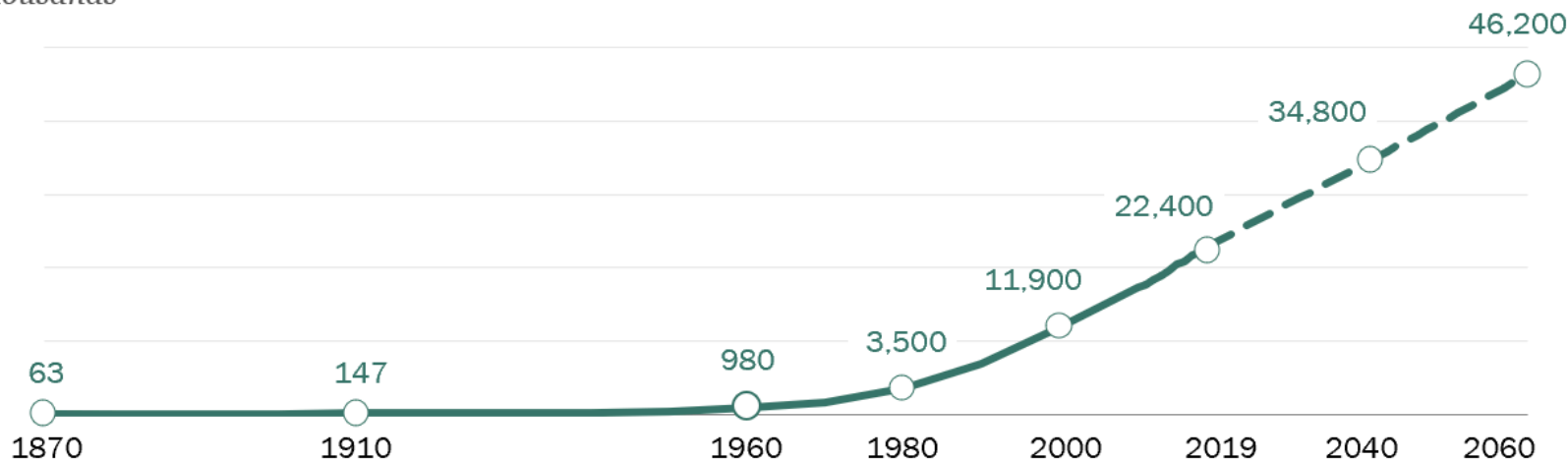
Epidemiologic cohorts

- MASALA Study (South Asian – Indian, Pakistani, Bangladeshi)
- MESA Study (Chinese, Hispanic)
- HCHS/SOL (Hispanic Community Health Survey/Study of Latinos)

ASIAN POPULATIONS IN THE UNITED STATES I

Asian population in U.S. nearly doubled between 2000 and 2019 and is projected to surpass 46 million by 2060

In thousands

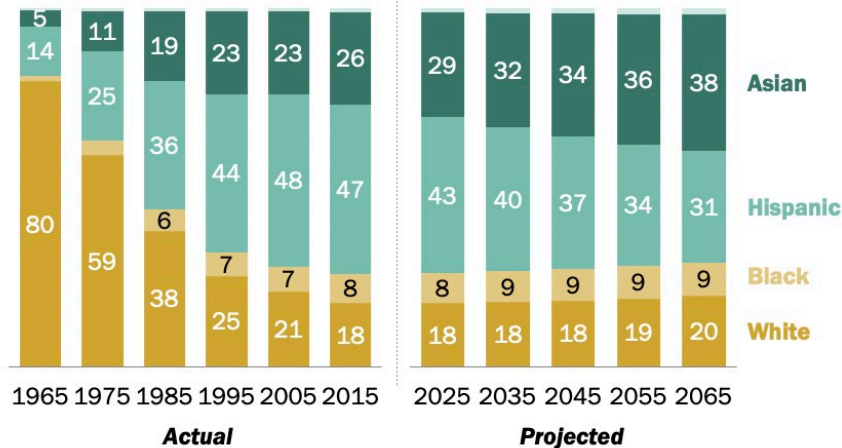


Pew Research Center, 2021.

ASIAN POPULATIONS IN THE UNITED STATES II

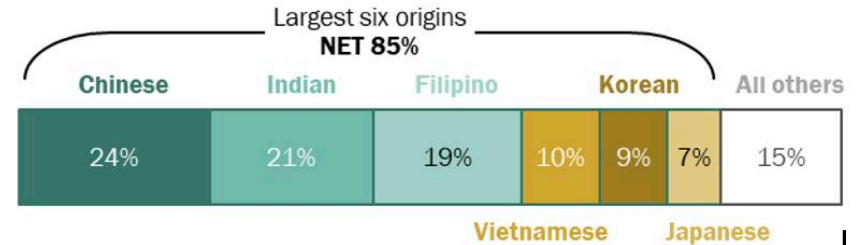
Asians projected to become the largest immigrant group in the U.S.

% of immigrant population



Six origin groups make up 85% of all Asian Americans

% of the U.S. Asian population that is...



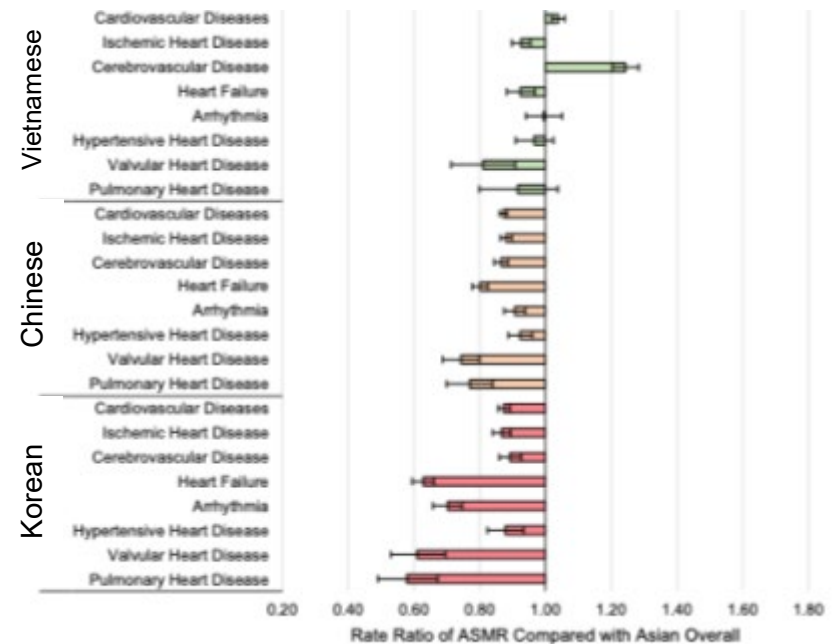
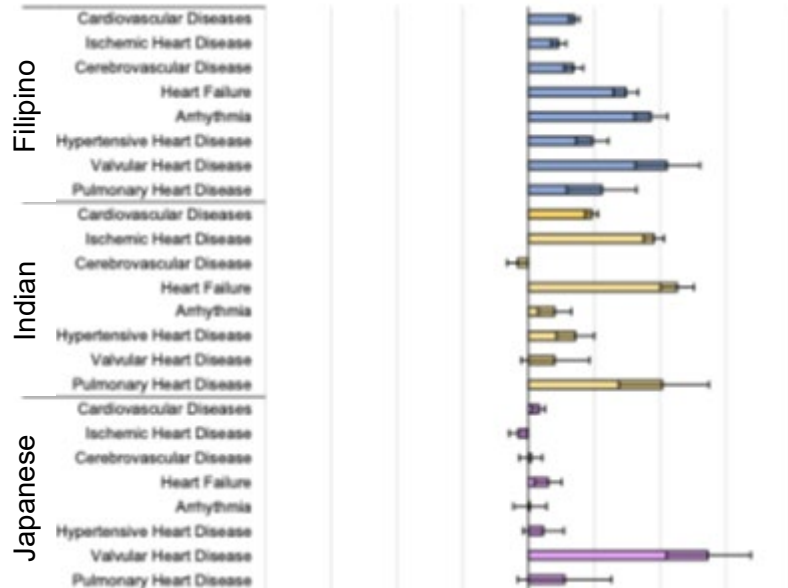
"All Others" includes Bangladeshi, Bhutanese, Burmese, Cambodian, Hmong, Indonesian, Laotian, Malaysian, Mongolian, Nepalese, Pakistani, Sri Lankan, Taiwanese, Thai

Pew Research Center, 2021.

CARDIOVASCULAR DISEASE MORTALITY RATES

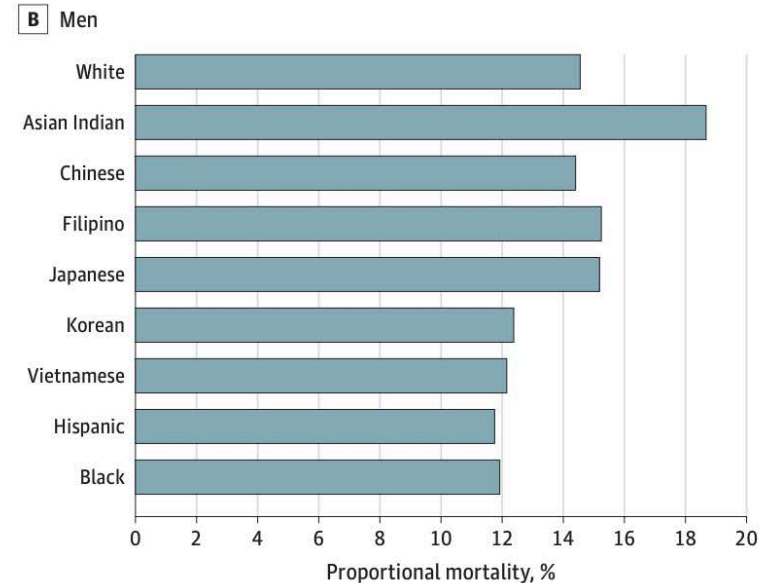
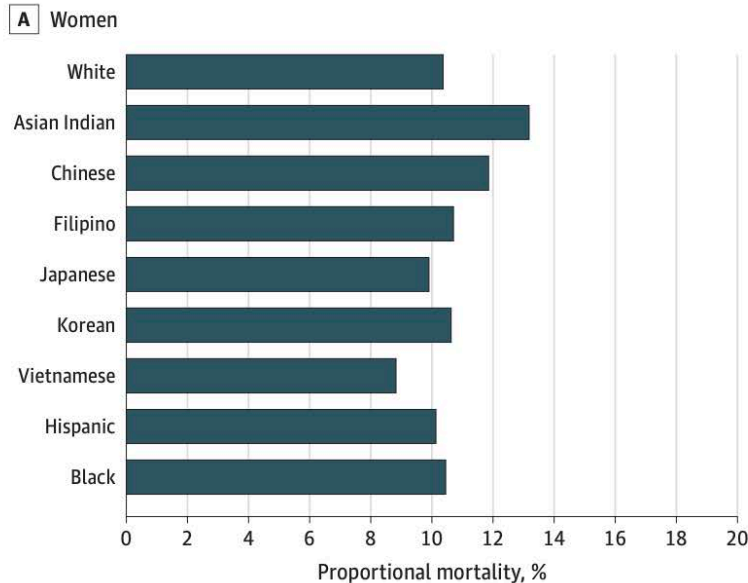
Mortality rates **higher** than in the “Overall Asian” group

