

**ASIAN AMERICANS, NATIVE HAWAIIANS & PACIFIC ISLANDERS AND DIABETES**

**DIABETES**

**Diabetes mellitus** is a group of diseases in which the body is unable to produce insulin or to use insulin properly. Insulin is a hormone which helps “unlock” cells and allows glucose (sugar) to enter and fuel them. Some warning signs for diabetes include excessive thirst and urination, weight loss, and difficulty healing cuts. However, many people do not notice symptoms for several years.

- Diabetes is usually detected by the high blood glucose levels which are found in individuals who are unable to produce or absorb insulin properly.<sup>1</sup>
- Diabetes contributes to many long-term health complications, including damage to the eyes, kidneys, nervous system and the cardiovascular system.
- Diabetes is a major cause of blindness, kidney failure and non-traumatic amputation in industrialized countries, and is a major risk factor for heart disease and stroke.<sup>2</sup>

Native Hawaiians & Pacific Islanders are four to seven times as likely as Caucasians to develop diabetes, are more likely to develop secondary complications from diabetes, and to die prematurely than are other major racial and ethnic groups.

There are two main types of diabetes. Type 1 diabetes usually affects children and young adults and is caused by the destruction of insulin-secreting cells by the body's own immune system. In Type 2 diabetes, the insulin-secreting cells are not destroyed, but they produce less insulin and the body becomes less sensitive to its effects. Type 2 diabetes is the more common form of diabetes; it is usually seen in

older adults, but increasing numbers of children and adolescents are now also being affected.<sup>3</sup>

Gestational diabetes is a temporary form of diabetes which occurs in some pregnant women but which usually goes away after delivery. However, these women are at increased risk of developing diabetes in the future.<sup>4</sup> Studies have found that Black, Hispanic, and Asian/Pacific Islander women are more likely than non-Hispanic White women to have diabetes before pregnancy.<sup>5</sup> Entering pregnancy with diabetes increases the possibility of problem pregnancies and of children becoming diabetic later on.<sup>5</sup> In some parts of Asia, people under 25 years of age have recently been diagnosed with a previously unknown form of diabetes which combines features of both type 1 and 2 diabetes.<sup>6</sup> A very small percentage of diabetes cases result from specific genetic syndromes, or may be caused by drugs, chemicals, infections or other illnesses.<sup>6</sup>

In 2007, 23.6 million people of all ages, or 7.8% of the population, in the United States had diabetes, of which 5.7 million were left undiagnosed.<sup>29</sup>

Diabetes rates in Chinese Americans have been reported as 5 to 7 times the rate seen in China.

**PREVALENCE**

Asian Americans are twice as likely as the general American population to develop diabetes.<sup>7</sup> Type 1 diabetes affects approximately 1 million people in the United States but it affects Asian Americans, Native Hawaiians, and Pacific Islanders (AAs & NHPIs) less frequently.<sup>8</sup> Type 2 diabetes is much more common, and affects up to 15 million people in America, of that affecting approximately 90-95% Asians. Diabetes is often called the “silent killer” because nearly one-third of people with type 2 diabetes do not know they have it until they develop serious diabetes-related complications. For many Asian Americans, the indicative type 2 diabetes symptom of weight gain is often not exhibited and those individuals may be left undiagnosed.<sup>7</sup> According to the Center for Disease Control and Prevention (CDC), the total prevalence of diabetes in the United States for all ages is 20.8 million people (approximately 7.0% of the population). Globally, the number of individuals with diabetes is growing at an alarming rate:

- At least 171 million people worldwide have diabetes. The World Health Organization (WHO) projects that this figure is likely to more than double by 2030, reaching 366 million.
- The dramatic rise in diabetes in this part of the world may in part be a result of changes in lifestyles due to industrialization, urbanization, and westernization.<sup>9</sup>

Approximately half of all people worldwide with diabetes in 2025 will be Asians and Pacific Islanders.

