



NATIVE HAWAIIAN AND PACIFIC ISLANDER HEALTH DISPARITIES

APIA HF

ASIAN & PACIFIC ISLANDER
AMERICAN HEALTH FORUM

MISSION STATEMENT

The Asian & Pacific Islander American Health Forum (APIAHF) influences policy, mobilizes communities, and strengthens programs and organizations to improve the health of Asian Americans, Native Hawaiians, and Pacific Islanders.

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OVERVIEW

Asian Americans, Native Hawaiians, and Pacific Islanders (AA and NHPI) historically have been aggregated in most demographic and health surveys, obscuring significant disparities in health risks and outcomes and health care access affecting NHPIs (Bitton et al., 2010). As a federal designation, “Native Hawaiian and Pacific Islander” refers to persons with ancestry in any of the original peoples of the islands of Polynesia, Micronesia, and Melanesia (Office of Management and Budget, 1997). According to the 2008 U.S. Census Bureau estimate, there are 829,949 NHPIs who reside within the United States, representing about 0.3% of the U.S. population. In large part due to the small number of NHPIs in the United States, little is known about their health. Until recently, available state or local data on NHPI health were collected mainly in states with the largest NHPI populations (mostly in Hawai‘i but occasionally in California) compiled by state health departments but also reported in research studies using samples of NHPIs. This health brief provides an overview of NHPI health in the United States on a wide range of health issues.

Limited by the available data, most of the statistics presented in this brief represent the aggregated NHPIs as a whole, although we used disaggregated statistics for distinct ethnic groups to the extent they were available. In general, our statistics represent NHPIs in the U.S. and do not include NHPIs in the U.S.-Affiliated Pacific Islands (USAPI) unless noted. The USAPI include the three U.S. Flag Territories of Guam, the Commonwealth of the Northern Mariana Islands, American Samoa, and the three Freely Associated States (independent nations in a special compact relationship with the United States) of the Republic of the Marshall Islands, the Republic of Palau, and the Federal States of Micronesia (Pohnpei, Kosrae, Chuuk, and Yap). As NHPIs comprise culturally, linguistically, and socioeconomically diverse ethnic groups, it is difficult to fully capture the complexities of NHPI health and health disparities using aggregated data: a limitation of this report or rather the current state of data available on NHPI health. Disparities revealed in the aggregate data may be an indication of even greater disparities at the subgroup level worthy of further research and examination.

The data that is presented in this report is a compilation of currently available and published data, unless otherwise noted. The data and statistics should be interpreted with caution because data on small populations (i.e., Pacific Islanders) from national surveys do not normally yield reliable nor precise estimates due to small sample sizes that are not representative of the population. Therefore, it is important not to make strong conclusions based solely on the data in these reports. For more information about limitations of the data, please refer to the technical documents of each survey.

DATA SOURCES

Three main sources were used to obtain data on NHPI health, all of which involve representative samples of NHPIs in the United States:

One is the data of the National Health Interview Survey (NHIS) collected from 2005 to 2008 and reported in several recent reports by the Centers for Disease Control and Prevention (CDC). NHIS is a cross-sectional household interview survey conducted annually by the CDC to monitor the health of the U.S. civilian, non-institutionalized population, including both children and adults, on a broad range of health topics.

The second is the 2008 data of CDC's Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a state-based system of health surveys that collects information on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. Currently BRFSS data are collected monthly in all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. To obtain findings generalizable to all NHPIs in these geographical areas, the data were weighted to account for the selection probability, as well as the racial, age, and gender compositions of the population.

The third set of data is from the national, school-based Youth Risk Behavior Survey (YRBS) conducted by CDC; state, territorial, and local education and health agencies; and tribal governments. To obtain data on NHPI adolescents, we used two sets of YRBS data: 1) 2009 YRBS data collected in all 50 states and Palau and 2) 2007 YRBS data collected in five of the six USAPI: American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, and Republic of the Marshall Islands.

CDC uses only single race categories in reporting the results of YRBS and BRFSS. While NHIS has a multiple races category, the only available combinations are Whites with Blacks or American Indians/Alaska Natives. Due to these limitations, data used in this brief depict the health of NHPIs who identified themselves as a single-race NHPI.

Available state and local data, including those extracted from published studies and health reports by state health departments, were used where U.S. data were unavailable.

The following is a list of data sources used:

The Burden of Cardiovascular Disease in Hawaii, 2007 (http://hawaii.gov/health/statistics/brfss/reports/CVDBurden_Rpt2007.pdf)

Behavioral Risk Factor Surveillance System (<http://www.cdc.gov/brfss/>)

California Health Interview Survey (<http://www.chis.ucla.edu/>)

Hawai'i Behavioral Risk Factor Surveillance System (<http://hawaii.gov/health/statistics/brfss/index.html>)

National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (<http://www.cdc.gov/nchhstp>)

National Health Interview Survey (<http://www.cdc.gov/nchs/nhis.htm>)

National Institute of Dental and Craniofacial Research (<http://www.nidcr.nih.gov/DataStatistics/>)

Public Policy Institute of California (<http://www.ppic.org/main/home.asp>)

Youth Risk Behavior Survey (<http://www.cdc.gov/features/riskbehavior/>)

HEALTH CARE ACCESS

HEALTH INSURANCE COVERAGE

The benefits of access to health care, particularly health insurance coverage, are well documented. Past research has consistently demonstrated that health insurance coverage has substantial positive effects on the use of ambulatory and therapeutic care, preventive and diagnostic services, early detection of illnesses, self-reported health status, and mortality conditional on injury and disease (Freeman et al., 2008; Hadley, 2003).

The health insurance coverage rate for NHPs is lower than for most other racial groups in the U. S. In 2008 almost one in four of all NHPs (24.3%) under 65 years of age lacked health insurance coverage, with this percentage being higher than those of all other racial groups but American Indians/Alaska Natives (30.7%) and Hispanics/Latinos (34.1%). The portion of NHPs with private health insurance coverage is also low; about half of all NHPs (49.4%) under 65 had private insurance—a proportion substantially lower than those for Asians (74.2%) and Whites (67.8%) and higher only than American Indians/Alaska Natives (32.0%) and Hispanics/Latinos (41.5%). (See Table 1.)

