Diabetes in the Asian Pacific Islander Populations in California

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Geographic Distribution of the Asian Population by State

- Overall, California, New York, and Texas account for >50% of the Asian population

Data based on 2004 US Census.
Asian Americans Are a Heterogeneous Group

Total Asian-alone population in the US = 12,097,281

Data based on 2004 US Census.
*Includes Bangladeshi, Cambodian, Hmong, Indonesian, Laotian, Malaysian, Pakistani, Sri Lankan, Taiwanese, Thai, and other not specified.


Growing Rate of Diabetes Among Asian Americans

Data from National Health Interview Survey.

Age-adjusted percentage of civilian, noninstitutionalized population with diagnosed diabetes, by race and sex, United States, 1980–2007.
State of the AANHPI Diabetes Epidemic

• 8.4% of Asian Americans have diagnosed diabetes, according to CDC national survey data.

• Diabetes was the 5th leading cause of death for Asian Americans and Pacific Islanders in 2006, on the rise from the 8th leading cause of death in 1980.

• Although Asian Americans tend to have lower BMIs, they are ~30% more likely to have type 2 diabetes than their white counterparts.

• A recent study by Quest Diagnostics found that Asian women are 177% more likely to test positive for gestational diabetes than Caucasian women. Asian Americans also tend to get gestational diabetes at a lower body weight, about 137 lbs on average, and therefore run a high risk of not being detected.

State of the AANHPI Diabetes Epidemic (cont’d)

• The few studies available have found great heterogeneity of Diabetes disease provenance and risk factors among Asian ethnicities. Barnes et al found that Filipino, Asian Indian, and Native Hawaiian and Other Pacific Islander (NHOPIs) individuals have a much higher prevalence of these disorders than Chinese, Vietnamese, Korean, and Japanese Americans.

• A 2004 World Health Organization survey found that 52.3% of men and 42.4% of women aged 25 to 64 years in American Samoa had types 2 diabetes.

• Native Hawaiians have death rates from diabetes that are 22 percent greater than that of the entire US population.

• A general lack of comprehensive, disaggregated data for smaller ethnic Asian populations, hinders further analysis.
State of the Diabetes Epidemic in California

- In 2009 it was estimated that 1 in 7 Californians has diabetes, or 4 million Californians.

- California had the greatest number of annual new cases from 2005-2007 (approximately 208,000) among all state and territories in the U.S.

- In 2009, over 502,000 adults with diagnosed diabetes had Medi-Cal insurance coverage; over 398,000 were uninsured.

- In 2009, diagnosed diabetes prevalence was much higher among those with less than a high school degree (13.2%), compared to those with a college degree (7.8%).

State of the AANHPI Diabetes Epidemic in California

- In 2009, among Californians between age 45-65, 14.5% of Asians Americans had diagnosed diabetes.

- In 2003, 15.3% of Asian Americans, native Hawaiians and Pacific Islanders over age 65 had been diagnosed with diabetes.

- In California, Asian Americans (12%) as a group have higher rates of uninsured than Caucasians (75) and African Americans (11%) as of 2007.

- In California, Asian American Households have the highest rates of linguistic isolation, which means that all members of the household age 14 or older speak English less than “very well”.
Influence of Immigration

- Asian Americans have immigrated to the US from >20 countries
  - >60 different ethnic groups
  - >100 languages and dialects are spoken
- Recent immigrants may not have fully developed social network and resources
- Cross-generational gap in healthcare barriers may be significant


Criteria for Overweight and Obesity Reclassified for Asian Populations

<table>
<thead>
<tr>
<th>Classification</th>
<th>BMI (kg/m²)</th>
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<tbody>
<tr>
<td></td>
<td>Adult (WHO 2000)¹</td>
</tr>
<tr>
<td>Underweight</td>
<td>&lt;18.5</td>
</tr>
<tr>
<td>Normal range</td>
<td>18.5-24.9</td>
</tr>
<tr>
<td>Overweight</td>
<td>≥25</td>
</tr>
<tr>
<td>Obese</td>
<td>≥30</td>
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Asians Have Higher Body Fat at Almost All Levels of BMI

<table>
<thead>
<tr>
<th>Sex and Race</th>
<th>Percent Body Fat</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>BMI=15 (lean)</td>
</tr>
<tr>
<td><strong>Males</strong></td>
<td></td>
</tr>
<tr>
<td>Whites</td>
<td>6.5</td>
</tr>
<tr>
<td>Asians</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td></td>
</tr>
<tr>
<td>Whites</td>
<td>15.0</td>
</tr>
<tr>
<td>Asians</td>
<td>20.4</td>
</tr>
</tbody>
</table>

Table shows estimated percent body fat at 3 levels of BMI by using linear equations relating BMI to fat % in whites and Asians.