- In Guam, over 73 percent of diabetics were Chamorros, although they represent only 43 percent of the population.<sup>10</sup>
- Present-day Palau, like many other countries, has started to adopt more westernized food habits. Researchers note higher rates of purchasing canned food, and eating food high in salts and fat may be increasing the threat of diabetes and other chronic diseases.<sup>10</sup>
- The top three countries estimated to have the highest numbers of people with diabetes in 2030 are India, China, and the U.S.<sup>11</sup>

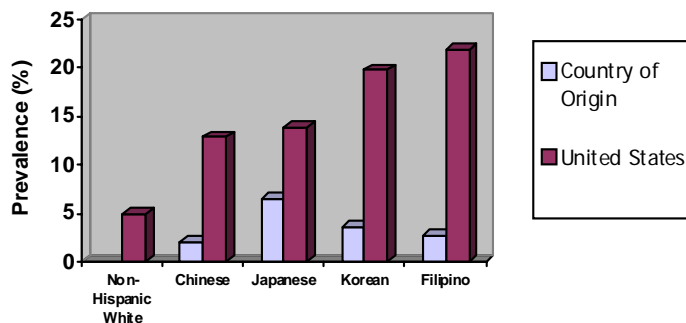
Diabetes is the fifth leading cause of death in the AAPI community.<sup>22</sup>

The Asian American population is more likely to have type 2 diabetes compared to non-Hispanic Whites despite having lower body weight.<sup>12</sup> The age-, sex-, and BMI-adjusted prevalence of diabetes in Asian Americans was ~60% higher than in non-

Hispanic Whites and ~20% - 30% lower than in African American, Hispanic, or American Indian.<sup>13</sup> Various studies have found Chinese American, Japanese American, Filipino American, Asian Indian, Native Hawaiian, and Samoan communities in the United States that are affected with diabetes much more than the White population.<sup>8,12</sup> Diabetes have reached alarming proportions among indigenous peoples, especially Pacific Island populations during the past 40 to 50 years. Numerous studies have shown that indigenous peoples such as Samoans, Native Hawaiians, Chamorros, and the Marshallese have high rates of obesity.<sup>14</sup> In addition, many immigrant communities have significantly higher rates of diabetes in the U.S. than are seen in their native countries. In general, the interaction between genetic and environmental factors largely contributes to the onset of diabetes.<sup>7</sup>

- Studies on Japanese Americans in Los Angeles<sup>28</sup>, Seattle<sup>13</sup>, and Hawaii<sup>14</sup> show that the prevalence of diabetes is two to three times higher than that seen in Japan.
- The rate of diabetes in Chinese Americans is higher than that of the Chinese population living in rural China.<sup>7</sup> Diabetes rates in Chinese Americans have also been reported as 5 to 7 times the rate seen in China.<sup>8</sup> Similarly, the diabetes rate for Japanese Americans living in the U.S. is higher than that of Japanese living in Japan.<sup>7</sup>
- Native Hawaiians, Filipinos, and Japanese have higher diabetes rates than non-Hispanic Whites.<sup>27</sup>
- Native Hawaiians have the highest diabetes mortality rates when compared with the other major ethnic groups.<sup>27</sup>
- Second and third generation Japanese Americans, who are well acculturated into the mainstream American lifestyle, still have higher diabetes rates compared to those of Caucasians.<sup>7</sup>
- Studies of Asian immigrants in other countries have produced similar results; British researchers found a five-fold increase in the prevalence of diabetes among South Asians living in West London compared to an age-matched European population.<sup>17</sup>
- The U.S. territory of American Samoa has a disproportionate number of people with type 2 diabetes mellitus compared with neighboring Samoa and the U.S. mainland.

**Diabetes rates in U.S. ethnic groups compared to their country of origin.** <sup>8,9,11,15,16</sup>



## RISK FACTORS

There are many factors that may contribute to the higher incidence of diabetes among certain Asian Americans, Native Hawaiians, and Pacific Islanders. Some AA & NHPI groups may be genetically predisposed to diabetes. Having a family history of the disease is also thought to increase the chances of developing diabetes.<sup>19</sup> However, research in these areas is

limited and requires further study. Low birth weight, which is more prevalent among some AA & NHPI populations, is also associated with the onset of diabetes in adulthood.<sup>20</sup> The risk for developing diabetes rises sharply even with a small amount of weight gain about the target appropriate for their ethnicity.