Table 1. Age-adjusted percentages of insurance coverage: United States, 2008

Race/ Ethnicity	Under age 65 years								65 years of age and over	
	Private		Medicaid		Other		Uninsured		Medicare only	
	%	SE	%	SE	%	SE	%	SE	%	SE
White	67.8	0.52	12.2	0.33	3.1	0.17	16.9	0.34	28.9	0.90
Black	50.6	0.90	26.5	0.77	4.3	0.34	18.6	0.57	41.9	2.08
AI/AN	32.0	3.40	31.8	3.47	5.4	1.31	30.7	3.40	51.7	7.94
Asian	74.2	1.34	9.6	0.91	2.8	0.41	13.4	0.91	34.0	2.73
NHPI	49.4	7.08	24.5	5.37	-	†	24.3	5.57	*63.3	22.05
Hispanic/ Latino	41.5	0.84	22.0	0.59	2.4	0.21	34.1	0.71	42.9	2.13

Source: 2008 National Health Interview Survey (NHIS) data reported in CDC, 2010

SE = standard error

† Estimates with a relative standard error greater than 50% are indicated with a dagger but are not shown.

* Estimates preceded by an asterisk have a relative standard error of greater than 30% and less than or equal to 50% and should be used with caution as they do not meet the standard of reliability or precision.

It is also worth noting that an estimated two in three NHPs (63.3%) aged 65 or older had only Medicare, lacking any supplemental insurance, and that this percentage may be higher than other racial groups, especially Whites (28.9%). (See Table 1.) While Medicare provides some basic coverage, it does not cover all health and medical expenses. A Medicare beneficiary still faces significant exposure to out-of-pocket liabilities for uncovered services, including most routine preventive care, immunization, dental care, hearing aids, eyeglasses, outpatient prescription drugs, and long-term care (Miller, 1992). For a large proportion of NHP seniors, this lack of supplemental insurance may be a barrier to accessing needed medications and health care.

EMERGENCY ROOM USE

Emergency room (ER) visits are also a key measure of health care access, particularly for underserved and at-risk populations. ER visits provide a way to measure multiple health care access issues—lack of preventive care and screening, delay of care, and at times, lack of health care coverage (Carey, 1994; Tseng et al., 2010). It has been found that many visits to emergency rooms are for conditions that are not life threatening or which otherwise do not require immediate medical attention (Cunningham and May, 2003).

Results of the 2007 California Health Interview Survey (CHIS) suggest that the proportion of NHPs (33.5%) in California who visited the ER in the past year was higher than other racial groups in California. (See Table 2.) These results suggest that many NHPs face greater barriers to (or do not seek) preventive care, instead accessing emergency room treatment when their conditions become acute. Tongans (45%) had the highest percentage of ER visits, followed by Samoans (28%). Given the large confidence intervals, these results should be interpreted with caution.

Table 2. Percentages of persons 18 years of age or older who visited the emergency room in the last 12 months: California, 2007

Race/Ethnicity	Visited the ER	
	%	95% CI
All	18.6	(18.0, 19.3)
White	19.9	(19.1, 20.6)
Black	28.3	(24.8, 31.7)
AI/AN	26.5	(19.3, 33.7)
Asian	12.6	(10.9, 14.3)
NHPI	33.5	(18.4, 48.6)
Hispanic/Latino	17.3	(16.1, 18.6)

Source: California Health Interview Survey (CHIS), 2007

LANGUAGE ACCESS

Patients with limited English proficiency are vulnerable to disparities in health care access and quality. Effective communication between patient and provider is critical to the delivery of safe and high-quality care, and language barriers can impede patient-provider communication, potentially leading to diagnostic errors or inappropriate treatment (Cohen et al., 2005; Divi et al., 2007; Ku and Flores, 2005). Individuals with limited English proficiency are more likely than those who are proficient in English to forgo needed medical care and less likely to have a health care visit, and more likely to experience avoidable adverse events, including physical harm (Shi et al., 2009). Limited English proficiency poses a barrier to accessing quality care for linguistically diverse NHPs (Mau et al., 2003).

Language access services designed to ensure effective communication between limited-English-proficient individuals and English speakers, including medical or health interpretation (oral) and translation (written) services, are a critical component of ensuring culturally and linguistically competent care (Ro et al., 2010). It appears that a significant proportion of NHPs do not receive adequate language services in accessing health care, and understanding health literature is an issue for NHPs. Almost one in five NHPI adults (19.9%) in California reported that they found it “somewhat difficult” or “very difficult” to understand written information from their doctor’s office (CHIS, 2007). Given the large confidence intervals, these results should be interpreted with caution. (See Table 3.)

Table 3. Percentages of persons 18 years of age or older who understand written information from doctor’s office: California, 2007

Race/ Ethnicity	Very easy		Somewhat easy		Somewhat difficult		Very difficult		Don't get written information	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
All	51.2	(50.4, 52.0)	31.0	(30.2, 31.8)	10.5	(9.9, 11.0)	4.4	(4.0, 4.8)	2.9	(2.7, 3.1)
White	58.7	(57.7, 59.6)	29.0	(28.1, 29.9)	6.9	(6.4, 7.5)	2.2	(1.9, 2.5)	3.2	(2.9, 3.5)
Black	56.0	(53.3, 60.6)	27.2	(23.8, 30.5)	11.1	(8.8, 13.5)	3.1	(2.1, 4.1)	1.7	(1.1, 2.2)
AI/AN	57.1	(49.2, 65.1)	24.9	(17.7, 32.2)	10.8	(5.8, 15.8)	4.1	(1.6, 6.6)	3.0	(1.0, 5.1)
Asian	45.9	(43.4, 48.4)	34.3	(31.8, 36.7)	9.4	(8.0, 10.7)	5.9	(4.7, 7.0)	4.6	(3.6, 5.6)
NHPI	42.5	(27.3, 57.7)	37.2	(22.9, 51.6)	11.8	(3.2, 20.4)	8.1	(0.0, 17.8)	-	-
Hispanic/ Latino	41.1	(39.4, 42.8)	33.4	(31.7, 35.0)	16.2	(14.8, 17.5)	7.3	(6.3, 8.3)	2.0	(1.6, 2.5)

Source: California Health Interview Survey (CHIS), 2007

NHPI ADULT HEALTH

Available data point to a variety of potentially life-threatening health conditions disproportionately affecting NHPI adults. The prevalence of chronic diseases, which constitute the leading causes of death in the U.S.—heart disease, cancer, and diabetes—is alarmingly high among NHPIs. Prevalence of other chronic conditions, including hypertension and obesity, which cause or exacerbate these life-threatening illnesses is also strikingly high among NHPIs.