Mortality rates **lower** than in the “Overall Asian” group

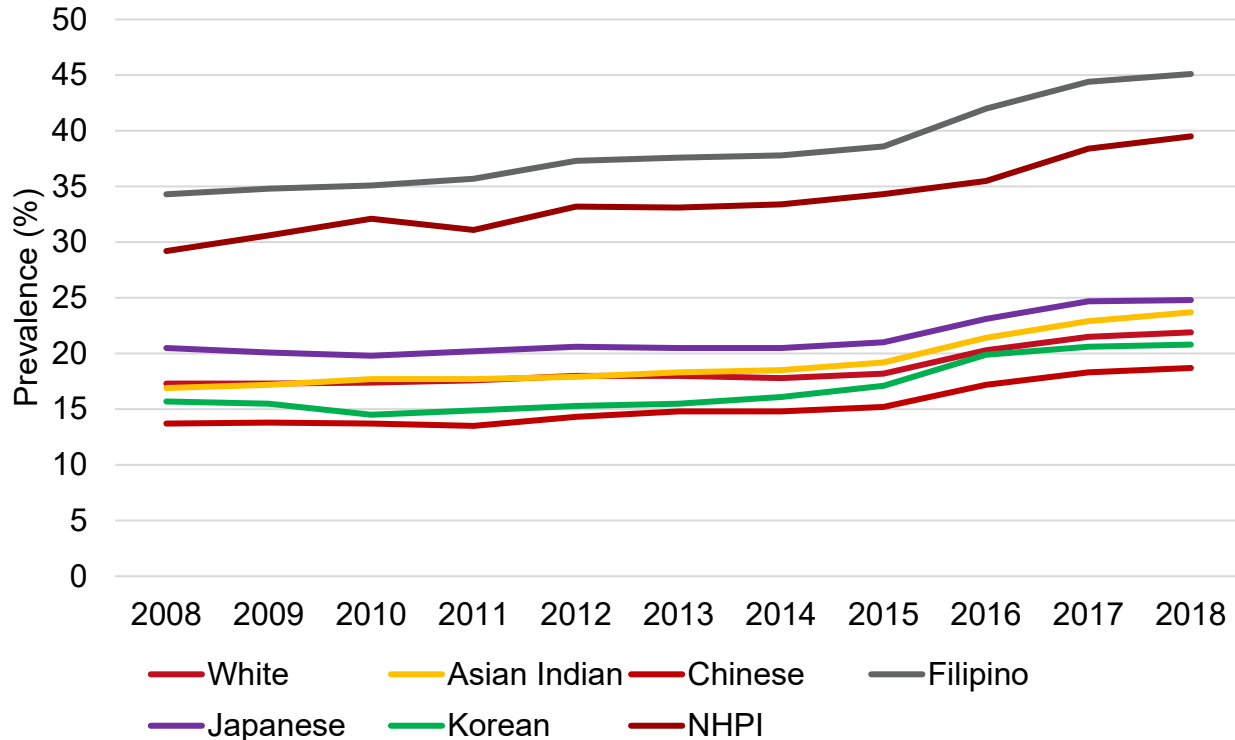


CARDIOVASCULAR DISEASE BURDEN

Proportional mortality from ischemic heart disease by race and ethnicity, 2018-2020



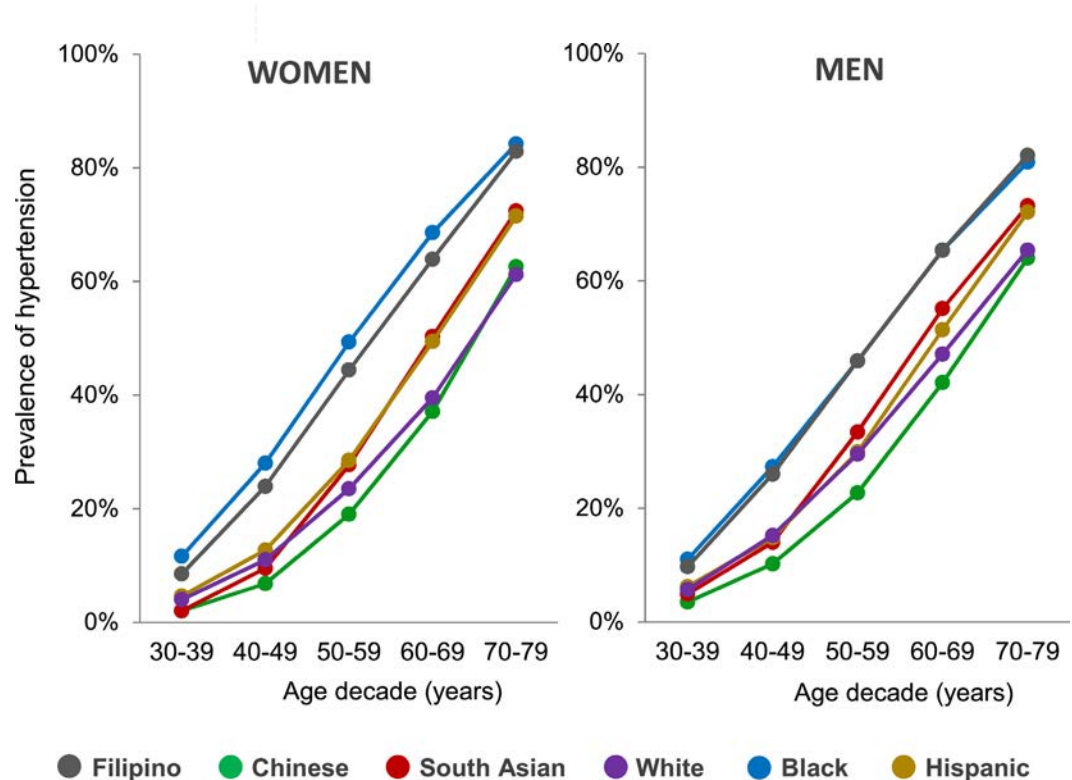
CARDIOVASCULAR DISEASE PREVALENCE



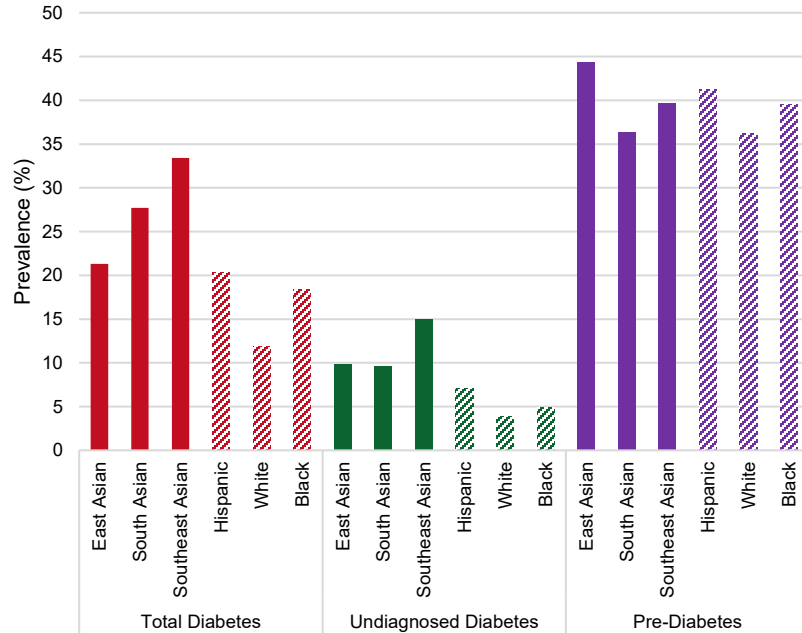
- 3.4 million primary care patients of Palo Alto Medical Foundation (CA)
- Adults age ≥ 18 years
- Filipino and NHPI adults had the highest CVD prevalence

HYPERTENSION

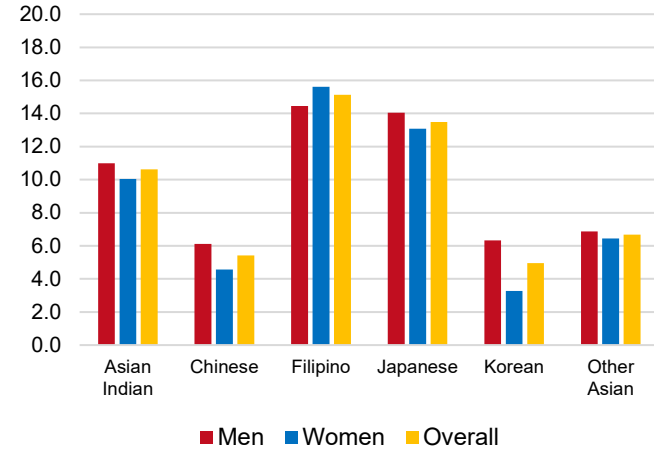
- 1.8 million adult patients of Kaiser Permanente Northern California
- Age 30-79 years
- Across all age groups, Filipino adults had the highest HTN prevalence, which was similar to that of Black adults



DIABETES



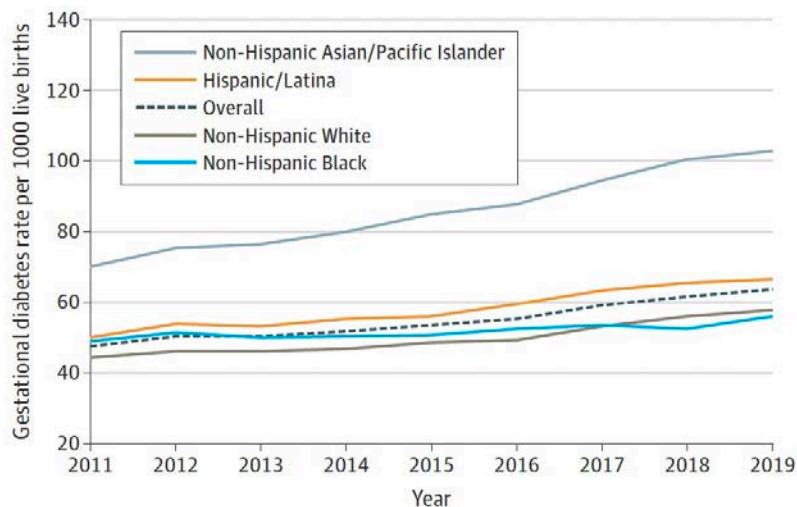
- NHANES, 2011-2016; age, sex, BMI-adjusted
- **Southeast Asian** with highest prevalence of diabetes, **East Asian** with highest prevalence of pre-diabetes



- BRFSS, 2013-2019; self-reported (“diagnosed”) diabetes
- **Filipino & Japanese** adults had the highest prevalence of self-reported diabetes

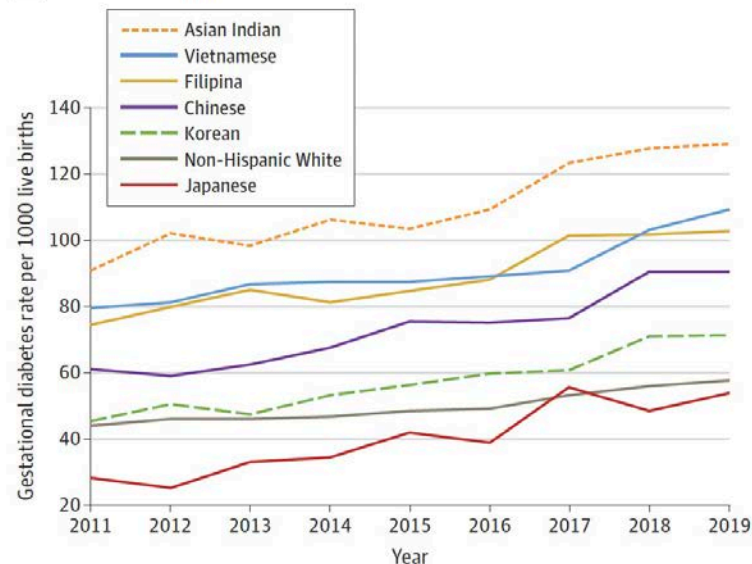
GESTATIONAL DIABETES

A Overall and by race and ethnicity



- Rate of gestational diabetes per 1,000 live births in the US between 2011-2019
- Rates increasing in all racial/ethnic groups
- Disproportionately high burden in non-Hispanic Asian and Pacific Islander

B Non-Hispanic Asian subgroups



- Non-Hispanic Asian adults disaggregated into individual Asian ethnic groups
- Wide heterogeneity in GDM rates
- Asian Indian individuals with highest rate of GDM

BODY WEIGHT & COMPOSITION I

Standard BMI Categories

CATEGORY	BMI (kg/m ²)
Underweight	< 18.5
Normal	18.5 – 24.9
Overweight	25.0 – 29.9
Obesity	> 30.0

Asian-Specific Thresholds for “Public Health Action”

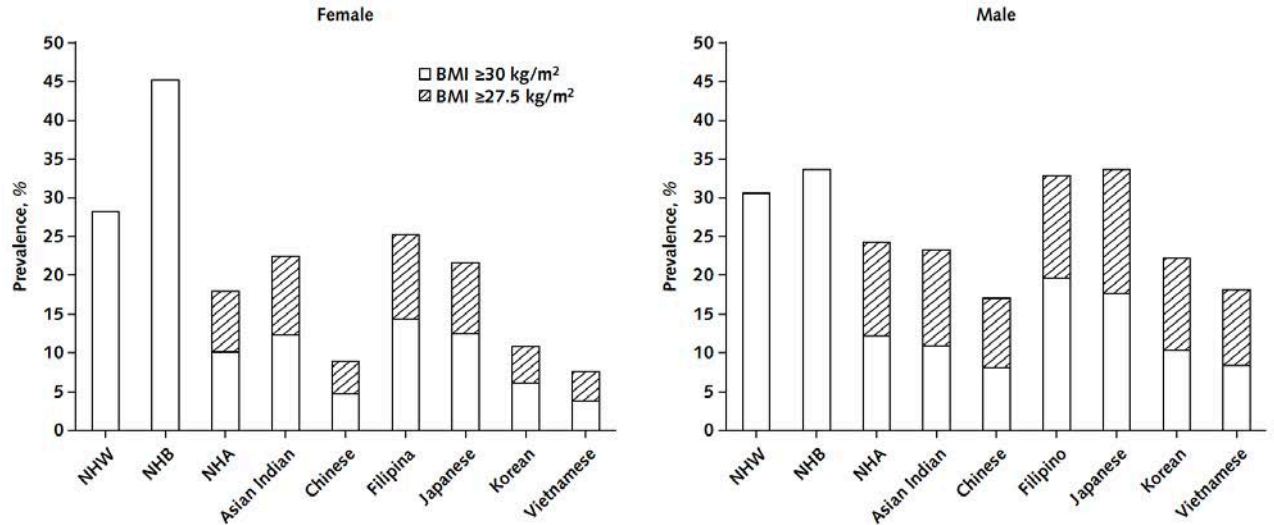
CATEGORY	BMI (kg/m ²)
Underweight	< 18.5
Normal	18.5 – 22.9
Overweight	23 – 27.5
Obesity	> 27.5

WHO Expert Consultation. *Lancet*. 2004.

