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# **Cardiac Disease Among South Asians: A Silent Epidemic**

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# Honoring a legend

“Heart disease is one of the most pressing challenges that Indians are facing. I'm pleased to see the Indian Heart Association making a significant impact on curbing heart disease.”



Late **Dr. A.P.J Abdul Kalam**, former President of India and former **Chief Advisor of Indian Heart Association**.

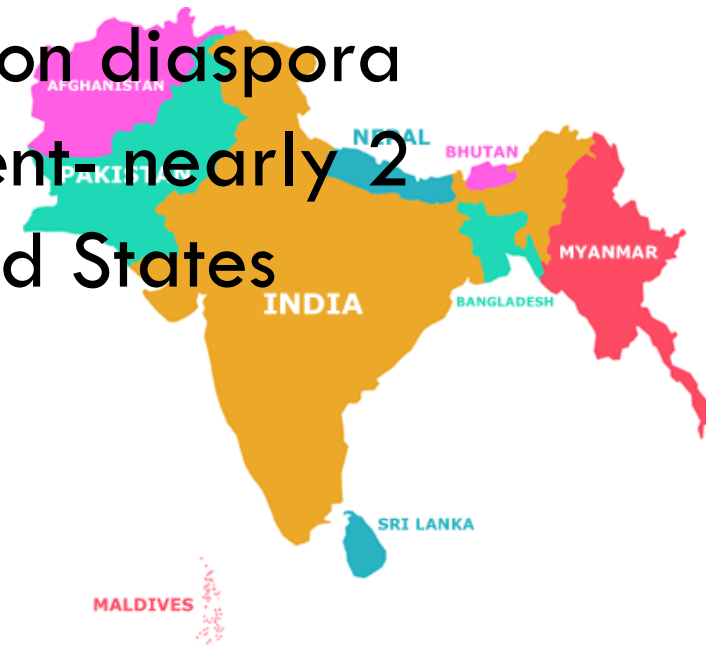
Photo: late President of India and Indian Heart Association Chief Advisor **Dr. A.P.J Abdul Kalam** with **Dr. Sevith Rao, MD**