HEART DISEASES

Cardiovascular disease is the leading cause of death across all racial and ethnic groups in the United States (Anderson and Smith, 2003). In 2006 it accounted for about one in three deaths among both Asian Americans (32.9%) and NHPI (33.5%) (NCHS, 2006).

Past research using data collected in states with large populations of Native Hawaiians demonstrates a high prevalence of heart diseases among that population. A large prospective cohort study (Henderson et al., 2007) that followed 139,406 multiethnic men and women—Blacks, Native Hawaiians, Japanese Americans, Hispanics/Latinos, and Whites—in Hawai'i and California from 1993 to 2003 found that Native Hawaiian men and women had higher mortality rates due to acute myocardial infarction (commonly known as a heart attack) and other health diseases than all other racial and ethnic groups but Blacks. Mortality rates from these heart diseases for NHPI men and women were about twice as high as those of Whites. (See Table 4.)

Table 4. Mortality rates* from acute myocardial infarction (AMI): United States, 2007

Race/ Ethnicity	Men			Women		
	Mortality rate	95% CI	P	Mortality rate	95% CI	P
White	60.2	-	-	21.4	-	-
Black	144.4	(1.22, 1.96)	<0.001	51.3	(1.87, 3.25)	<0.001
Native Hawaiian	124.5	(1.17, 2.25)	0.004	44.3	(1.17, 2.82)	0.008
Japanese American	38.5	(0.49, 0.80)	<0.001	13.7	(0.47, 0.90)	0.009
Hispanic/ Latino	64.4	(0.74, 1.20)	0.614	22.9	(0.75, 1.49)	0.752

Source: Henderson, et al., 2007

* Per 100,000 persons per year, age-standardized to U.S. Standard Population ages 45-79 years for the year 1970.

In Hawai'i, both Native Hawaiian men and women die from major cardiovascular diseases at a younger average age than all other major racial and ethnic groups in the state, including White, Chinese, Filipino, and Japanese Americans. In addition, Native Hawaiians (135.4 per 100,000 persons) had a higher age-adjusted mortality rate for coronary heart diseases than other major groups in Hawai'i, such as Whites (80.4 per 100,000 persons), Chinese (66.4 per 100,000 persons), Filipino (128.3 per 100,000 persons), and Japanese (66.6 per 100,000 persons). With the exception of Filipino Americans, NHPIs had the highest stroke mortality rate among all the major racial groups in Hawai'i. (See Table 5.)

Table 5. Cardiovascular disease (CVD) mortality rates: Hawai'i, 2005

	Average age at death for major CVD ¹		Mortality rate for CHD ²	Mortality rate for stroke ²	Adult Obesity Prevalence
	Men	Women	Total	Total	Total
Chinese	79.8	84.6	66.4	36.1	-
Filipino	77.1	78.2	128.3	84.4	13.4
Japanese	78.6	84	66.6	48.2	11.3
Native Hawaiian	65.2	72.3	135.4	57.1	43.5
White	74.8	82.5	80.4	32.1	17.9
All Others	62.9	75.1	-	-	24.1

Source: Hawai'i State Department of Health, 2007

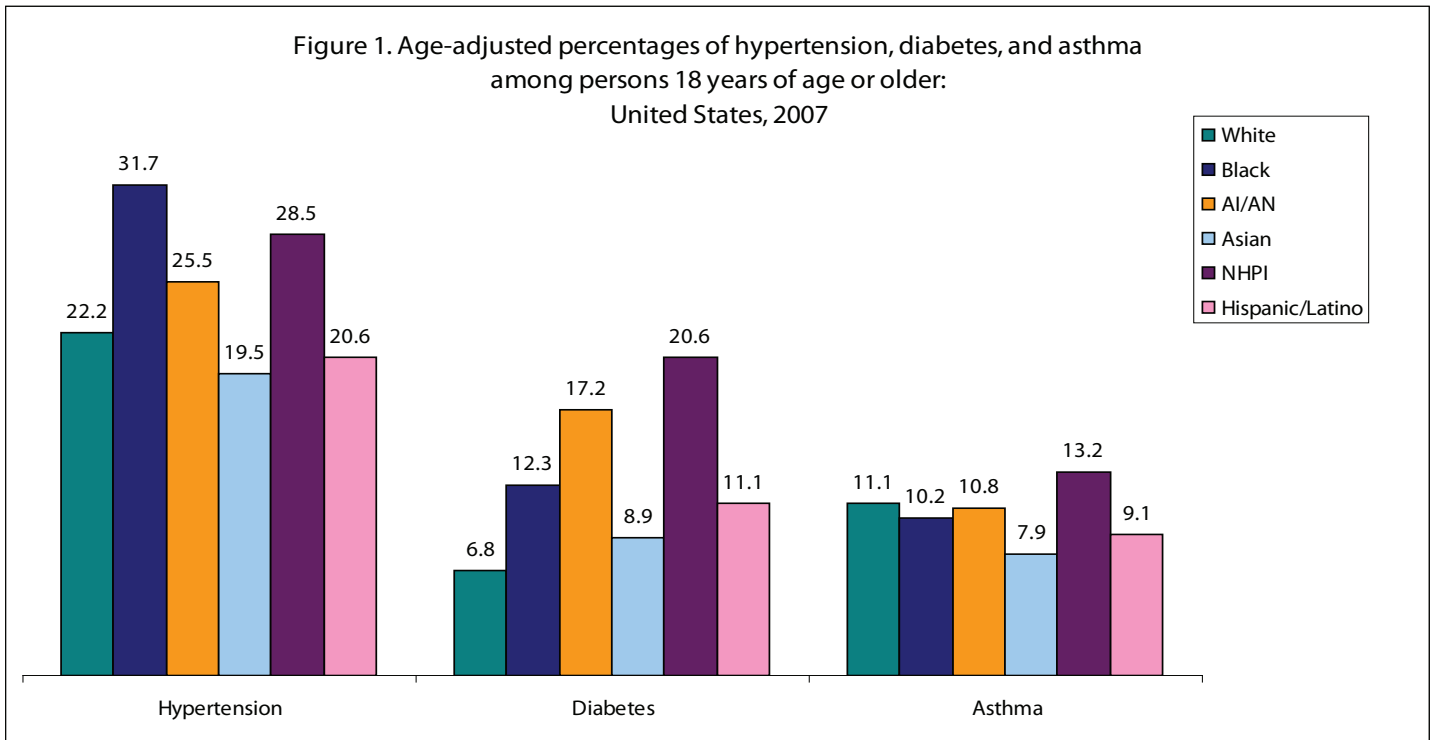
¹ Includes ICD-10 Codes 100-178.