BODY WEIGHT & COMPOSITION II

- BRFSS, 2013-2019
- Self-reported height/weight
- Obesity prevalence higher accounting for Asian-specific categories – are we “missing” obesity?

Prevalence of BMI categories in Asian American subgroups



KEY QUESTIONS: CVD PREVENTION IN ASIAN AMERICANS II

1.

How are cardiovascular health and disease experienced by Asian American populations?

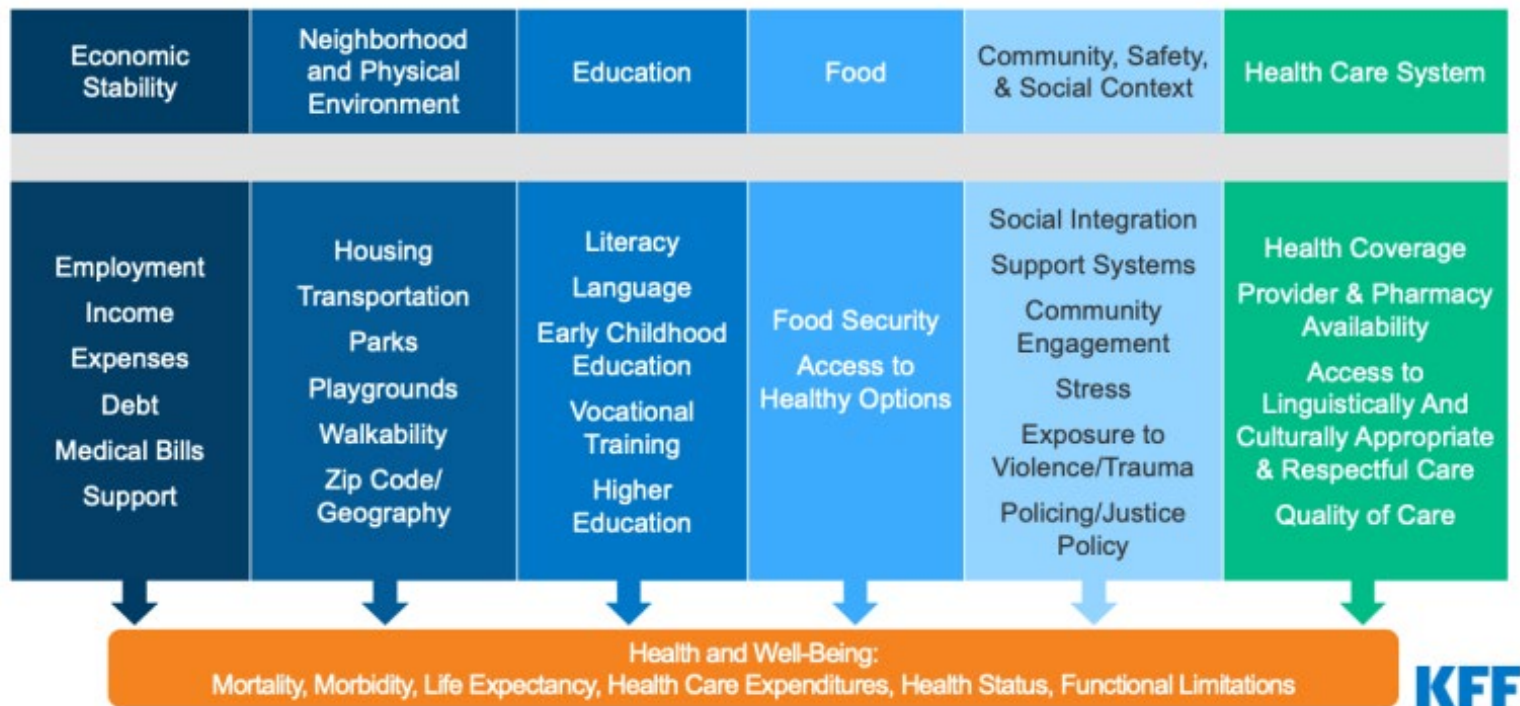
2.

What upstream social and structural factors influence CVD risk in Asian Americans?

3.

What strategies and interventions may effectively and equitably prevent CVD for Asian American patients?

WHAT ARE SOCIAL DETERMINANTS?



AMERICAN HEART ASSOCIATION SCIENTIFIC STATEMENT

SOCIAL DETERMINANTS OF CARDIOVASCULAR HEALTH IN ASIAN AMERICANS

A SCIENTIFIC STATEMENT FROM THE AMERICAN HEART ASSOCIATION

Council on Epi/Prevention Prevention Science Committee, and
Council on CV and Stroke Nursing
Council on Hypertension
Council on Lifestyle and Cardiometabolic Health
Council on Basic CV Sciences
Council on Clinical Cardiology
Council on Peripheral Vascular Disease
Council on Quality of Care and Outcomes Research

AHA SCIENTIFIC STATEMENT

Social Determinants of Cardiovascular Health in Asian Americans: A Scientific Statement From the American Heart Association

Nilay S. Shah, MD, MPH, FAHA, Chair; Namratha R. Kandula, MD, MPH; Yvonne Commodore-Mensah, PhD, MHS, RN, FAHA; Brittany N. Morey, PhD, MPH; Shivani A. Patel, PhD, MPH; Sally Wong, PhD, RD, FAHA; Eugene Yang, MD, MS; Stella Yi, PhD, MPH, Vice Chair; on behalf of the American Heart Association Prevention Science Committee of the Council on Epidemiology and Prevention and the Council on Cardiovascular and Stroke Nursing; Council on Hypertension; Council on Lifestyle and Cardiometabolic Health; Council on Basic Cardiovascular Sciences; Council on Clinical Cardiology; Council on Peripheral Vascular Disease; and Council on Quality of Care and Outcomes Research

ABSTRACT: To achieve cardiovascular health (CVH) equity in the United States, an understanding of the social and structural factors that contribute to differences and disparities in health is necessary. The Asian American population is the fastest-growing racial group in the United States but remains persistently underrepresented in health research. There is heterogeneity in how individual Asian American ethnic groups experience CVH and cardiovascular disease outcomes, with certain ethnic groups experiencing a higher burden of adverse social conditions, disproportionately high burden of suboptimal CVH, or excess adverse cardiovascular disease outcomes. In this scientific statement, we review structural and social determinants that influence CVH in the Asian American population, with particular emphasis on the role of social determinants of health across disaggregated Asian American ethnic groups. Key social determinants that operate in Asian American communities include socioeconomic position, immigration and nativity, social and physical environments, food and nutrition access, and health system-level factors. The role of underlying structural factors such as health, social, and economic policies and structural racism is also discussed in the context of CVH in Asian Americans. To improve individual, community, and population-level CVH and to reduce CVH disparities in Asian American ethnic subgroups, multilevel interventions that address adverse structural and social determinants are critical to achieve CVH equity for the Asian American population. Critical research gaps for the Asian American population are given, along with recommendations for strategic approaches to investigate social determinants of health and intervene to reduce health disparities in these communities.

Key Words: AHA Scientific Statements • Asian • health equity • health inequities • heart disease risk factors • social determinants of health

The Asian American population is a diverse group that experiences considerable heterogeneity in cardiovascular health (CVH) and cardiovascular disease (CVD). Despite being the fastest-growing racial group in the United States, with a population projected to reach 46.2 million by 2060,^{1,2} Asian Americans remain underrepresented in health-related research. Because of the small numbers of Asian Americans recruited in research studies, participants are frequently categorized in an "Other" racial group, aggregated into a single "Asian" category or grouped with Native Hawaiian and Pacific Islander communities, or excluded from analyses citing small sample size, which results in the masking of

clinically relevant differences in health among Asian ethnic groups. Asian American ethnic groups should be individually identified and categorized separately from Native Hawaiian and Pacific Islander groups because each ethnic group represents a unique population with distinct social, cultural, and health characteristics. Furthermore, self-identification as Asian American varies among individual ethnic subgroups, with consequent individual-level variation in how study participants may respond to demographics questionnaires querying self-identified race or ethnicity, which may also result in underrepresentation of Asian ethnic groups in health data.³ Research conducted exclusively in English may also result in

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Circulation is available at www.ahajournals.org/journal/circ

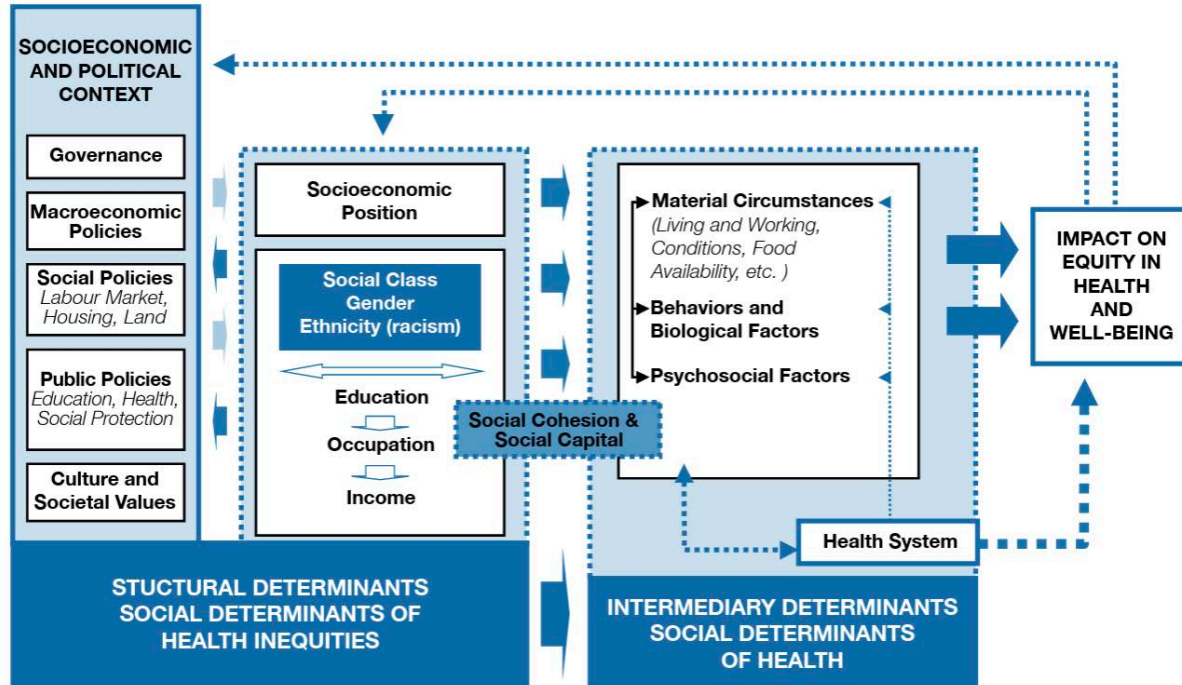
Circulation. 2024;150:e00–e00. DOI: 10.1161/CIR.0000000000001278