# Overview

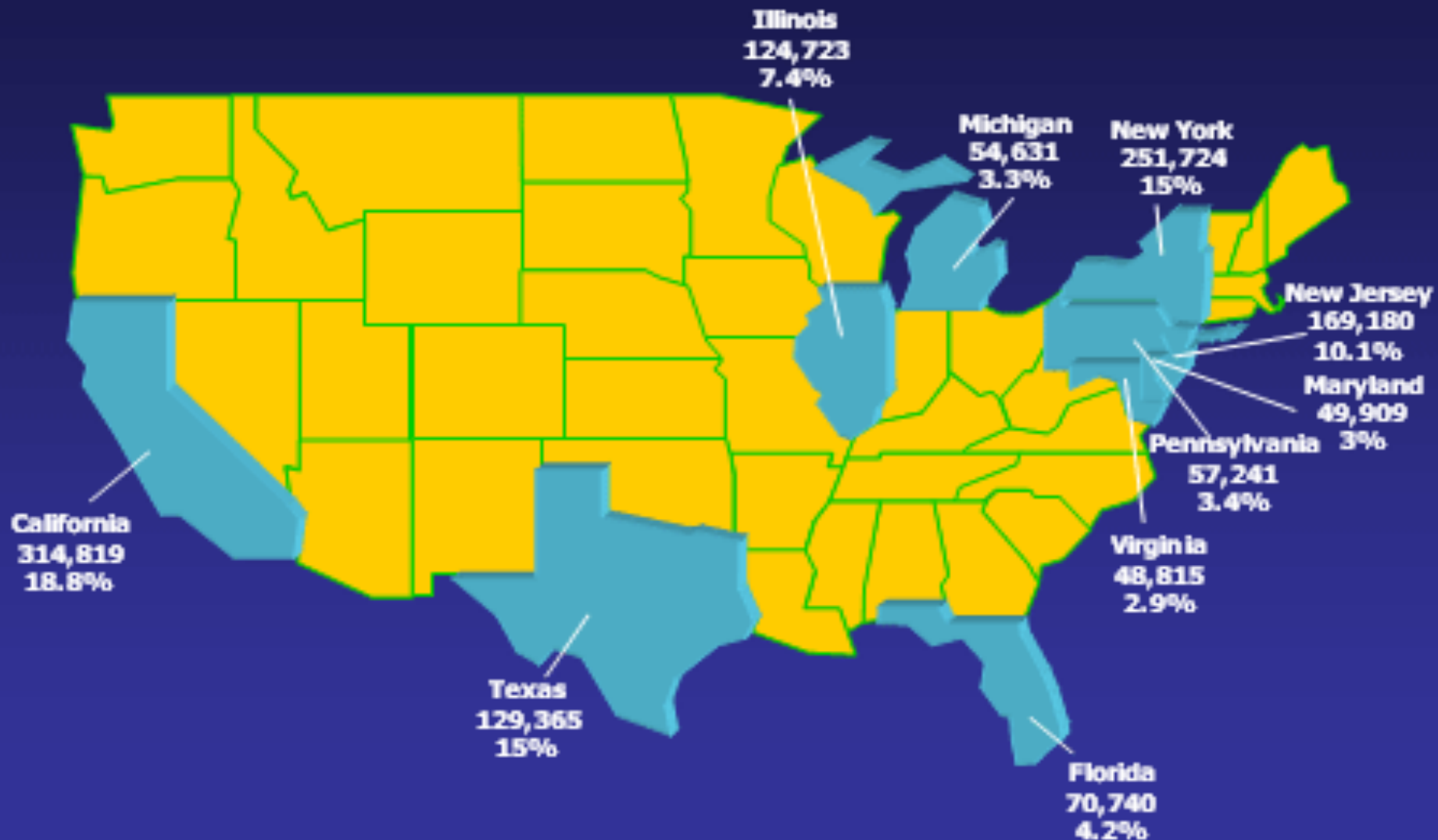
- Coronary Artery Disease Epidemic in South Asia
- Pathogenesis and Risk Factors for CAD
- Introduction to the Indian Heart Association (IHA)
- Strategies Looking to the Future
- What can each of us do?

# South Asia

- “South Asian” refers to individuals who originate from the Indian Subcontinent or adjacent countries
- Account for 17% of the global populace
- There are an estimated 20 million diaspora from the South Asian Subcontinent—nearly 2 million of whom live in the United States