² Adjusted by age to 2000 U.S. Standard.

Among the established risk factors of cardiovascular diseases including obesity, hypertension, diabetes, unhealthy diet, physical inactivity, smoking, alcohol consumption, and education level (Lee et al., 1993; Rehkopf et al., 2009; Wong, 2009), diabetes and hypertension have been identified as the most important factors accounting for ethnic and racial differences in disease mortality (Henderson et al., 2007). The prevalence of several of these risk factors—most prominently, diabetes and hypertension—is disproportionately high among NHPs.

HYPERTENSION

Among cardiovascular risk factors, hypertension is the most common (Kaplan and Opie, 2006; Pieske and Wachter, 2008). Hypertension is an established risk factor for coronary heart disease and stroke in AAs and NHPs (Watson et al., 2009). An analysis of the 2007 National Health Interview Survey (NHIS) data found that NHPs (28.5%) may have one of the highest percentages of hypertension among all racial groups in the United States. (See Figure 1.)



Note: Persons had to have been told on two or more different visits that they had hypertension or high blood pressure to be classified as hypertensive. In separate questions, respondents were asked if they had ever been told by a doctor or other health professional that they had: an ulcer (including a stomach, duodenal, or peptic ulcer) or diabetes (or sugar diabetes; Women respondents were instructed to exclude pregnancy-related diabetes). Responses from persons who said they had “borderline” diabetes were treated as unknown with respect to diabetes. A person may be represented in more than one column.

Note: Estimates for NHPI have a relative standard error of greater than 30% and less than or equal to 50% and should be used with caution as they do not meet the standard of reliability or precision.

Prevalence of hypertension is reported to be even higher in some NHPI ethnic groups. In a study conducted in San Diego County, home to the largest Chamorro community outside of Guam, 42.5% of Chamorros (35.0% of men and 48.4% of women) reported having been diagnosed with hypertension. Women who were unemployed and age 50 and over were diagnosed with hypertension at significantly greater frequencies than younger and employed male counterparts. Prevalence of hypertension among less educated women was much higher than among their more educated counterparts (Chiem et al., 2006). Diabetes mellitus and physical inactivity all were more prevalent among the Chamorros than the U.S. average, suggesting an increased risk of heart disease.

The high rate of hypertension among NHPIs may be explained in large part by the high prevalence of obesity, but other factors may also come into play. NHPIs may be at an elevated genetic risk for hypertension, especially diastolic blood pressure, which was positively associated with those of a Native Hawaiian ancestry after controlling for all demographic, biochemical, and behavioral risk factors (Grandinetti et al., 2002). The Angiotensin-converting enzyme insertion/insertion (ACE II) genotype associated with increased hypertension-related mortality was found with greater frequency among persons of Native Hawaiian ancestry (Grandinetti et al., 2006), as well as among Samoans and Tongans (Kyle et al., 2001).

There also may be a wide range of psychosocial factors disproportionately affecting NHPIs. Research has established a strong link between various hypertension and psychosocial stressors such as work strain, social status, and emotional stress (Kulkarni et al., 1998), which many NHPIs of lower incomes and occupational status may experience more acutely.

An additional risk factor of hypertension identified for racial minorities is perceived racism (Steffen et al., 2003) or stress due to exposure to racial discrimination (Davis et al., 2005). While much of this research has focused on Blacks, a recent study found that perceived racism had the greatest magnitude of effects on hypertension status for Native Hawaiians, after adjusting for the effects of age, sex, educational level, and level of Hawaiian cultural identity (Kaholokula et al., 2010). NHPs who were more acculturated to American ways of life were more likely to perceive racism and discrimination, suggesting that drawing upon NHP cultural heritage could be a strategy to improve the health and well-being of NHPs.

The confluence of these behavioral, genetic, and psychosocial factors may increase the risk of hypertension, placing NHPs at high risk of heart diseases and premature death. Moreover, many patients with hypertension develop diabetes; hypertension is often associated with impaired glucose tolerance, insulin resistance, and obesity (Gress et al., 2000).

DIABETES

In 2007, NHPs (20.6%) may have had the highest age-adjusted percentage of people with diabetes among all the racial groups in the United States, more than three times as high than Whites (6.8%) and about twice as high than Hispanics/Latinos (11.1%) and Asians (8.9%). (See Figure 1.) High prevalence of diabetes among Native Hawaiians has long been noted (Grandinetti et al., 1998; Sloan, 1963). A study of Native Hawaiians in two rural communities in Hawai'i found that the age-adjusted type 2 diabetes prevalence was four times as high as the average diabetes percentage of the U.S. National Health and Nutrition Examination Survey (NHANES) II population (Grandinetti et al., 1998). Other research has found a high prevalence (16.2%) of diabetes among Micronesians such as Chamorros (Chiem et al., 2006).

The high prevalence of diabetes mellitus may be explained in large part by the high prevalence of obesity and physical inactivity among Native Hawaiians and Pacific Islanders (Grandinetti et al., 1998). It has also been reported that diabetes is particularly prevalent among NHPs who have adopted more Westernized lifestyles (Collins et al., 1994; Okihiro and Harrigan, 2005).

Diabetes has detrimental effects on a range of health outcomes. Diabetic persons have been found to be at greater risk of mortality from cardiovascular disease, stroke, and renal disease (Moss et al., 1991) and suffer from lower health-related quality of life (Reddy, 2000). Diabetes is also related to an excess risk of hepatocellular carcinoma, the main form of liver cancer, and the increased prevalence of overweight and obesity likely contributes to it (Chuang et al., 2009). Given the high prevalence of diabetes among NHPs, major efforts should be put into primary prevention strategies to encourage healthy lifestyles and to reduce the risk of diabetes.