TBD TBD, 2024 e1



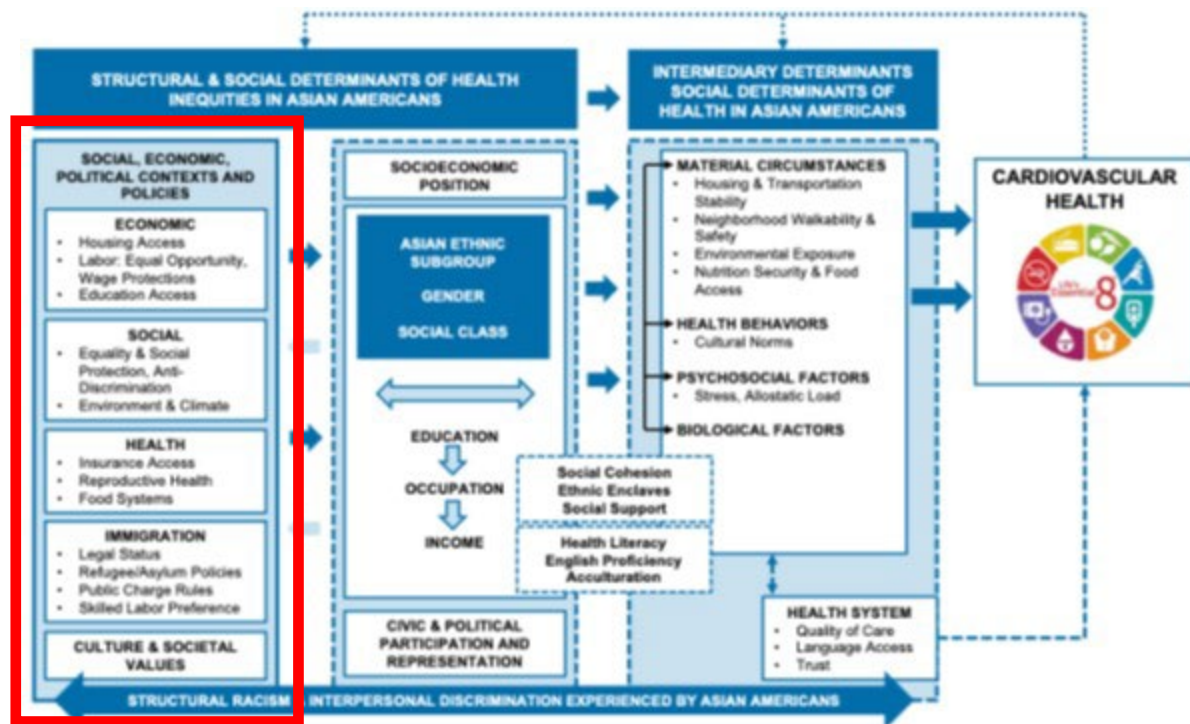
W.H.O. CONCEPTUAL MODEL

World Health Organization Commission on Social Determinants of Health Conceptual Framework