# South Asians in the United States



**Total US Population: 1,678,765**

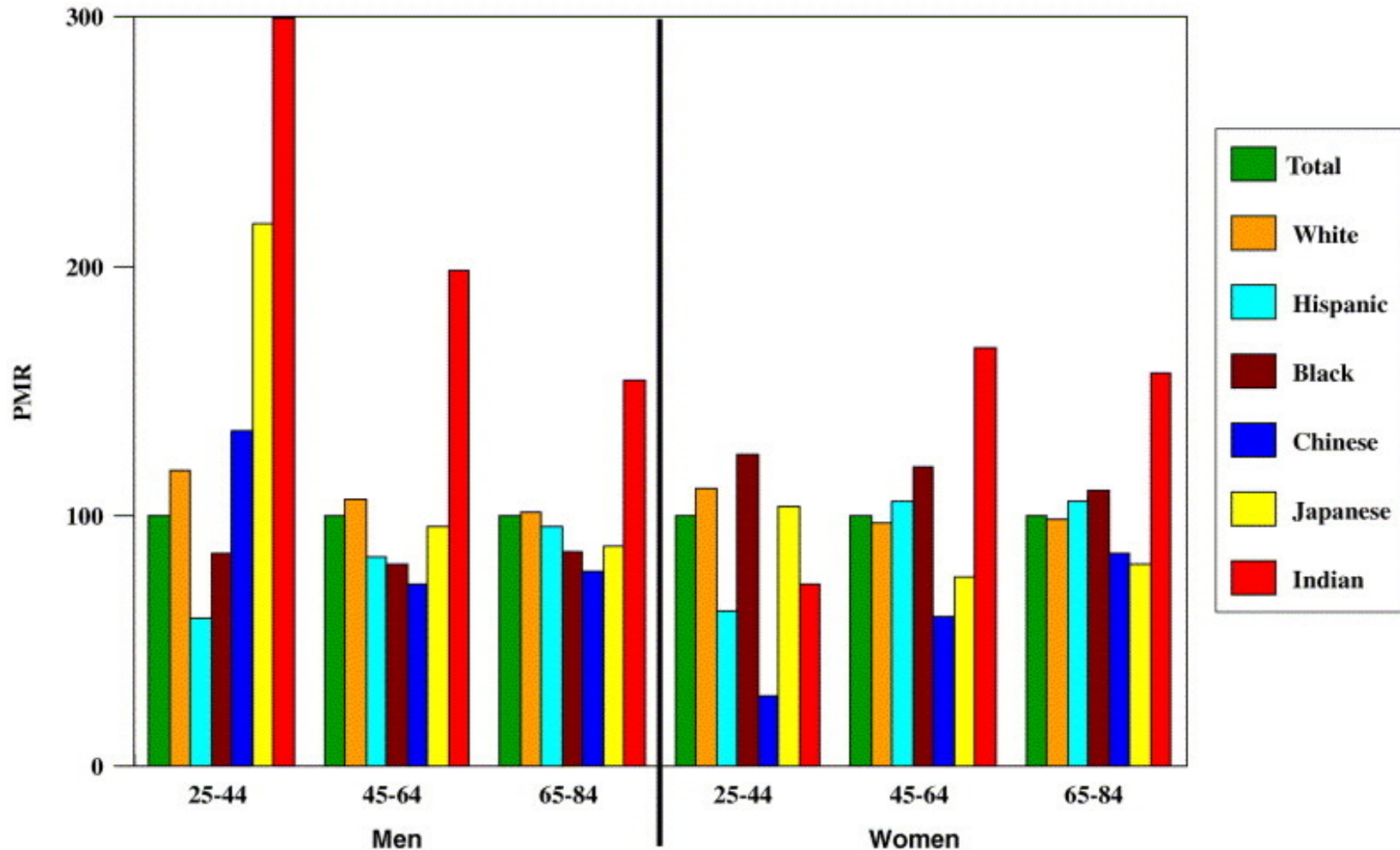
# Some Startling Facts

- Public health estimates indicate that India accounts for approximately **60%** of the world's heart disease burden<sup>1</sup>, **despite having less than 20%** of the world's population. Heart disease is the number one cause of mortality and a silent epidemic among Indians.
- India, particularly the city of Hyderabad in the state of Andhra Pradesh, is currently the diabetic capital of the world <sup>2</sup>.
- When heart disease strikes Indians, it tends to do so at an **earlier age** (almost 33% earlier) and with **higher mortality rates** than other demographics.
- Furthermore, **50%** of all heart attacks in Indian men occur **under 50 years of age and 25%** of all heart attacks in Indian men occur **under 40 years of age**, a staggering figure <sup>(1, 3-5)</sup> ! Indian women have high mortality rates from cardiac disease as well.
- South Asians: **“At Risk”** Special Population in Healthy People 2010

# Study by Palaniappan et al.

- To investigate ethnic variations in coronary heart disease death in California, the authors examined total and CHD-specific mortality among six ethnic groups including Asian Indian Americans via the California Mortality Database and public census information.

# Proportional Mortality Rates by Ethnic Group, Gender, and Age





# Why South Asians?

- Demographic data indicate that the heart disease rate among South Asians is **double** that of the national averages of the western world.
- This may be attributed to an underlying genetic predisposition to metabolic syndrome, elevated lipoprotein A levels, hypertension, and cardiomyopathy <sup>(6-8)</sup>.
- Also a shift towards increasing consumption of red meats, tobacco smoking, and higher stress in sedentary call-center workers in India.