OBESITY

Obesity is associated with several chronic diseases, including Type-II diabetes, hypertension, heart diseases, various types of cancers, osteoarthritis, and psychosocial problems (Burton et al., 1985; Kumar and Singh, 2009; Must et al., 1999). The prevalence of having two or more chronic conditions increases with obesity (Must et al., 1999). An ideal body mass index (BMI) ranges from 18.5 to 24.9. Any person with a BMI of 25 to 29.9 is considered overweight and a BMI of 30 and greater is considered obese (National Heart, Lung, and Blood Institute, 2004).

An analysis of the 2007 NHIS data found that NHPs (31.0%) had a higher percentages of adults with obesity compared to most other racial groups. More than half of NHPs in the United States may either be overweight (31.7%) or obese (31.0%), indicating a very high rate of excess body weights for NHPs. (See Table 56.)

Table 6. Age-adjusted percentages of overweight and obesity among persons 18 years of age and over: United States, 2007

Race/Ethnicity	Overweight		Obese	
	%	SE	%	SE
White	35.4	0.5	25.4	0.4
Black	35.1	1.0	35.1	1.1
AI/AN	34.7	3.5	32.4	3.7
Asian	29.2	1.6	8.9	1.0
NHPI	*31.7	10.6	31.0	8.2
Hispanic/Latino	40.3	1.1	27.5	1.0

Source: 2008 NHIS reported data in CDC, 2010

* Estimates preceded by an asterisk have a relative standard error of greater than 30% and less than or equal to 50% and should be used with caution as they do not meet the standard of reliability or precision

Available evidence suggests that obesity is a common health problem affecting NHPs. The high prevalence of obesity among Native Hawaiians has long been noted (Aluli, 1991). In 2007, Native Hawaiians (43.5%) had the highest adult obesity percentage in Hawai'i, over twice as high as Whites (17.9%) and more than three times as high as those of Japanese Americans (11.3%) and Filipino Americans (13.4%). (See Table 5.) In California, NHPs (31.6%) had the highest percentage of people with obesity except for Blacks (34.9%), both exceeding the general population (22.7%) (CHIS, 2007). In a study of over 44,000 insured individuals of various racial and ethnic backgrounds, including Whites, Puerto Ricans, Hawaiians, and several Asian groups, Samoans had the highest percentage of obesity (Taira et al., 2004). Overweight and obesity percentages were also high among Chamorros (31.1% and 21.1%, respectively) in the United States (Chiem et al., 2006). Overweight and obesity percentages were high among Marshallese men (29.0% and 21.0%, respectively) living in the Republic of the Marshall Islands (Gittelsohn et al., 2003a).

Several factors for the high prevalence of overweight and obesity among NHPs are identified in existing literature. First, genetic and cultural factors may come into play, as suggested by a study reporting that a portion of Hawaiian ancestry was significantly associated with increased BMI and waist-to-hip ratio (Grandinetti et al., 1999). Second, increasing adoption of Western lifestyles by NHPs predisposed to be overweight may be responsible for the rise of the overweight and obesity epidemic among them (McGarvey, 1991). While traditional NHP culture may perceive large body size as both healthy and attractive (Cortes et al., 2001), the prevalence of overweight individuals was much lower in traditional Pacific Island societies than in more modernized ones. For example, the overweight percentage of Samoan women (46.1%) in Western Samoa is almost half that of Samoan women (80.0%) in Hawai'i (McGarvey, 1991). Compared to traditional Pacific Island lifestyles based on fishing and farming (i.e., active lifestyles), Western urban and modern living has led to increases in sedentary lifestyles and diets higher in fat and refined sugars, as well as decreased infant breast feeding (Okihiro and Harrigan, 2005). As is the case for most Americans, excessive dietary energy intake, high consumption of fat and protein, and lower consumption of dietary fiber predict a higher BMI for NHPs (Cortes et al., 2001; Gittelsohn et al., 2003a; Maskarinec et al., 2006).

Third, high consumption of fatty food by NHPs may have to do with food resources. For example, while there is considerable variation in food availability in the Marshall Islands, the majority of food consumed by the Marshallese populace is imported from other countries—primarily the United States but also Australia, Korea, and Japan. In addition to Western processed food, fatty food items such as turkey tails and necks and corned beef are imported and marketed (the phenomenon termed “fat dumping”), which may account at least in part for the high prevalence of obesity among Pacific Islanders residing on the islands (Gittelsohn et al., 2003a; Okihiro and Harrigan, 2005). Displacement of traditional diets based on fishing and cultivation of tropical plants may also be a factor.

Chronic conditions and morbidities associated with obesity have become a heavy burden on the health care system and on the quality of life of NHPIs (Kumar and Singh, 2009). Culturally-appropriate and effective intervention strategies targeting high-risk NHPI individuals (and addressing food production and distribution issues) are direly needed.

CANCERS

A study on cancer incidence and mortality among Asian and Pacific Islander populations in the U.S. using 1998 to 2002 data obtained from 14 U.S. state and regional population-based cancer registries (Miller et al., 2008) found that incidence of and deaths from various cancers are disproportionately high for NHPI men and women, especially Samoans and Native Hawaiians. While overall cancer incidence rates for NHPI men (531.6 per 100,000 persons) were lower than the cancer incidence rate for non-Hispanic White men (587.0 per 100,000 persons), cancer mortality rates were higher for Samoan (293.9 per 100,000 persons) and Native Hawaiian men (263.7 per 100,000 persons) than for non-Hispanic White men (241.3 per 100,000 persons) and for all the Asian ethnic groups included in the study (Miller et al., 2008). The high cancer mortality rates for Native Hawaiian and Samoan men may be due to the high lung cancer mortality rates for both Native Hawaiians (87.7 per 100,000 persons) and Samoans (74.0 per 100,000 persons), as well as the high stomach (40.9 per 100,000 persons), prostate (36.2 per 100,000 persons), and liver (32.9 per 100,000 persons) cancer mortality rates for the latter. The overall cancer incidence rates were also high for Samoan men (566.7 per 100,000 persons) and Native Hawaiian men (531.6 per 100,000 persons), which may be attributable to the high rates of prostate and lung cancers for both groups, as well as the high liver cancer rate for Samoan men. (See Table 7.)