Data based on a study that included 687 health volunteers recruited in the New York City area; 445 whites and 242 Asians aged 18–94 y with BMIs of 15–38 kg/m².

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Asian Americans Have Higher Insulin Resistance Than Other Races/Ethnicities

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Insulin Sensitivity Index (mU/m²/min/pM)†</th>
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<tbody>
<tr>
<td>Caucasian American (n=46)</td>
<td>6.76*</td>
</tr>
<tr>
<td>African American (n=11)</td>
<td>5.06*</td>
</tr>
<tr>
<td>Mexican American (n=20)</td>
<td>4.20*</td>
</tr>
<tr>
<td>Asian American (n=28)</td>
<td>4.03*</td>
</tr>
</tbody>
</table>

*P<0.001 between groups.
†Geometric means (95% CI).

The “Asian Indian Phenotype” and Risk for Diabetes

- Greater waist-to-hip ratios compared with non-Hispanic whites
- Greater Total Abdominal and visceral fat for any given BMI
- Increased insulin resistance for any given body fat
- Lower levels of plasma adiponectin concentrations
- Increased levels of adipose tissue metabolites (NEFAs, leptin)

**NEFAs = non-esterified fatty acids**


**Impact of Language Barriers in Chinese Americans* With Diabetes**

<table>
<thead>
<tr>
<th></th>
<th>English Preferred Group (n=22)</th>
<th>Chinese Preferred Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest of Diabetes Knowledge Score (%)</td>
<td>84.5 ±15.5%</td>
<td>62.5 ±22.5%</td>
</tr>
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</table>

**P<0.0003**

<table>
<thead>
<tr>
<th></th>
<th>English Preferred Group (n=22)</th>
<th>Chinese Preferred Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1C (%)</td>
<td>6.9 ±1.0%</td>
<td>7.6 ±1.4%</td>
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</table>

**P=0.09**

*Patients had comparable diabetes care and self-management behaviors.

The Impact of Yin-Yang Concepts on Beliefs and Behaviors

- Illness is related to yin-yang disharmony
- Medication use can be discontinued once balance is restored

Beliefs

- Affects food choice
- Affects willingness to take medicines
- Influences use of alternative therapies

Behaviors

Asians and Dietary Considerations

- In traditional Chinese medicine, diet plays an important role in maintaining health and treating disease
  - Emphasis on balancing yin (“cold” food) and yang (“hot” food)

- Cooling foods may be prescribed for diabetes (considered a “hot” disease)
  - Spinach, celery, pumpkins, soybeans, beans, sweet potatoes, wheat bran, millet
  - Fruit remedies include crab apple, guava, plum, strawberry, mulberry

References:
3. Choate CJ. Traditional Chinese medicine. Diabetes Mellitus from Western and TCM Perspectives.
ADA Actions and Priorities

• Prioritized the Implementation of the Affordable Care Act (ACA), which is important for the AANHPI population. More than one in five Pakistani, Bangladeshi, Korean and Cambodian Americans is uninsured.

• At the state level, fight cutbacks in Medicaid, which have the potential to decrease access to care and coverage of diabetes supplies and treatment. Reliance on Medicaid varies widely among Asian American ethnic sub groups. 19% Southeast Asians rely on Medicaid.

• ADA’s Safe at School Campaign aims to ensure that children with diabetes receive adequate care or the flexibility to self-manage in a school setting. Ensuring that students with diabetes start each school day knowing that their diabetes needs will be safely met in the school setting.

ADA Actions and Priorities (cont’d)

• Primary Prevention of Type 2 Diabetes. State emphasis has been on nutrition and physical activity, to improve those factors which contribute to obesity and diabetes type 2.

• Supports funding for public health programs that monitor diabetes prevalence, implement and evaluate diabetes interventions, and promote public awareness about diabetes.
Questions?