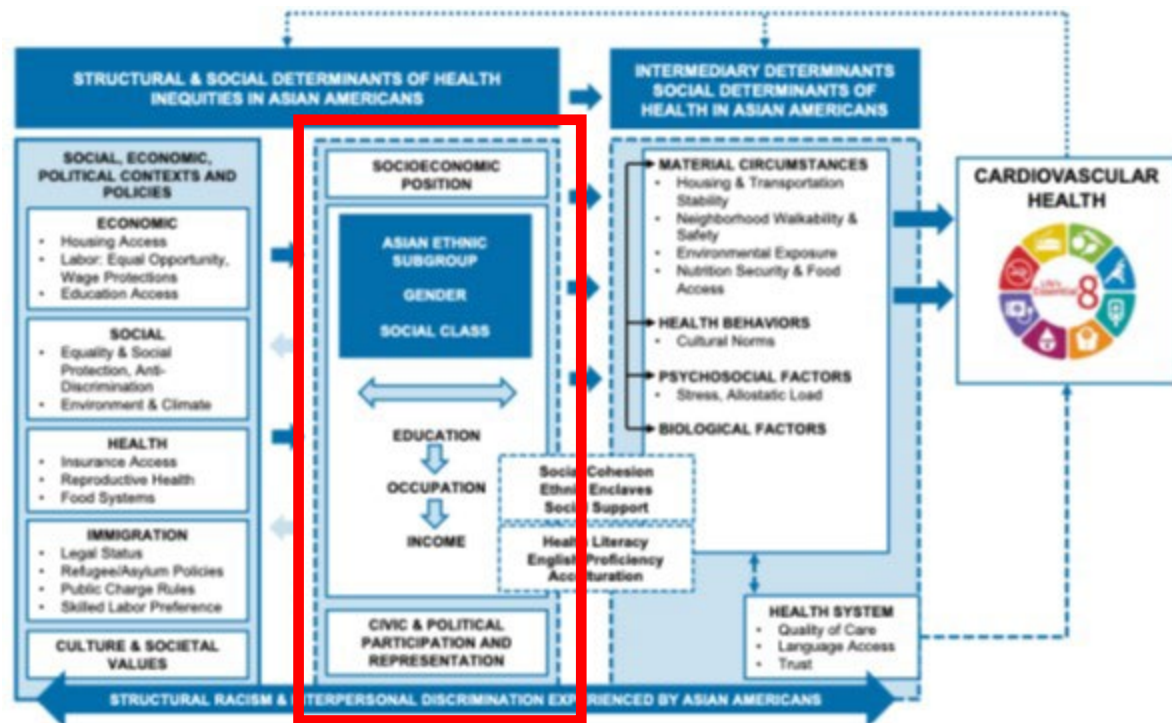
CONCEPTUAL MODEL OF SDOH IN ASIAN AMERICANS

Adapted Conceptual Framework for SDOH and CVH in Asian Americans



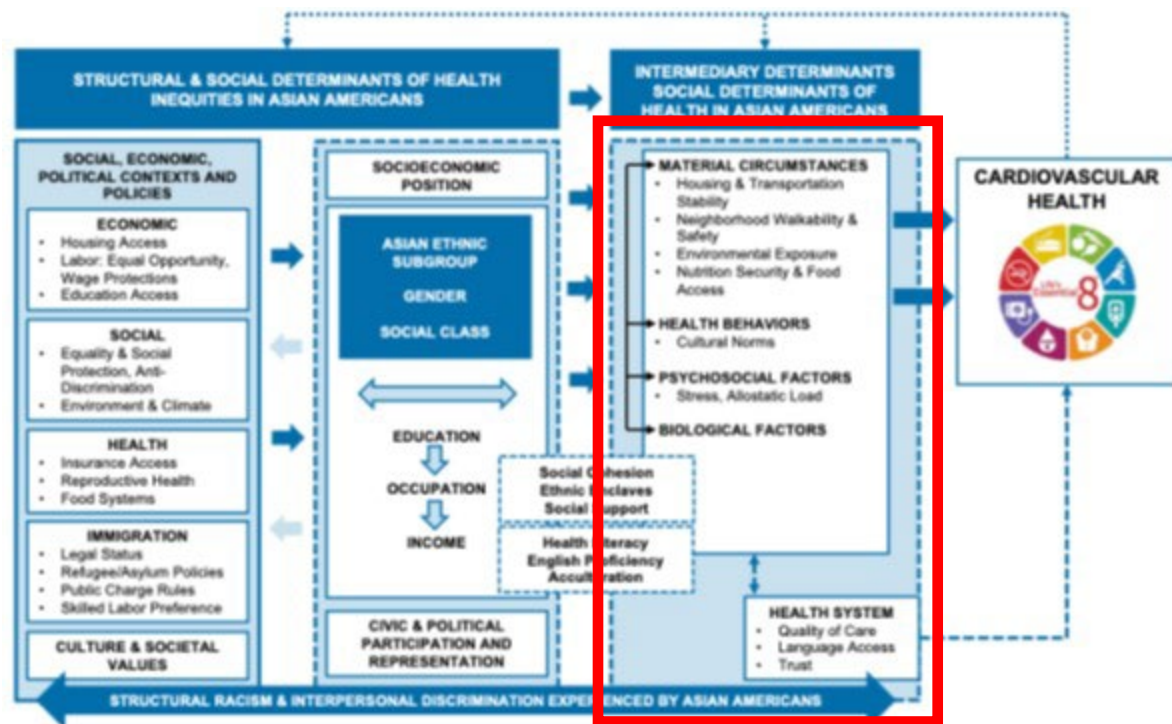
CONCEPTUAL MODEL OF SDOH IN ASIAN AMERICANS II

Adapted Conceptual Framework for SDOH and CVH in Asian Americans



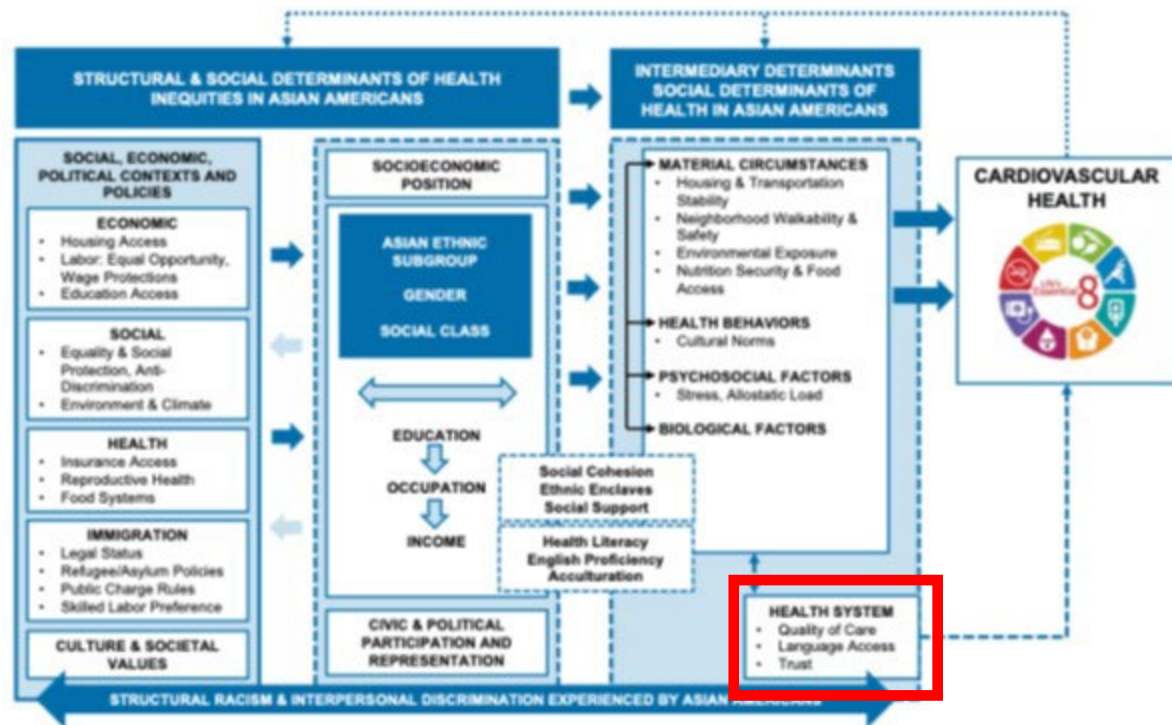
CONCEPTUAL MODEL OF SDOH IN ASIAN AMERICANS III

Adapted Conceptual Framework for SDOH and CVH in Asian Americans



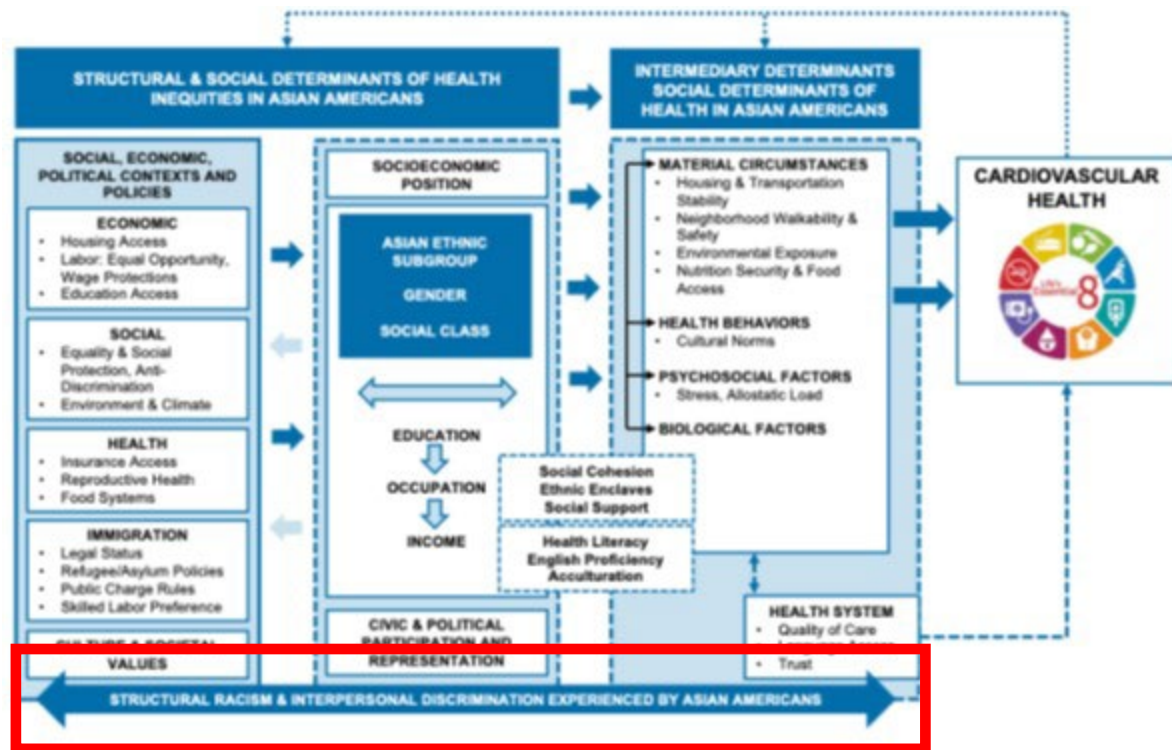
CONCEPTUAL MODEL OF SDOH IN ASIAN AMERICANS IV

Adapted Conceptual Framework for SDOH and CVH in Asian Americans



CONCEPTUAL MODEL OF SDOH IN ASIAN AMERICANS V

Adapted Conceptual Framework for SDOH and CVH in Asian Americans

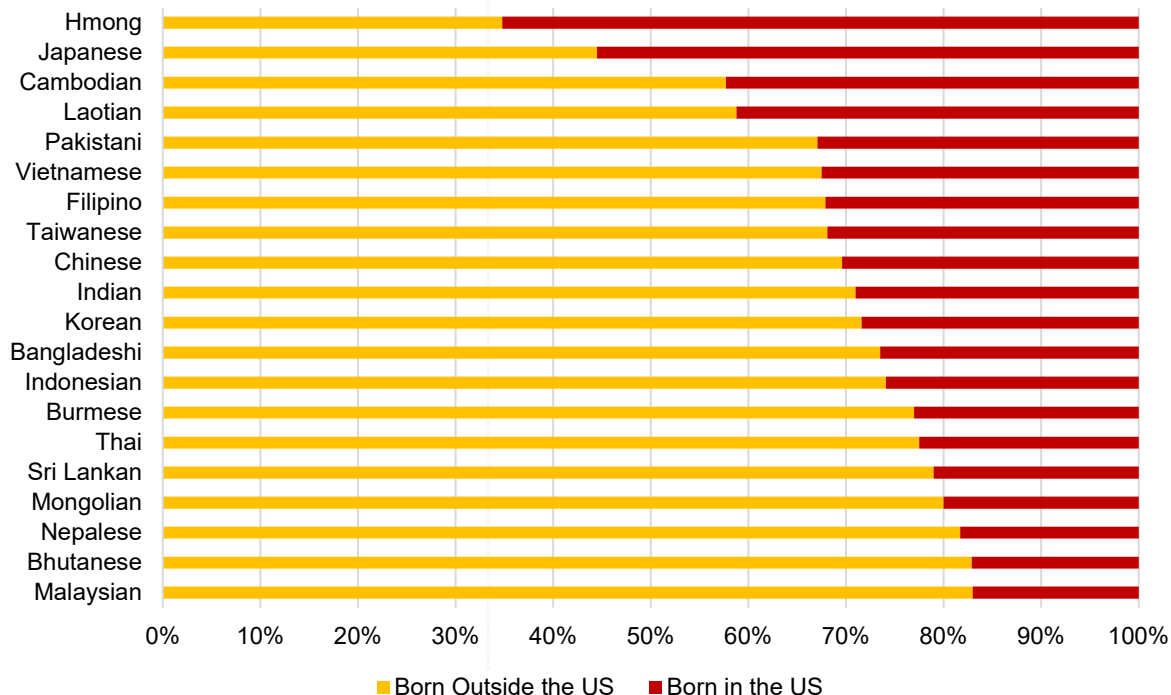


SOCIAL DETERMINANTS OF CVH IN ASIAN AMERICANS



PLACE OF BIRTH & US NATIVITY

Place of Birth



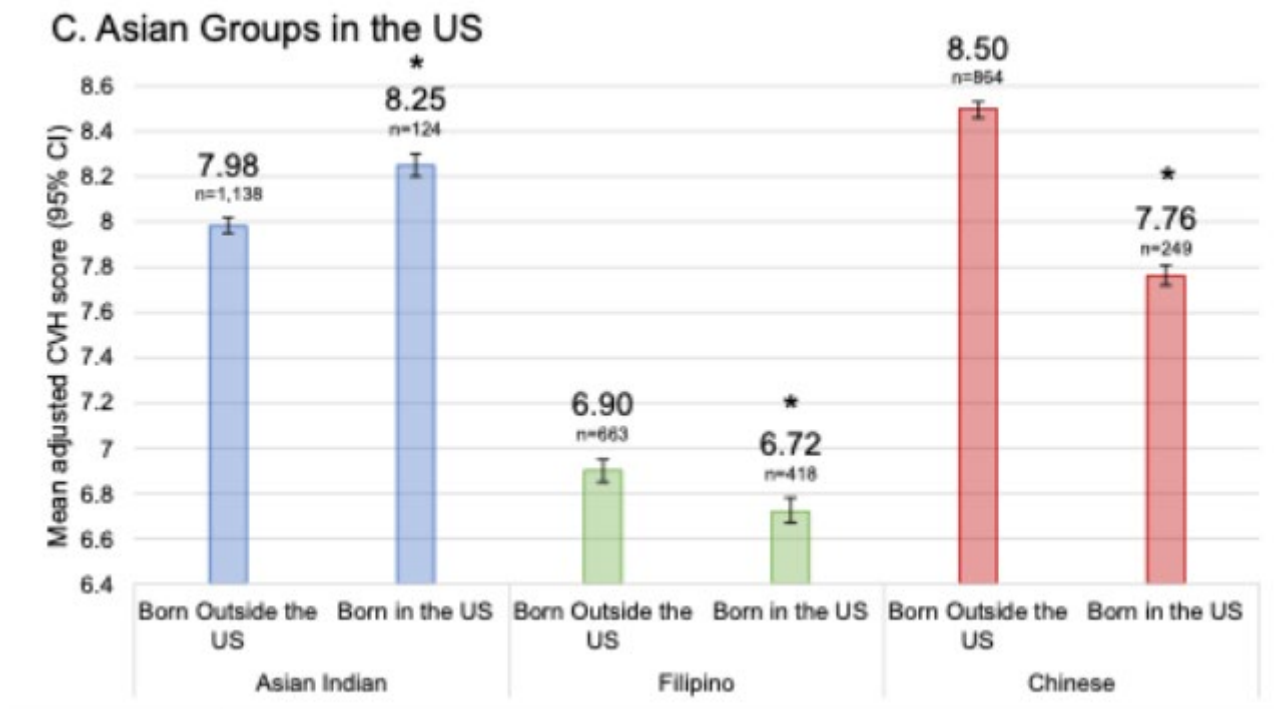
- Place of birth & US nativity are related to
 - Immigration policies
 - Childhood environmental exposures
 - Socioeconomic position, education, income
 - Acculturation
 - Food environments
 - Health behavior norms
 - And more...
- Is there a “Healthy Immigrant Effect” among Asian populations?



More from Yi S, et al. 2022 →



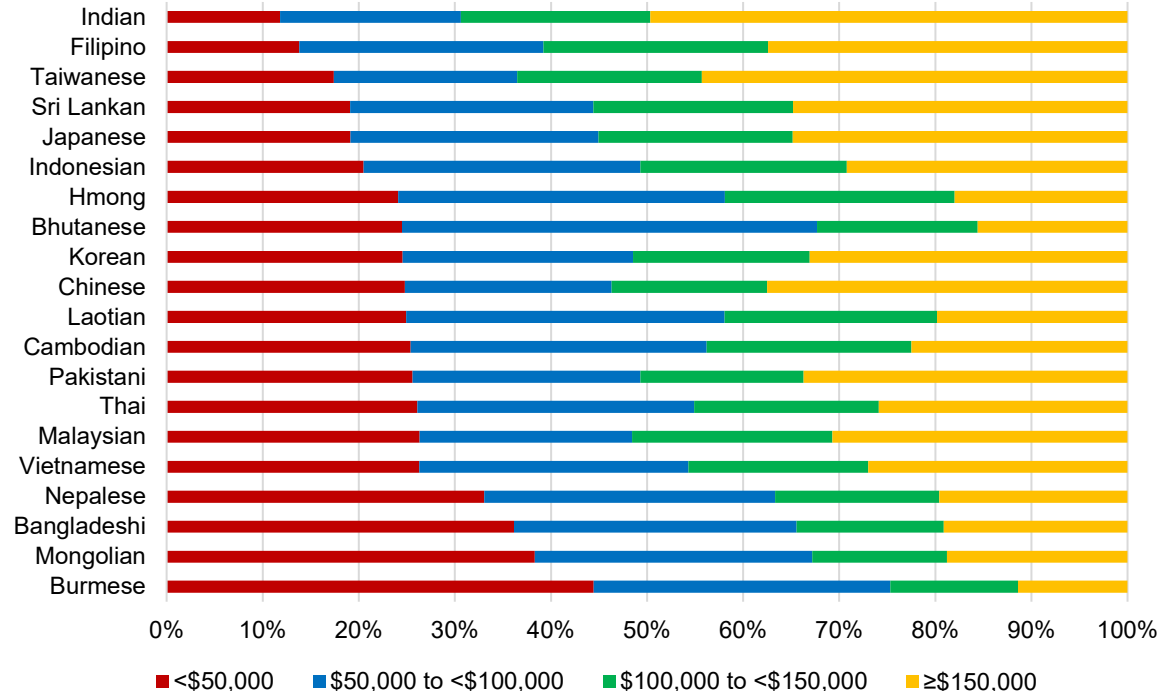
PLACE OF BIRTH & US NATIVITY II



SOCIOECONOMIC STATUS - INCOME

- Indian households with highest proportion (50%) with income $\geq$ \$150k
- Burmese households with highest proportion (45%) with income $<$ \$50k
- In South Asian participants of MASALA, LE8 CVH higher in those with higher vs. lower income (women: 70 vs 62; men: 63 vs. 59)
- In MESA and NYC Community Health Survey, Chinese adults were more likely to experience poverty vs. White adults

Annual Household Income

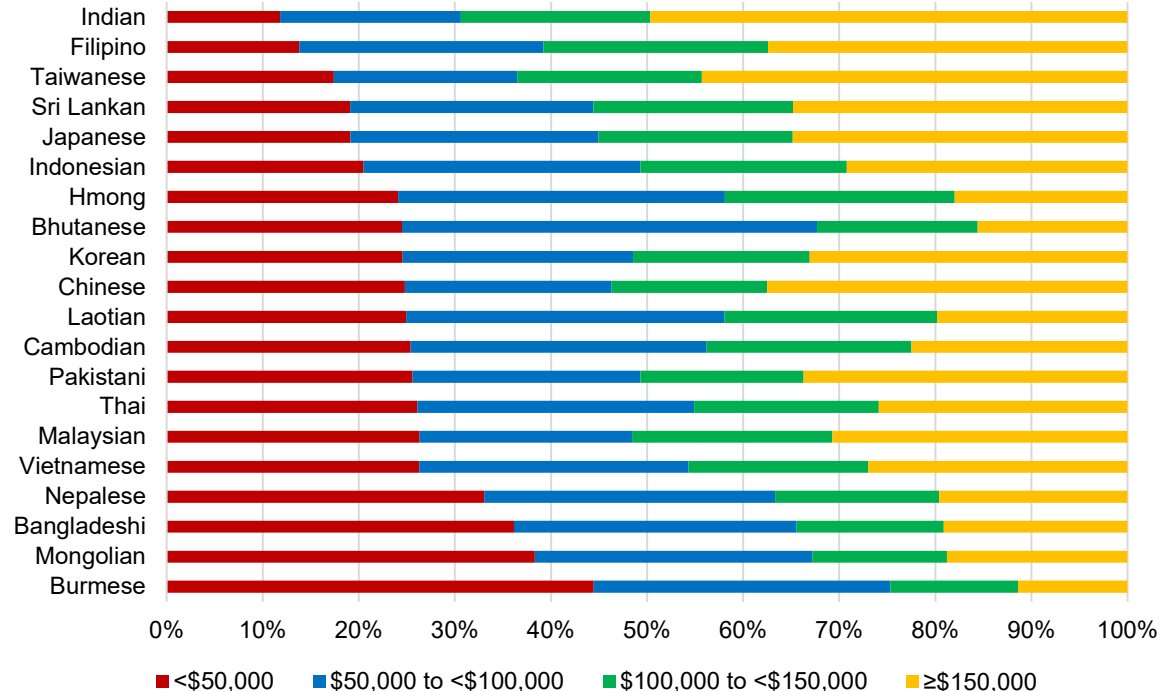


SOCIOECONOMIC STATUS – INCOME II

Income may be uniquely related to CVH in Asian Americans:

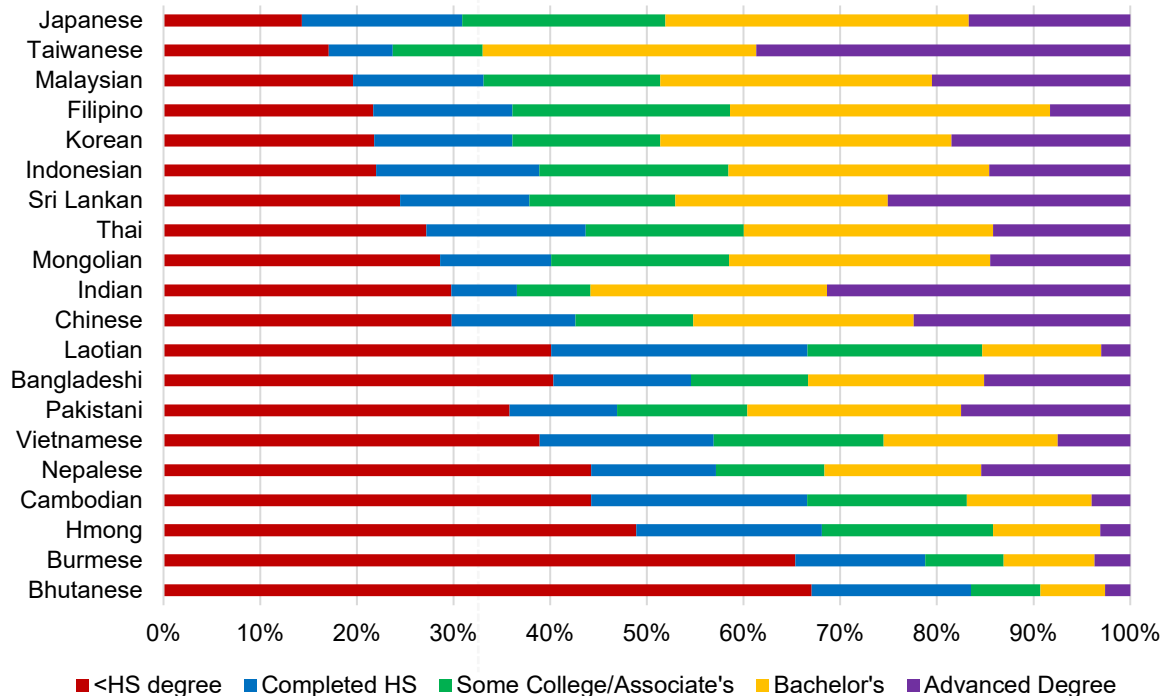
- *Family income may be spread across a larger household size or multigenerational household*
- *The income-health relationship may be influenced in several US Asian communities that frequently send remittances to family in home countries (**Bangladesh, China, India, Indonesia, Pakistan, the Philippines, and Vietnam** are in the top 10 remittance-receiving countries)*

Annual Household Income



SOCIOECONOMIC STATUS - EDUCATION

Educational Attainment

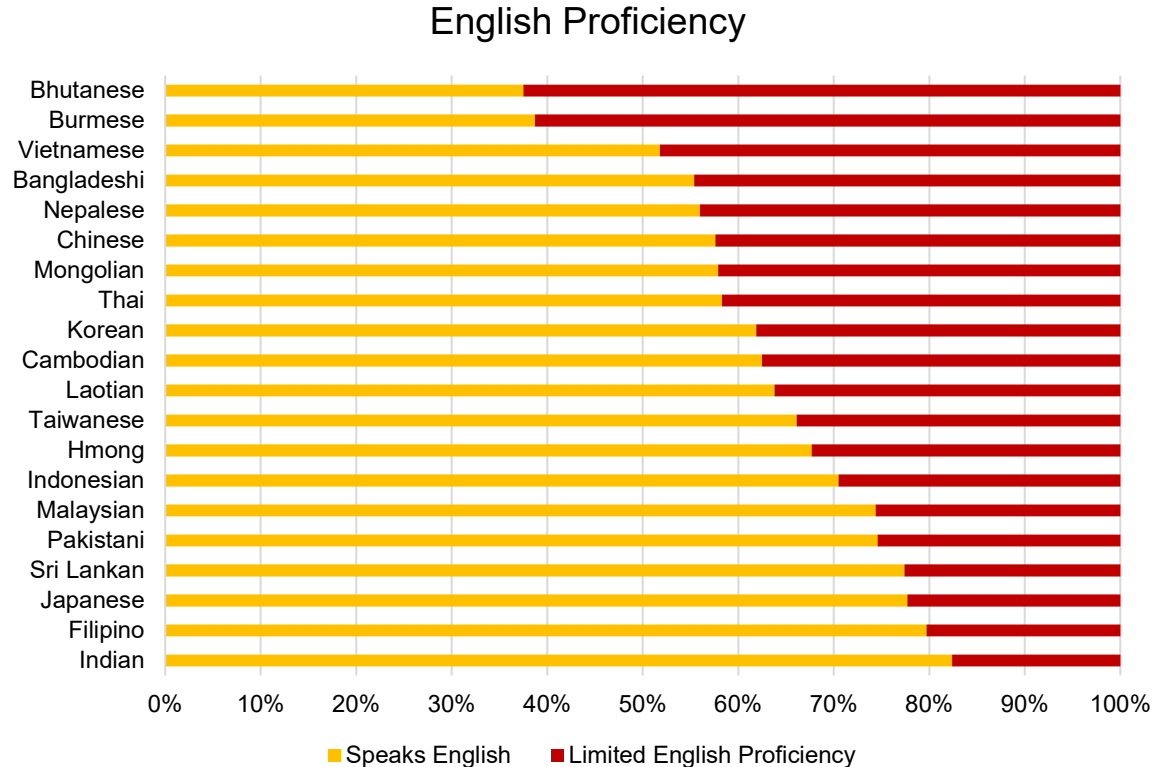


- Bhutanese individuals with the highest proportion (67%) of less than high school completion
- Taiwanese individuals with the highest proportion (39%) with an advanced degree
- Differences related to
 - Migration histories
 - Linguistic, cultural, social factors
- US-born Asian Americans more likely to be college graduates vs. with foreign-born

ENGLISH PROFICIENCY

- Bhutanese (36%) and Burmese (38%) communities have the highest prevalence of LEP
- In NHANES 2011-16, Asian adults (in aggregate) who spoke their native language at home “most” or “all of the time” were
 - less likely to smoke (prevalence ratio, 0.60)
 - had intermediate/poor levels of blood pressure (prevalence ratio, 0.83)

Compared with adults who spoke English most or all of the time

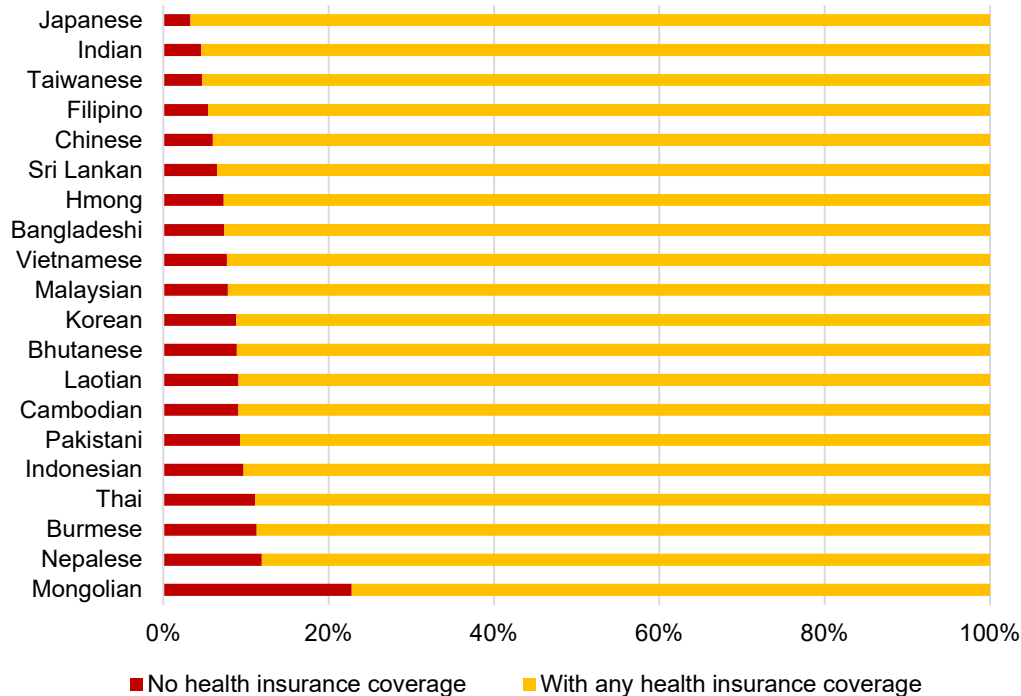


HEALTH SYSTEM DETERMINANTS



HEALTH SYSTEM – ACCESS

Health Insurance Coverage

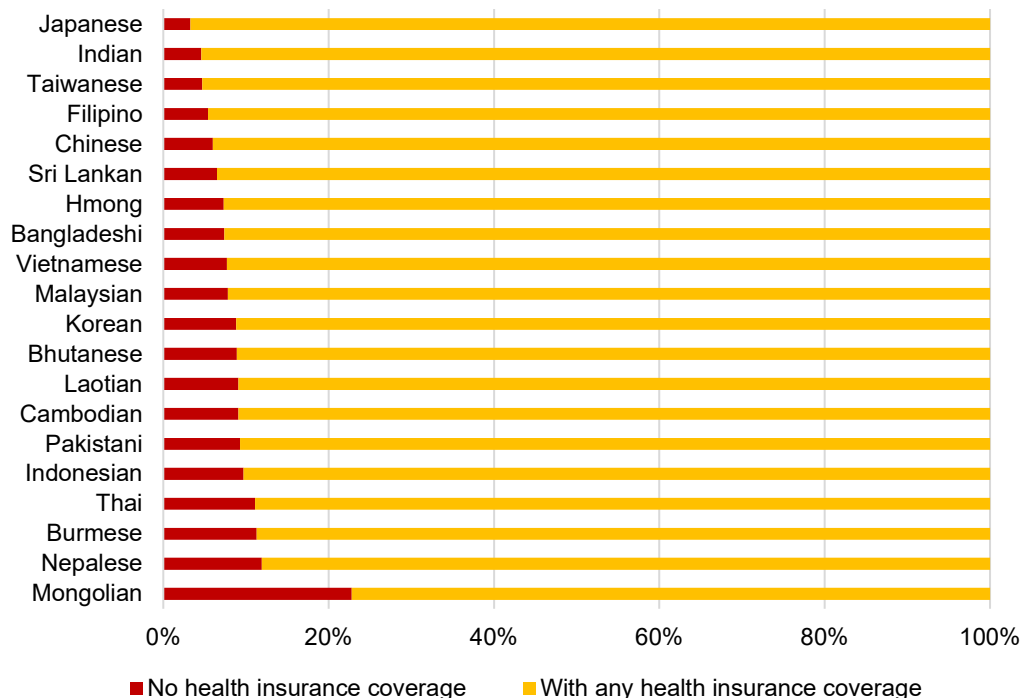


Health system **access** among US Asian communities is related to...

- Approachability
 - Acceptability
 - Availability and Accommodation
 - Affordability
 - Appropriateness
-
- In 2019, private insurance coverage rates ranged 62.0% for Hmong to 78.8% for Filipino Americans
 - Medicaid or public health insurance coverage rates ranged from 26.2% for Filipino to 35.9% for Hmong Americans

HEALTH SYSTEM – ACCESS II

Health Insurance Coverage



Health system **access** among US Asian communities is related to...