The same study found that NHPI women had higher cancer incidence rates than non-Hispanic White and Asian women. Tongan women (504.7 per 100,000 persons), Native Hawaiian women (488.5 per 100,000 persons), and Samoan women (472.0 per 100,000 persons) had the highest overall cancer incidence rates—all exceeding the rates for non-Hispanic White women (448.5 per 100,000 persons) and for all Asian ethnic groups—mainly due to their high breast and lung cancer rates (Miller et al., 2008). The extremely high breast cancer incidence rate for Native Hawaiian women (175.8 per 100,000 persons) far exceeds that of non-Hispanic White women (145.2 per 100,000 persons), revealing that these women constitute high risk groups for breast cancer. (See Table 8.)

Even more troubling is the high cancer death rates for NHPI women. Samoan women (209.3 per 100,000 persons) and Native Hawaiian women (198.9 per 100,000 persons) had the highest overall cancer death rates—higher than the rates for non-Hispanic White women (171.7 per 100,000 persons) and all Asian women (Miller et al., 2008). This is accounted for in large part by the high lung cancer death rates for Native Hawaiian women (47.6 per 100,000 persons) and Samoan women (42.0 per 100,000 persons), as well as high breast cancer death rates for both Samoan (36.2 per 100,000 persons) and Native Hawaiian women (33.5 per 100,000 persons).

CANCER PREVALENCE AMONG ADULTS IN THE USAPI

Cancer rates are exceedingly high in some USAPI. Chamorros (15.5 per 100,000 persons) had the highest age-adjusted rate of mouth and pharynx cancer from 2000 to 2005, almost six times the U.S. rate. The age-adjusted nasopharyngeal cancer mortality rate for the population in Guam is over 20 times the U.S. rates for those ages 45 through 74. The age-adjusted rate for Chamorro men (12.2 per 100,000 persons) is 61 times the U.S. rate for men (0.2 per 100,000 persons). Its equivalent for Chamorro women (5.6 per 100,000 persons) is 28 times the U.S. rate for both sexes (Guam Comprehensive Cancer Control Coalition, 2007).

Cancer has consistently been one of the top five leading causes of death in the Marshall Islands. The number of newly diagnosed cases of cancer is on the rise. Since nationwide surveillance of cancer incidence began with the inception of the Marshall Islands National Cancer Registry in 2004, the leading types of cancer have been identified. Between 2003 and 2005, and again in 2007, lung cancer was the most common cancer, followed by cervical cancer (Republic of the Marshall Islands National Comprehensive Cancer Control Program, 2007).

Table 7. Top five age-adjusted cancer incidence and mortality rates* in men: United States, 1998–2002

Cancer incidence rates	Native Hawaiian			Samoan			Tongan			White		
	Cancer	Rate	95% CI	Cancer	Rate	95% CI	Cancer	Rate	95% CI	Cancer	Rate	95% CI
	All	531.6	(503.7, 561.1)	All	566.7	(498.8, 645.5)	All	428.8	(329.9, 555.9)	All	587.0	(585.6, 588.5)
1	Prostate	119.7	(106.1, 135.1)	Prostate	144.1	(110.0, 190.4)	Lung	107.0	(55.2, 193.0)	Prostate	170.0	(169.3, 170.8)
2	Lung	109.8	(97.4, 123.9)	Lung	111.9	(84.4, 151.1)	Prostate	85.0	(44.5, 157.4)	Lung	89.2	(88.7, 89.8)
3	Colorectal	65.7	(56.1, 77.1)	Liver	54.5	(35.2, 86.9)	NR	-	-	Colorectum	65.2	(65.2, 66.1)
4	Bladder	21.2	(15.3, 29.1)	Stomach	53.0	(33.2, 86.1)	NR	-	-	Bladder	43.0	(42.6, 43.4)
5	Non-Hodgn	19.6	(14.8, 26.3)	Colorectum	43.1	(26.6, 72.8)	NR	-	-	Skin	29.3	(29.0, 29.6)
Cancer mortality rates	Native Hawaiian			Samoan			Tongan			White		
	Cancer	Rate	95% CI	Cancer	Rate	95% CI	Cancer	Rate	95% CI	Cancer	Rate	95% CI
	All	263.7	(243.7, 285.4)	All	293.9	(247.6, 348.6)	NR	-	-	All	241.3	(240.5, 242.1)
1	Lung	87.7	(76.4, 100.7)	Lung	74.0	(53.6, 102.9)	NR	-	-	Lung	72.2	(71.8, 72.7)
2	Colorectum	26.9	(20.8, 34.9)	Stomach	40.9	(24.1, 67.6)	NR	-	-	Prostate	27.7	(27.4, 28.0)
3	Prostate	21.9	(15.7, 30.1)	Prostate	36.2	(18.9, 64.4)	NR	-	-	Colorectum	24.6	(24.3, 24.8)
4	Stomach	14.1	(9.9, 20.2)	Liver	32.9	(19.3, 56.1)	NR	-	-	Pancreas	12.6	(12.4, 12.8)
5	Liver	11.8	(7.9, 17.7)	Colorectum	31.6	(17.2, 56.0)	NR	-	-	Non-Hodgn	10.6	(10.5, 10.8)

Source: Miller et al., 2008

NR = not reported; Lung = lung and bronchus; Liver = liver and intrahepatic bile duct; Non-Hodgn = non-Hodgkin lymphoma; Endometrium = corpus uterus, NOS; Bladder = Urinary bladder; Skin = Melanoma of the skin

¹ Rates are average annual per 100,000 persons, age-adjusted to the 2000 US standard population for the following SEER areas: Atlanta Detroit, Seattle/Puget Sound; and the states of California (registries for Los Angeles County, the Greater San Francisco Bay Area, and the rest of California), Connecticut, Hawai'i, Iowa, Kentucky, Louisiana, New Jersey, New Mexico, and Utah.