Obesity is recognized as a serious risk factor for diabetes.<sup>19</sup> Immigrants in the U.S. often eat foods that are higher in animal fat and exercise less than is typical in their native country.<sup>21</sup> Researchers point to the negative health effects of westernization and urbanization, particularly in relation to unhealthy habits that promote the development of diabetes. However, some Asian populations have lower rates of obesity, yet they have rates of diabetes that are twice the rate of the white population.<sup>17,22</sup> To address this discrepancy, the World Health Organization has proposed new criteria to define obesity for Asians, Native Hawaiians, and Pacific Islanders which takes into account distinct body mass issues in these populations.<sup>23</sup> Improving diet and exercise habits, as well as changing national perceptions of diet and exercise may prove to be beneficial for diabetic populations.<sup>26</sup>

Nearly 80% of diabetes is diagnosed in overweight and obese individuals.<sup>27</sup>

Stress caused by cultural and/or environmental changes also increases the risk of diabetes and other chronic diseases. This has been observed in studies with American Samoans in the context of modernization and acculturation. This suggests that stress management and reduction would be a helpful intervention.<sup>26</sup>

## COMPLICATIONS OF DIABETES

Diabetes can affect many different parts of the body and can lead to serious complications for pregnancy, mobility, and overall health. Adults with diabetes have heart disease death rates about 2-4 times higher than adults without diabetes; likewise, the risk for stroke is 2-4 times higher among people with diabetes. Diabetes is the leading cause of new cases of blindness among adults aged 20-74 years old in the U.S. Diabetes is also the currently leading cause of kidney failure, accounting for 44% of new cases in 2005. About 60-70% of people with diabetes have mild to severe forms of nervous system damage, of which many severe forms have led to lower-extremity amputations. Among young U.S. adults, those with diabetes have twice the risk of periodontal, or gum, disease, than those without diabetes.<sup>29</sup>

Fortunately, there are many ways to prevent diabetes complications, such as controlling glucose levels, controlling blood pressure, controlling blood lipids, and exercising preventive care practices for important body parts, such as the eyes, feet, and kidneys. With the collaboration of people with diabetes, their support networks, and health care providers, the occurrence of diabetes complications can be significantly reduced.<sup>29</sup>

## HEALTH CARE COSTS

Diabetes now costs the nation \$174 billion annually in direct health care and indirect costs, such as lost productivity, a figure that has increased by 32% since 2002.<sup>24</sup> It costs nearly \$3,200 per person per year in lost productivity as a result of

diabetes.<sup>25</sup> In 2007, \$58 billion of indirect costs were lost due to such causes as disability, work loss, and premature mortality.<sup>29</sup>

## DIABETES RESOURCES & INFORMATION

Joslin Diabetes Center – Asian Clinic

[http://aadi.joslin.harvard.edu/asianclinic/asianclinic\\_index.asp](http://aadi.joslin.harvard.edu/asianclinic/asianclinic_index.asp)

Joslin Diabetes Center – Asian American Diabetes Initiative

<http://aadi.joslin.harvard.edu/index.asp>

American Diabetes Association – Asian Americans, Pacific Islanders and Diabetes

<http://www.diabetes.org/communityprograms-and-localevents/asianamericans.jsp>

Association of Asian Pacific Community Health Organizations (AAPCHO) – BALANCE

<http://www.aapcho.org/site/aapcho/section.php?id=10937>

Pacific Diabetes Education Program

<http://www.pdep.org>

National Diabetes Information Clearinghouse (NDIC) – Asian Americans, Pacific Islanders, and Diabetes

<http://diabetes.niddk.nih.gov/dm/pubs/asianamerican/index.htm>

National Diabetes Education Program

<http://ndep.nih.gov/index.htm>

The National Women's Health Information Center

<http://www.womenshealth.gov/>

## References

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<sup>3</sup> Fagot-Campagna, A., 'Emergence of type 2 diabetes mellitus in children: epidemiological evidence,' *J Pediatr Endocrinol Metab.* 2000, 13(Suppl 6):1395-402.

<sup>4</sup> Alberti, KGMM., Zimmet, PZ., 'Definition, diagnosis and classification of diabetes mellitus and its complications. Part 1: Diagnosis and classification of diabetes mellitus provisional report of a WHO consultation,' *Diabetes Med.* 1998, 15:539-53.

<sup>5</sup> Steenhuysen, Julie. "More babies born to diabetic mothers." Reuters 2008. <<http://www.canada.com/topics/bodyandhealth/story.html?id=90490cfc-bd86-491e-8f38-c1f6407cf151>>.

<sup>6</sup> Kitagawa, T., et al., 'Epidemiology of type 1 (insulin-dependent) and type 2 (non-insulin-dependent) diabetes mellitus in Japanese children,' *Diabetes Res Clin Pract.* 1994, 24:S7-63.