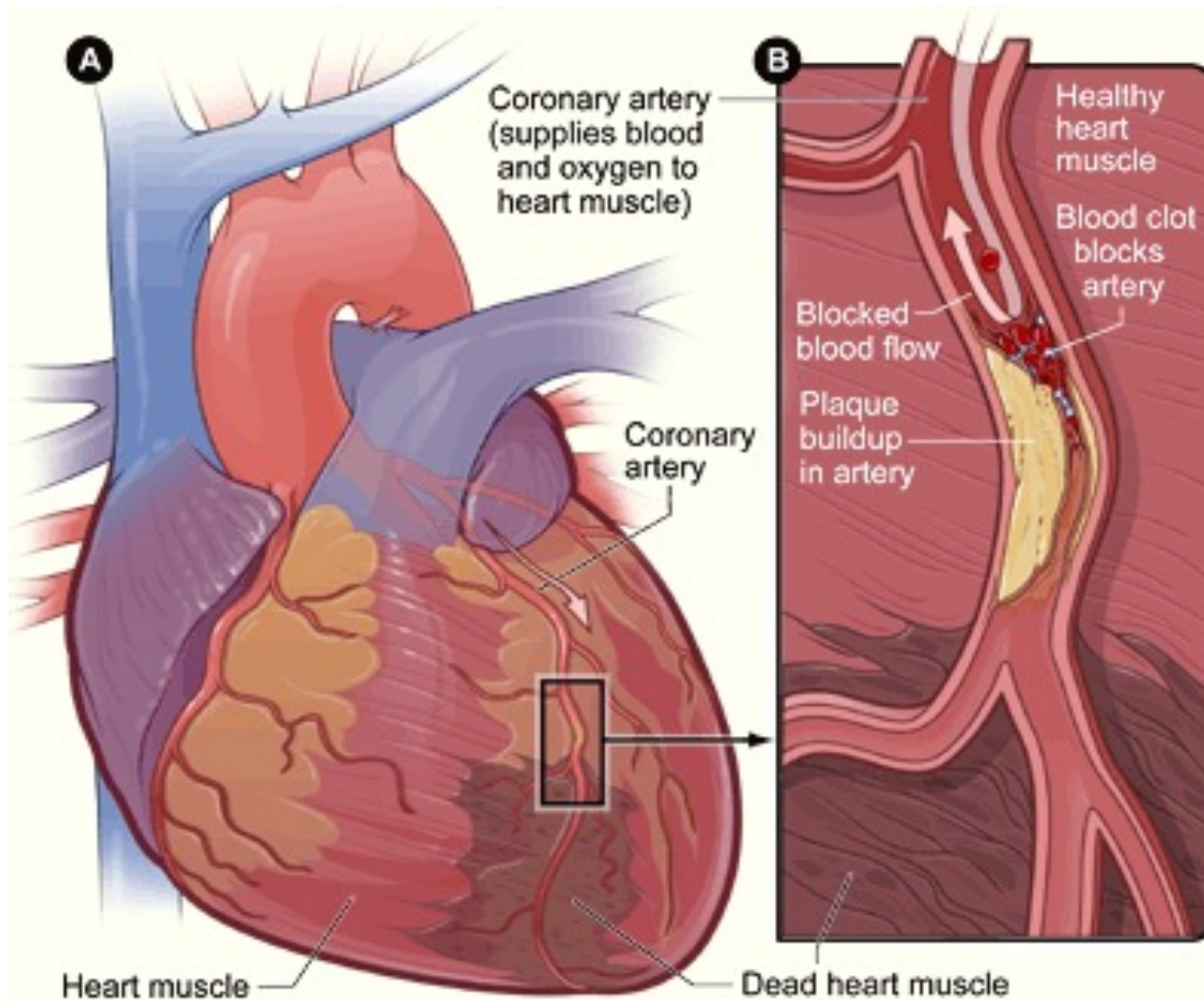
# Some More Facts

- A well balanced, heart healthy diet as well as positive lifestyle changes such as exercise, stress reduction techniques, control of hypertension and diabetes, and quitting smoking may reduce the incidence and progression of heart disease <sup>9</sup>.
- Unlike many developed countries, there is a notable paucity of public health infrastructure and initiatives in India to raise awareness about this important issue <sup>10</sup>. To date, few healthcare providers in India routinely screen South Asians for heart disease risk factors. We can do something about this!

# The Basics

- A heart attack (aka MI) occurs when flow of O<sub>2</sub> rich blood to the myocardium is blocked.
- MI is most commonly caused by atherosclerosis  
Waxy plaque builds up in the coronary arteries.
  - Atherosclerosis can create a fixed lesion in the heart
  - If the plaque ruptures, a clot can quickly block off all remaining flow to the heart.
- If blockage is not treated quickly with angioplasty and stenting or thrombolytic therapy, cardiac cell death may occur.

# Pathogenesis of CAD



# Risk Factors CAD

## ☐ Non-Modifiable

- ☐ Family History
- ☐ Gender
- ☐ Age

## ☐ Modifiable

- ☐ Hyperlipidemia, elevated serum cholesterol
- ☐ Smoking
- ☐ Hypertension
- ☐ Diabetes
- ☐ Obesity
- ☐ Serum markers such as elevated Homocysteine
- ☐ Poor Diet, Lack of Exercise

# Key Screening Measures

- Do you smoke?
- BP testing
- Blood cholesterol and lipid profile
- Fasting plasma glucose
- Body mass index (BMI)-ratio of height to weight (kg/m<sup>2</sup>)
  - Specific measures for truncal obesity

# INTERHEART Study in JAMA

- Standardized case-control study with age and gender matching, 1732 cases with first acute MI and 2204 controls matched by age and gender from 15 medical centers in 5 South Asian Countries