Table 8. Top five age-adjusted cancer incidence and mortality rates* in women: United States, 1998–2002

Cancer incidence rates	Native Hawaiian			Samoan			Tongan			White		
	Cancer	Rate	95% CI	Cancer	Rate	95% CI	Cancer	Rate	95% CI	Cancer	Rate	95% CI
	All	488.5	(466.5, 511.3)	All	472.0	(421.5, 528.6)	All	504.7	(414.1, 616.6)	All	448.5	(447.3, 449.6)
1	Breast	175.8	(163.0, 189.4)	Breast	102.5	(81.7, 129.5)	Breast	118.0	(78.1, 181.2)	Breast	145.2	(144.5, 145.8)
2	Lung	69.7	(61.2, 79.1)	Endo- me- trium	66.1	(50.3, 88.2)	Endo- me- trium	91.2	(56.4, 150.1)	Lung	59.0	(58.6, 59.4)
3	Colorec- tum	44.0	(37.3, 51.6)	Lung	56.9	(39.6, 81.3)	NR	-	-	Colorec- tum	47.6	(47.2, 47.9)
4	Endo- me- trium	37.5	(31.9, 44.1)	Colorec- tum	38.6	(24.1, 60.5)	NR	-	-	Skin	26.0	(25.7, 26.2)
5	Pan- creas	18.6	(14.3, 23.9)	Cervix Uteri	18.1	(10.6, 32.7)	NR	-	-	Non- Hodgn	19.3	(19.0, 19.5)
Cancer mortality rates	Native Hawaiian			Samoan			Tongan			White		
	Cancer	Rate	95% CI	Cancer	Rate	95% CI	Cancer	Rate	95% CI	Cancer	Rate	95% CI
	All	198.9	(184.4, 214.4)	All	209.3	(176.5, 248.2)	NR	-	-	All	171.7	(171.1, 172.2)
1	Lung	47.6	(40.6, 55.6)	Lung	42.0	(27.1, 63.7)	NR	-	-	Lung	44.5	(44.2, 44.8)
2	Breast	33.5	(27.9, 40.1)	Breast	36.2	(24.0, 54.9)	NR	-	-	Breast	27.8	(27.5, 28.0)
3	Pan- creas	16.8	(12.7, 21.8)	NR	-	-	NR	-	-	Colorec- tum	17.3	(17.1, 17.5)
4	Colorec- tum	13.1	(9.5, 17.7)	NR	-	-	NR	-	-	Ovary	9.8	(9.6, 9.9)
5	Stom- ach	10.3	(9.5, 17.7)	NR	-	-	NR	-	-	Pan- creas	9.5	(9.4, 9.6)

Source: Miller et al., 2008

NR = not reported; Lung = lung and bronchus; Liver = liver and intrahepatic bile duct; Non-Hodgn = non-Hodgkin lymphoma

* Rates are average annual per 100,000 persons, age-adjusted to the 2000 US standard population for the following SEER areas: Atlanta; Detroit; Seattle/Puget Sound; and the states of California (registries for Los Angeles County, the Greater San Francisco Bay Area, and the rest of California), Connecticut, Hawai'i, Kentucky, Louisiana, New Jersey, New Mexico, and Utah.

Also troubling is the poor survival of some NHPI cancer patients. Using 1991 to 2003 data from all 17 U.S. cancer registries participating in the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program, a study (Goggins and Wong, 2007) found that Samoans were most likely among all racial and ethnic groups to have advanced disease and the worst cause-specific survival for all the cancer sites considered, including breast, prostate, lung, colorectal, stomach, and liver cancers. NHPIs also had significantly worse cause-specific survival than did non-Hispanic Whites for most cancer sites, but generally had better survival than Blacks and American Indians/Alaska Natives. These findings indicate that much of the survival disadvantage for NHPI groups may be a consequence of late diagnosis and that targeted interventions might be needed to reduce cancer mortality in this group. The lower socioeconomic status of Samoans may also be an important contributing factor (Goggins and Wong, 2007).

The high breast cancer mortality rates of Samoan women may be attributed at least in part to their low screening rate. A study conducted from 1996 to 1997 with Samoan women living in American Samoa, Hawai'i, and Los Angeles found low utilization of clinical breast exams (CBE) and mammograms. More than half of the American Samoan women (55.6%) ages 30 years and older reported ever having had a clinical CBE and less than one in three American Samoan women (32.9%) ages 40 and older having received mammograms. Less than one in three women (30.8%) surveyed had received a CBE according to age-specific American Cancer Society guidelines. Age-specific CBE and mammogram percentages were significantly lower in Samoa (19.8% and 3.6%, respectively) than in Hawai'i (39.7% and 24.4%, respectively) and Los Angeles (33.3% and 22.4%, respectively), suggesting that screening rates were lower in the USAPI (Mishra et al., 2001). Low breast cancer screening prevalence among Samoan women may contribute to a smaller percentage of breast cancer diagnosed at an early stage and a high breast cancer death percentage. Those who had visited a gynecologist less than a year ago were over five times as likely to have had CBEs and over seven times as likely to have had mammograms as those who had never visited a gynecologist (Mishra et al., 2001), indicating that education on breast cancer and screening by medical practitioners may be effective in increasing screening.

Breast cancer screening may have become more prevalent among NHPI women of some ethnic groups in recent years, especially those who live in large metropolitan areas. A recent study conducted with 110 Chamorro women over the age of 40 (with no history of breast cancer) living in San Diego, California indicated a relatively high degree of breast cancer awareness and screening. Almost all of the survey respondents reported having had a mammogram and three out of four within the past two years (92.7% and 75.9%, respectively). Almost all had heard of mammograms and believed that early detection of cancer may help to cure it (98.2% and 85.3%, respectively) (Cruz et al., 2008). Such high degree of knowledge and screening percentages of breast cancer may be due in part to the small, potentially skewed sample with a high degree of health insurance coverage (87.3%), particularly because of the high percentage of Chamarros (50.9%) in the military.

These differences in breast screening percentages among NHPI women of different ethnic and sociocultural backgrounds point to a need to identify high risk groups and make concerted efforts to increase awareness of breast cancer and access to screening.

Although more research is needed in this area, past research discussed above indicates that Samoans, especially those who live in more traditional societies, may constitute high risk groups. But they may not receive targeted interventions to the same extent as other larger disadvantaged minority groups (Goggins and Wong, 2007).

ASTHMA

NHPIs (13.2%) may have a higher percentage of adults with asthma than the other racial groups in the United States including Whites (11.1%), Blacks (10.2%), American Indian or Alaska Natives (10.8%), and Asians (7.9%). (See Figure 1.) In 2000, the asthma rate of Native Hawaiians in Hawai'i (139.5 per 1,000 persons) was almost twice the rate for all other races in Hawai'i (71.5 per 1,000 persons) (CDC).

Asthma comprises a range of heterogeneous phenotypes that differ in presentation, etiology, and pathophysiology, with the risk factors for each recognized phenotype of asthma including genetic, environmental, and host factors. In addition to the recurrence of childhood asthma, occupational exposures to substances known to cause asthma, as well as smoking tobacco or marijuana, may increase the risk for adult asthma (Subbarao et al., 2009). In addition, asthma care regimens required for effective control of asthma may be compromised by psychological factors such as anxiety and depression (Oraka et al., 2010). Little research has been reported on risk factors that may cause and exacerbate asthma for NHPI adults and children or ways to control it effectively, pointing to the need for research on NHPIs in this area.