- Approachability
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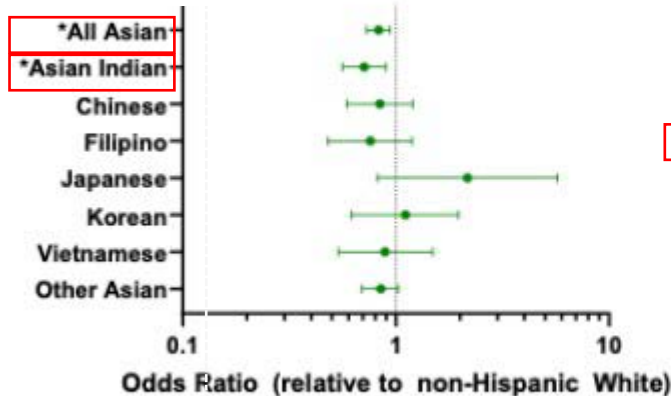
HEALTH SYSTEM – QUALITY OF CARE

Myocardial Infarction Quality of Care in Asian Groups in US Hospitals

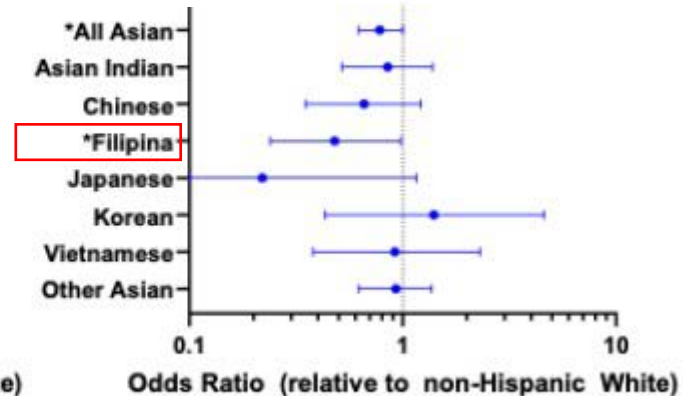


Door to Balloon Time ≤ 90 Minutes

Male



Female



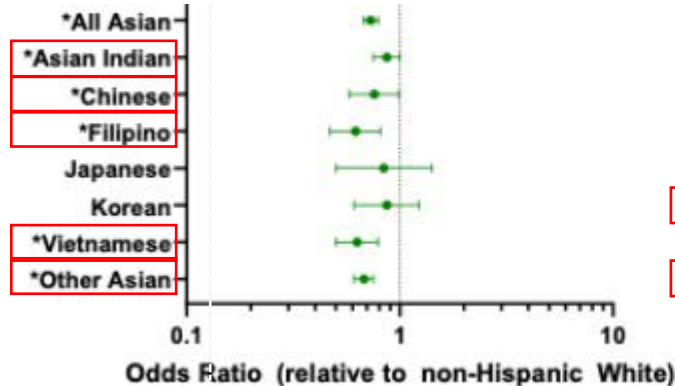
HEALTH SYSTEM – QUALITY OF CARE II

Myocardial Infarction Quality of Care in Asian Groups in US Hospitals

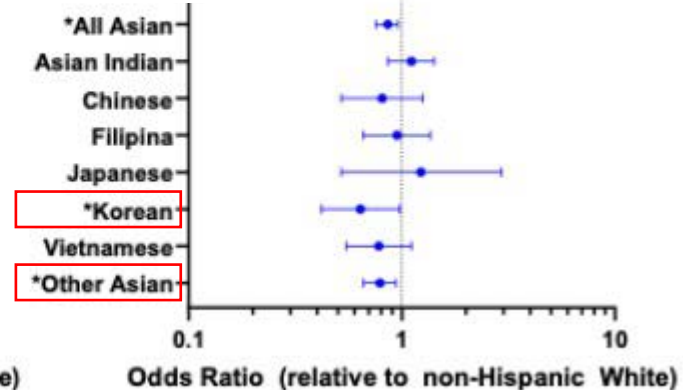


Cardiac Rehabilitation Referral

Male



Female



NEIGHBORHOODS & PLACES



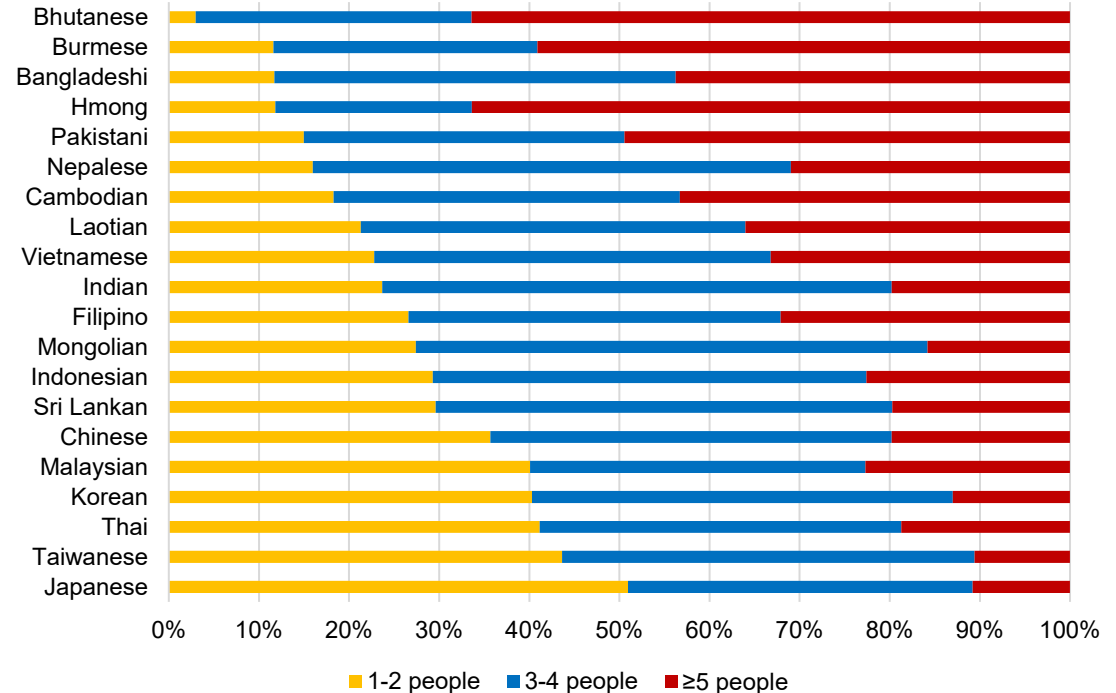
Most common measures and constructs include:

- Social networks
- Neighborhood social cohesion
- Social support
- Ethnic enclaves
- Neighborhood safety
- Built environment

NEIGHBORHOODS & PLACES II



Household Size



SOCIAL ENVIRONMENT

- Neighborhood social cohesion – the level of the level of solidarity and connection with coresidents
→ *perceived support, sense of community, and frequency of interactions*



SOCIAL ENVIRONMENT II

- Social networks – *size, quality, and behaviors within one's social network may influence health behaviors*

<i>Social network member with...</i>	Intermediate (vs Low) CVH	High (vs Low) CVH
... High BP	OR 0.50 (95% CI 0.28-0.87)	OR 0.51 (95% CI 0.29-0.88)
... High cholesterol	OR 0.73 (95% CI 0.73-1.25)	OR 0.54 (95% CI 0.30-0.94)
... Diabetes	OR 0.87 (95% CI 0.50-1.51)	OR 0.85 (95% CI 0.48-1.50)

Shah NS, et al. *JAHA*. 2021.



KEY QUESTIONS: CVD PREVENTION IN ASIAN AMERICANS III

1.

How are cardiovascular health and disease experienced by Asian American populations?

2.

What upstream social and structural factors influence CVD risk in Asian Americans?

3.

What strategies and interventions may effectively and equitably prevent CVD for Asian American patients?

EVIDENCE FOR INTERVENTIONS

- Few randomized trials exist testing the effect of an adapted CVD prevention intervention among Asian Americans
- A 2014 systematic review identified 7 RCT's with mixed evidence for efficacy
- Recommendations included: more rigorous RCT designs, more objective measures, larger Asian American sample sizes, culturally appropriate interventions, individual tailoring, maintenance phase with support, and providing education and modeling of lifestyle behaviors

JAMA Cardiology | Original Investigation

Culturally Adapted Lifestyle Intervention for South Asian Adults With Cardiovascular Risk Factors The SAHELI Randomized Clinical Trial

Namratha R. Kandula, MD, MPH; Nirav S. Shah, MD, MPH; Santosh Kumar, LLB; Michael Charley, MS;
Margaret Clauson, PhD; Nicola Lancki, MPH; Emily A. Finch, MA; Linda Ehrlich-Jones, PhD; Goutham Rao, MD;
Bonnie Spring, PhD; Nilay S. Shah, MD, MPH; Juned Siddique, DrPH

SOUTH ASIAN HEALTHY LIFESTYLE INTERVENTION

RCT: Culturally Adapted Lifestyle Intervention for South Asian Adults With Cardiovascular Risk Factors

POPULATION

231 Males, 318 Females



South Asian adults with cardiovascular risk factors without a history of cardiovascular events

Mean (SD) age, 49.2 (9.5) y

SETTINGS / LOCATIONS



4 Community sites and 1 health system in Illinois

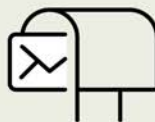
INTERVENTION

549 Individuals randomized



274 Group lifestyle intervention

Coaches delivered culturally adapted diet, physical activity, and stress management counseling



275 Health education materials

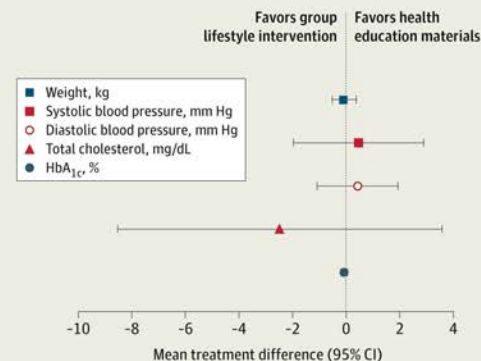
Received culturally adapted print health education materials by mail

PRIMARY OUTCOME

Between-group differences in cardiovascular disease risk factor change from baseline to 12 mo (weight, systolic and diastolic blood pressure, glycated hemoglobin [HbA_{1c}], and total cholesterol)

FINDINGS

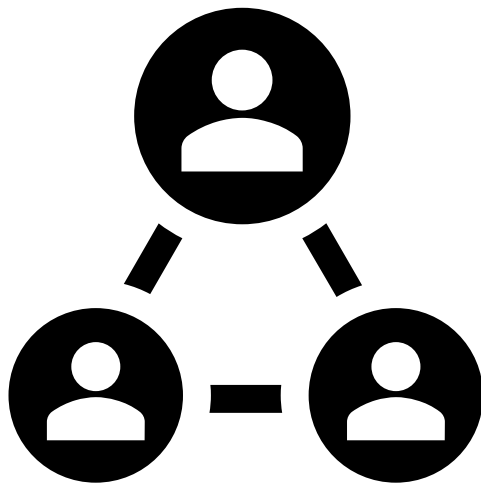
At 12-mo follow-up, the change in weight, blood pressure, hemoglobin HbA_{1c}, and cholesterol was not significantly better in the intervention participants than in the control participants



Kandula NR, Shah NS, Kumar S, et al. Culturally adapted lifestyle intervention for South Asian adults with cardiovascular risk factors: the SAHELI randomized clinical trial. *JAMA Cardiol*. Published online September 11, 2024. doi:10.1001/jamacardio.2024.2526