- 10,728 cases and 12,431 controls from non-South Asian Countries
- February 1999 to March 2003
- 9 Factors Identified accounted for 90% of risk for CAD

# INTERHEART Results

Potential Risk Factors	Other Groups	South Asians
Elevated Apo B/Apo A-1	31.8%	<b>43.8%</b>
Diabetes	7.2%	<b>10.7%</b>
Hypertension	23.6%	<b>12.7%</b>
Non-smokers	50.6%	<b>59.2%</b>
Non obese	66%	<b>70.4%</b>
Moderate exercise	21.6%	<b>6.1%</b>
Daily Fruits, Vegetables	45.2%	<b>26.5%</b>
$\geq 1$ Alcohol serving/week	26.9%	<b>10.7%</b>
Psychosocial stress	18%	<b>14%</b>

Joshi et al. Risk Factors for early myocardial infarction in South Asians compared with individuals in other countries. JAMA, 2007 297(3): 286-94.

Table Adapted from: Presentation: Mathur A, The High Risk of Coronary Heart Disease in South Asians. Online at: [www.southasianheartcenter.org](http://www.southasianheartcenter.org)



# Tobacco

- Number one preventable risk, unfortunately rates of smoking are rising among South Asians <sup>12</sup>
- Health benefits of quitting smoking begin immediately
  - Most effective is combined pharmacologic and behavioral strategies
- Governmental prevention programs including package health warning labels and graphics



# Some Dietary Strategies

- ☐ Home cooked meals
  - ☐ Preferred versus restaurant and fast food
- ☐ Carbs
  - ☐ Recommend whole grains, barley, oats
  - ☐ Roti is healthier option versus processed white rice
- ☐ Proteins
  - ☐ Veg Options include Soy, Tofu, Paneer (but watch the fat!)
  - ☐ White meats preferred over red meats
- ☐ Fat: Prefer unsaturated fats like EPA/DHA & Alpha-Linoleic Acid
  - ☐ Nuts and fresh fish are excellent sources
  - ☐ Avoid saturated fats such as ghee, stick margarine, coconut oils
  - ☐ Don't reuse cooking oil-this is unfortunately a common practice in India!