<sup>7</sup> *Asian Americans and Diabetes.* Joslin Diabetes Center, 2008.

<[http://aadi.joslin.harvard.edu/intro/intro\\_asian\\_epidemic.asp](http://aadi.joslin.harvard.edu/intro/intro_asian_epidemic.asp)>.

<sup>8</sup> Fujimoto, WY. 'Diabetes in Asian and Pacific Islander Americans,' in: Harris, M., ed., *Diabetes in America*, Bethesda, MD: National Institutes of Health, 1995: 661-82.

<sup>9</sup> Global burden of diabetes, 1995-2025: Prevalence, numerical estimates, and projections. *Diabetes Care*, 1998, 21(9):1414-31.

<sup>10</sup> Guam: Health Needs of Chamorros: A comprehensive approach to health care in the Republic of Palau. *Asian American and Pacific Islander Journal of Health.* 1996; 4(1-3).

<sup>11</sup> Wild, S., et al. (2004) Global prevalence of diabetes. *Diabetes Care*, 27(5). 1047-1053

<sup>12</sup> Hsu, W.C. et al. (2006). Identification of linguistic barriers to diabetes knowledge and glycemic control in Chinese Americans with diabetes. *Diabetes Care.* 29(2). 415-416.

<sup>13</sup> McNeely, M.J. & Boyko, E.J. (2004) Type 2 diabetes prevalence in Asian Americans. *Diabetes Care.* 27(1). 66-69.

<sup>14</sup> Cortes, L.M. et al. Formative research to inform intervention development for diabetes prevention in the Republic of the Marshall Islands. *Health Education & Behavior.* 28(6). 696-715

<sup>15</sup> Carter, JS., et al., 'Non-insulin dependent diabetes mellitus in minorities in the United States,' *Ann of Inter Med.* 125:237-39, 1996.

<sup>16</sup> Fujimoto, WY., et al., 'Prevalence of diabetes mellitus and impaired glucose tolerance among second-generation Japanese-American men,' *Diabetes*, 36:721-29, 1987.

<sup>17</sup> Hara, H., et al., 'Incidence of non-insulin dependent diabetes mellitus and its risk factors in Japanese-Americans living in Hawaii and Los Angeles,' *Diabetes Med.*, 1996; 13:S133-42.

<sup>18</sup> Mather, HM. and Keen, H., 'The Southall diabetes survey: Prevalence of known diabetes in Asians and Europeans,' *Br Med J.* 1985; 291:1081-84.

<sup>19</sup> Burchfiel, CM., et al., 'Incidence and predictors of diabetes in Japanese-American men: The Honolulu heart program,' *Ann Epidemiol.* 1995, 5(1):33-43.

<sup>20</sup> *MMWR*, 1993; 42:398-403.

<sup>21</sup> Fujimoto, et al., 'Type 2 diabetes and the metabolic syndrome in Japanese Americans,' *Diabetes Res Clin Pract*, 2000; 50(2 Suppl):S73-76.

<sup>22</sup> Office of Minority Health, 2008

<sup>23</sup> *Report on the Asia-Pacific Perspective: Redefining obesity and its treatment.* Geneva: World Health Organization, 2000.

<sup>24</sup> American Diabetes Association Press Release: Devastating Toll of Diabetes Reaches \$174 billion, January 23, 2008.

<sup>25</sup> S. Vijan et al., Health Services Research, 2004; 39 (6), Part 1: 1653-1669.

<sup>26</sup> Elstad E, Tusiofo C, Rosen RK, McGarvey ST. *Living with ma'i suka: individual, familial, cultural, and environmental stress among patients with type 2 diabetes mellitus and their caregivers in American Samoa.* Prev Chronic Dis 2008;5(3). [http://www.cdc.gov/pcd/issues/2008/jul/07\\_0101.htm](http://www.cdc.gov/pcd/issues/2008/jul/07_0101.htm). Accessed June 26, 2008.

<sup>27</sup> Hawaii Diabetes Report, 2004

<sup>28</sup> Parker, Steven. "Asian Americans: The Facts." Health Guidance: Health Guidance for Better Health.

<<http://www.healthguidance.org/entry/6320/1/Asian-Americans-The-Facts.html>>.

<sup>29</sup> Centers for Disease Control and Prevention, National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2007. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2008.