© AMA

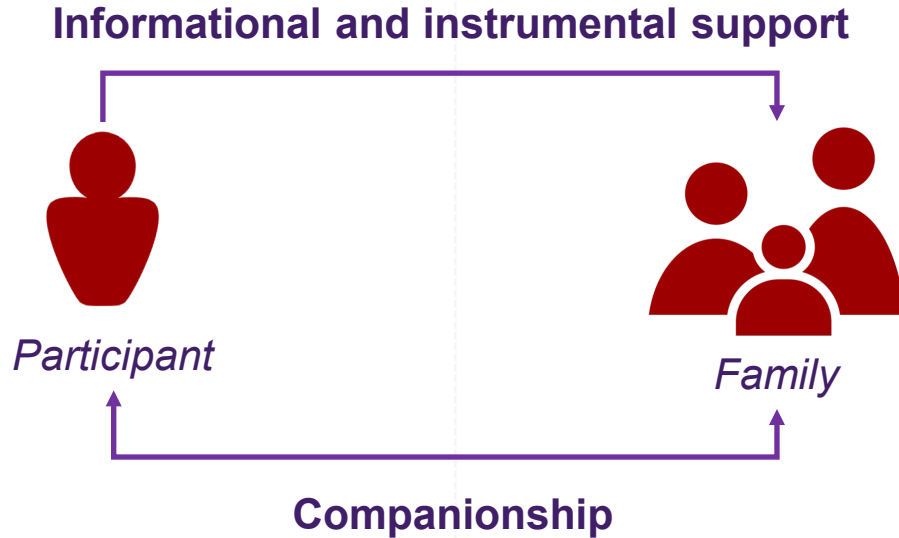
SOCIAL NETWORKS AS FACILITATORS & BARRIERS



	Participants (N=24)
Age, mean (SD)	50.5 (10.8)
Sex, n (%)	
Female	16 (67%)
Country of birth, n (%)	
India	16 (67%)
Pakistan	5 (21%)
U.S.	3 (13%)
Percent of life lived in US, mean (SD)	47% (31%)
	Health Educators (N=3)
South Asian	3 (100%)
Female	2 (67%)

SOCIAL NETWORKS AS FACILITATORS & BARRIERS II

Theme 1: SAHELI participants and their family members provided social support to one another for behavior change

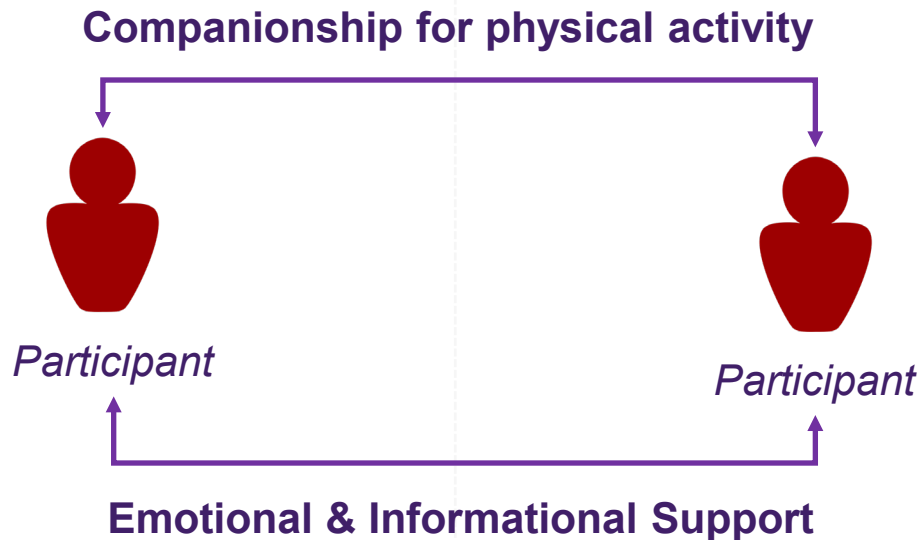


"I influenced [my family] a little in **cooking**... So we drastically **reduced rice quantity**."

"My husband and I made a habit of **eating this big bowl of salad** before we start eating rotli and shak. That cuts down on eating other food."

SOCIAL NETWORKS AS FACILITATORS & BARRIERS III

Theme 2: SAHELI participants provided social support to one another in the group intervention setting

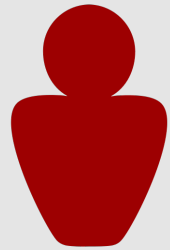


“With COVID-19, we’re all **walking in our neighborhoods** but we have a **conference call** on the phone, and then we say, I burnt this many calories, this many steps.”

“The classes were very **motivating**. It was very **uplifting** and **energizing**, psychologically to go and be a part of that group.”

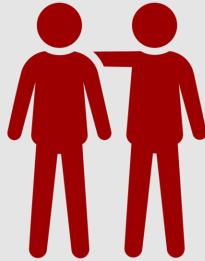
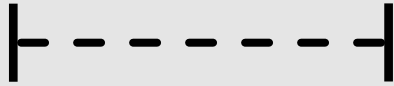
SOCIAL NETWORKS AS FACILITATORS & BARRIERS IV

Theme 3: SAHELI participants encountered resistance to behavior change from network members



Participant

Resistance



Friends

“I noticed that a lot of us were **not proactive**... And if I had one wish today, I wish the word **discipline** would become a part of especially the Indian community.”

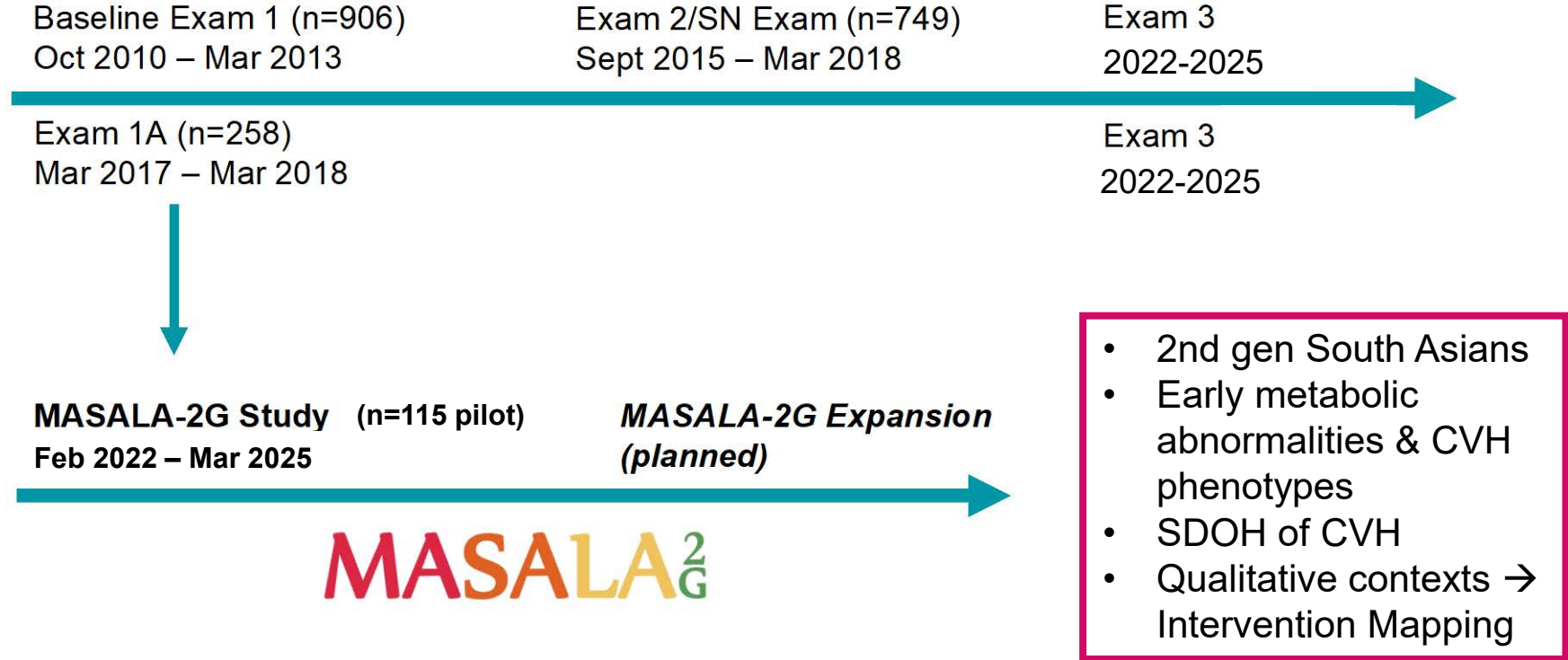
“I’ve been trying to tell some maybe four or five **friends** that please join this, please do this. They think I’m neurotic. I’m not going to flog a dead horse, so **I’ve just given up.**”

MASALA-2G SECOND GENERATION STUDY



- Second generation South Asian young adults, who are children of original MASALA Study participants
- Mean age ~30 years
- **Objective:** To identify the causes of early cardiovascular and metabolic abnormalities in South Asians at younger ages, to identify ***adapted strategies for earlier prevention*** of CVD

MASALA-2G SECOND GENERATION STUDY II



MOSAAIC STUDY



www.mosaaic.org



- 10,000-participant longitudinal cohort of multiple disaggregated Asian, Native Hawaiian, Pacific Islander groups
- Multiple NIH IC-funded
- Enrolling in Chicago, NYC, Philadelphia, SF Bay Area, Hawai'i
- Eligibility: Age 18-64 years, not currently pregnant, not in active military service
- Languages offered: Trad'l/simplified Chinese, Korean, Vietnamese, Tagalog

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Cardiovascular Disease Prevention in Asian Americans

June 4, 2025

NIH ODP Early Stage Investigator Award Lecture

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RECOMMENDATIONS FOR YOUR RESEARCH

1. When participants of 'Asian' race and ethnicity are not identified or included, investigators should **explicitly identify this as a limitation** in their manuscript Discussion section
2. If investigators publish data using an aggregated Asian category, they should **acknowledge that the findings do not reflect the health of all Asian Americans**
3. Clinical investigators should **routinely seek to understand the demographics of their populations of interest**, including assessment of the Asian (and other) race/ethnic composition of their patient population and local community.
4. **Assume that differences exist** between Asian subgroups until proven otherwise.
5. **Ask participants to self-identify** as one or more Asian subgroup (rather than ask country of origin)

Commentary

ADDRESSING ASIAN AMERICAN MISREPRESENTATION AND UNDERREPRESENTATION IN RESEARCH

Nilay S. Shah, MD, MPH^{1,2};
Namratha R. Kandula, MD, MPH^{1,3}

Asian Americans are the fastest growing racial/ethnic minority group in the United States and have unique, heterogeneous health status and outcomes across a range of conditions between disaggregated Asian subgroups. Despite the rapid growth of this group, clinical and epidemiologic research lags considerably in adequately and appropriately representing Asian Americans. Too often, Asian American participants and populations are inappropriately aggregated into a single race category in research, masking important differences between ethnic subgroups. In this commentary, actionable recommendations are provided to investigators in order to enhance inclusion and representation of Asian Americans in a broad scope of research programs. Incorporating these recommendations in research planning and conduct will support health and promote health equity for these populations. *Ethn Dis.* 2020;30(3):513-516; doi:10.1186/s12913-020-03513-3

Keywords: Asian American; Asian; Representation; Research Methods; Disparities

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INTRODUCTION

Asian Americans are the fastest growing racial/ethnic minority group in the United States. This group's approximately 70% increase in population since 2000 to current estimates of 20.9 million¹ has primarily been fueled by immigration. There are significant knowledge gaps about the health of Asian Americans. Yet, National Institutes of Health (NIH) funding on health and disease in Asian Americans lags behind the remarkable growth of this group, comprising only .17% of the NIH budget between 1992-2018.² Deficiencies in research in Asian Americans extend beyond inadequate funding. Asian Americans are grossly underrepresented as participants in epidemiologic and clinical research in the United States. When included, they are often aggregated into one "Asian" race category. As Asian Americans are projected to become the largest immigrant group in the United States by 2065,³ understanding the current and future health of the nation requires a more granular, comprehensive, and contemporary understanding of health and disease outcomes in Asian American subgroups.

The largest Asian American subgroups are Chinese, Indian, Filipino, Vietnamese, Korean, Japanese, Pakistani, Cambodian, Hmong, Thai, Laotian, Bangladeshi, Burmese, Nepalese, Indonesian, Sri Lankan, Malaysian, Bhutanese, and Mongolian.¹ Accumulating evidence demonstrates that these Asian American subgroups are not uniformly affected by noncommunicable and communicable diseases. Aggregating Asian Americans into a single Asian race category masks important heterogeneity and obscures health disparities of Asian subgroups. Aggregation may consequently lead to disease under-recognition and undertreatment, exacerbating disparities and threatening health equity. For instance, the prevalence of type 2 diabetes mellitus appears similar in aggregate Asian Americans compared with non-Hispanic Whites. However, a 2019 study reporting the first national estimates of diabetes prevalence in Asian American subgroups showed that South Asians had the highest diabetes prevalence (23.3%) compared with 12.1% in non-Hispanic Whites, followed by Southeast Asians (22.4%), and East Asians (14.0%).⁴ This study also found that Asian Americans were