# A Healthy Meal





# Not so Healthy!



# Simplified Lipid Goals

- Diet and exercise are key!
- Total cholesterol goal:  $<200$  mg/dL
- LDL (bad cholesterol) goal:  $<100$  mg/dL
- Triglycerides Goal:  $<150$  mg/dL
- HDL (good cholesterol) goal:
  - $>40$  mg/dL in men,  $>50$  mg/dL for women

# Physical Activity

- Helps lower BP, Diabetes, raises good cholesterol (HDL), manages stress, improves bone health, helps control weight
- 30 minutes of moderate activity most days of week

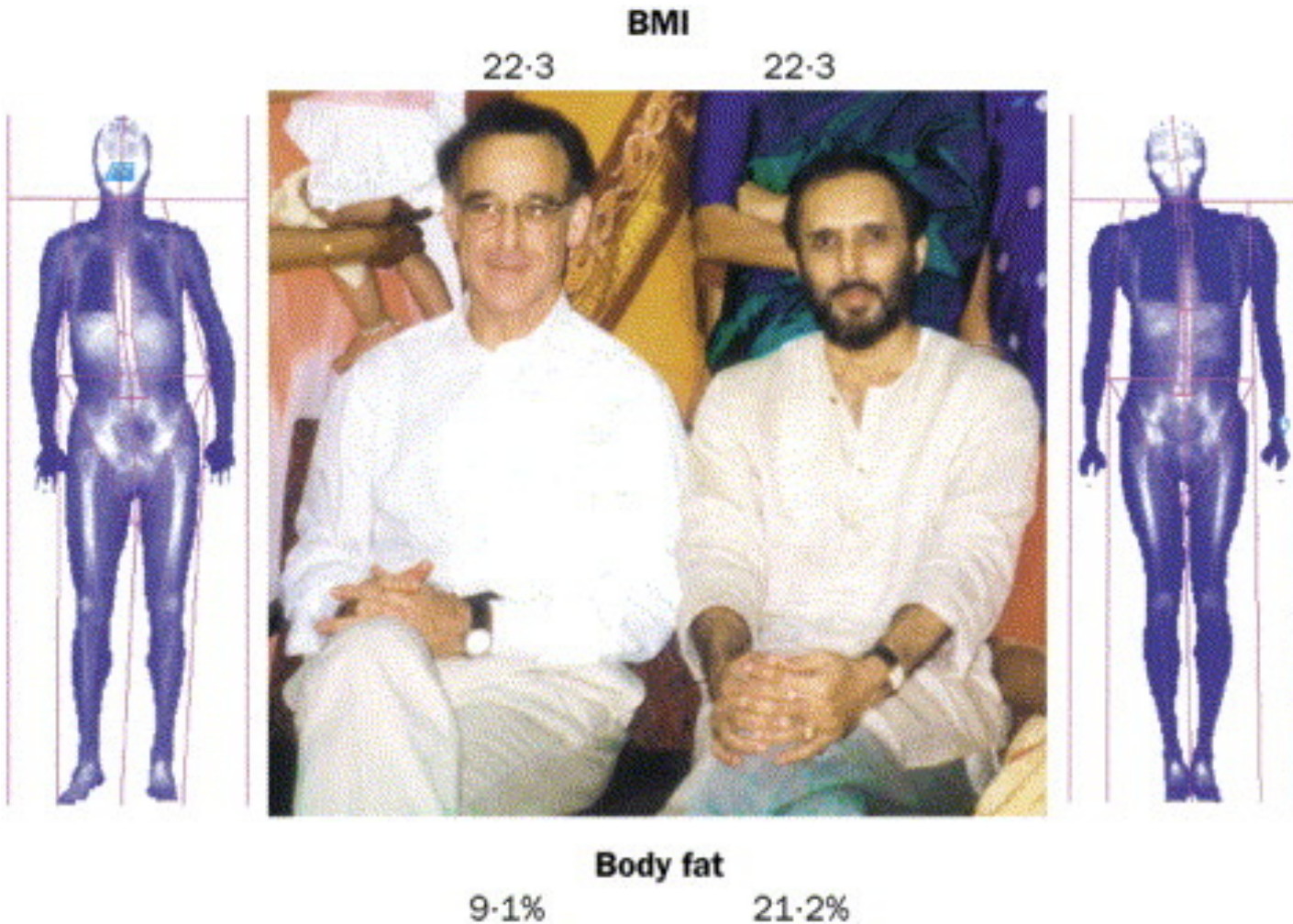




# Obesity

- Most Indians with CAD are actually within the *normal* weight range!
- Age related waist circumference may be a more specific measure <sup>13</sup>.
- Nevertheless, Obesity is a major risk factor for CAD, elevated BP, high cholesterol, DM and a multitude of other health problems!
- Rapidly rising obesity rates within the US among all demographics.

# Limitations of BMI!





# Blood Pressure

- Quick screening recommended during all healthcare visits for adults
- Controlling hypertension reduces risk of heart disease by 25%!
  - Strategies include weight loss (i.e. via weight loss, exercise, diet), low sodium in diet, limit alcohol
- Goal BP: <120 systolic and <80 diastolic pressures

# Diabetes

- Optimal fasting blood sugar is  $< 100$  mg/dL
- Criteria for Diagnosis of Diabetes
  - Fasting glucose  $126$  mg/dL or higher
  - Random glucose of  $200$  mg/dL or higher + symptoms
- Goal to detect patients at level of impaired fasting glucose of  $100$ - $125$  mg/dL
  - Individuals at risk for diabetes can reduce their risk of developing the disease via a modest diet and exercise plan

# Symptoms of CAD (coronary artery disease)



- ☐ Chest pain
- ☐ Shortness of Breath
- ☐ Sweating
- ☐ Nausea/Vomiting (may be only symptoms in some diabetics, women, or elderly!)
- ☐ Neck or arm pain
- ☐ Dizziness
- ☐ What to do if you recognize these symptoms?
  - ☒ Call 911
  - ☒ If instructed by provider, may take nitroglycerin or aspirin
  - ☒ Do not try driving!

# Indian Heart Association

- The Indian Heart Association is an organization founded by a group of passionate physicians who were personally affected by heart disease along with like-minded friends living in India.
- The **major goal** of the organization is to reduce the incidence of cardiac disease in South Asians by a targeted strategy of raising awareness of risk factors through early ***screening and education***, and to facilitate ***personalized risk evaluation and early treatment*** among the South Asian Community in the United States and abroad.

# Indian Heart Association (IHA) in action



The Economist's Heart Health in Asia event in Seoul, South Korea, where IHA represented India. Panel speaker Dr. Sevith Rao, MD.



Padma Vibhushan Dr. S. Padmavathi, India's first female cardiologist, with Indian Heart Association



Indian Heart Association screening camp in action. Centre: Dr. Sishir Rao, MD



# Photos from a few of IHA's screening events.



# What Can You Do?

- Learn more about this preventable disease
  - [www.indianheartassociation.org](http://www.indianheartassociation.org)
- Educate your family and loved ones
  - Follow & share our social media pages including our official Twitter page **@theindianheart** to stay up to date on latest heart healthy tips & guidelines.
- Get involved in prevention efforts
  - Take advantage of local screening in your community, especially Indian Heart Association sponsored screening initiatives

# Summary

- CAD is a major problem, disproportionately among South Asians
- CAD is preventable
- Through a combination of disseminating educational content, screening, and early detection, the Indian Heart Association hopes to shift attitudes and improve outcomes



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