DEPRESSION/MENTAL HEALTH

A large proportion of NHPI adults suffer from poor mental health. Our analysis of the 2008 BRFSS data found that one in five NHPI adults (20.0%) had a diagnosed depressive disorder—the highest proportion among all racial groups in the United States. The prevalence of diagnosed anxiety disorder among NHPIs (15.7%) was also high—higher than those of all racial groups in the United States with the exception of American Indians/Alaska Natives (17.5%). (See Table 9.)

Table 9. Percentages of depressive and anxiety disorder: United States, 2008

Race/Ethnicity	Ever told you had a depressive disorder			Ever told you had an anxiety disorder		
	All	Men	Women	All	Men	Women
White	16.8	12.1	2.1	12.8	9.5	15.9
Black	10.7	7.9	13.0	9.1	6.3	11.3
AI/AN	17.4	13.9	21.4	17.5	16.1	19.0
Asian	3.8	2.1	5.8	2.6	1.7	3.7
NHPI	20.0	32.0	5.5	15.7	19.9	10.7
Hispanic/Latino	11.2	7.9	15.2	8.5	7.0	10.3
<i>p</i>	<0.0001	<0.001	<0.0001	<0.0001	<0.05	<0.0001

Source: APIAHF analysis of 2008 Behavioral Risk Factor Surveillance System (BRFSS) data, 2010

Note: data were weighted to account for the selection probability, as well as the racial, age, and gender compositions of the population.

Somewhat unconventionally, prevalence of both depressive and anxiety disorders is higher for NHPI adult men than women. Indeed, the high frequency of such disorders among NHPI men, especially that of depressive disorder, are striking. Almost one in three NHPI men (32.0%) had diagnosed depressive disorder, compared to one in ten NHPI women (5.8%). Almost one in five NHPI men (19.9%) had diagnosed anxiety disorder, compared to one in ten NHPI women (10.7%).

Although national statistics on suicide rates among NHPI adults are unavailable, available state and local data indicate high suicide rates among them. From 1999 to 2005, the suicide attempt rate among NHPIs was twice as high as that among non-Hispanic Whites (Suicide Prevention Resource Center, 2009).

HIV

From 2005 to 2008, HIV incidence rates for NHPs ranged from 22.8 to 34.8 per 100,000 persons. While these rates are much lower than those for Blacks and similar to those for Hispanics/Latinos, they were substantially higher than those for all other racial groups. The rates of persons of living with diagnosed AIDS for NHPs were lower than those for Blacks and Hispanics/Latinos but higher than those for all other racial groups. For male adult or adolescent NHPs, the primary mode of transmission was male-to-male sexual contact. For female adult or adolescent NHPs, the most frequent mode of transmission was heterosexual contact, closely followed by injection drug use (CDC, 2010b). (See Table 10.)

Table 10. Estimated rates* of HIV and AIDS diagnoses: United States

Race/Ethnicity	Rates of HIV diagnoses infection			Rates of persons living with an AIDS diagnosis			
	2005	2006	2007	2008	2005	2006	2007
White	8.0	7.7	8.3	8.2	75.3	77.9	80.4
Black or AA	68.2	66.8	70.5	73.7	509.5	528.9	546.7
AI or AN	10.3	9.4	11.2	11.9	69.7	71.8	73.7
Asian	6.1	5.7	7.2	7.2	31.3	33.0	35.3
NHPI	34.8	32.0	27.8	22.8	80.5	90.4	99.4
Hispanic/Latino	26.6	25.6	26.4	25.0	185.7	189.6	192.8
Multiple races	19.7	13.9	15.9	14.1	89.7	90.6	89.5

Source: National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, 2010

*Estimated rates resulted from statistical adjustment that accounted for reporting delays and missing risk-factor information, but not for incomplete reporting. Rates are per 100,000 population. Rates are not calculated by transmission category because of the lack of denominator data.

Timely health care seeking is critical to preventing and treating HIV/AIDS. About one in three NHPs (34.0%) diagnosed with HIV infection received an AIDS diagnosis within 12 months (CDC, 2010b). Early detection and treatment of infected individuals improve primary prevention at the population level by diminishing the risk of further viral transmission. It also leads to secondary prevention for individual patients by enabling prompt management of infection complications (Bhattacharya, 2004). Given a significant trend in progression among NHPs from HIV infection to AIDS within 12 months of diagnosis, it is imperative to identify and address the barriers to testing at the individual and community level as the first step toward facilitating timely diagnosis and treatment of HIV/AIDS.

LIFE EXPECTANCIES AND AGE-ADJUSTED DEATH RATES

Given the host of illnesses disproportionately affecting NHPs, it is not surprising that NHPs are likely to die younger than most other racial groups. In California, life expectancies for Pacific Islander men (70.5 years) are almost ten years less than Asian men (81.5 years). There is also a near ten year difference between the life expectancies between Pacific Islander women (77.8 years) and Asian women (88.1 years). The difference between Pacific Islanders and both Latinos (80.5) and American Indians (78.2) is also substantial. (See Table 11.)

Similarly, the age-adjusted death rate for NHPs in California was 695.0 per 100,000 persons in 2007, again higher than all other racial groups but Blacks (990.7 per 100,000 persons). (See Table 12.)

Table 11. Life expectancies: California, 2000

Race/Ethnicity	Life expectancies in CA		
	All	Men	Women
All Californians	78.4	76.0	80.8
White	77.8	75.5	80.1
Black	72.1	69.0	75.3
All Asian groups	83.0	80.5	85.2
Asian Indian	84.3	81.5	88.1
Cambodian ¹	77.3	NR	NR
Chinese	83.7	81.8	85.5
Filipino	82.5	79.7	85.3
Hmong ²	79.3	NR	NR
Japanese	82.9	80.9	84.6
Korean	83.2	80.8	85.2
Laotian	75.3	NR	NR
Vietnamese	83.8	82.0	85.7
All Latino groups	80.5	77.7	83.2
Mexican	79.3	76.6	82.0
Puerto Rican	79.9	77.1	82.7
Cuban	80.7	77.5	83.9
Central/South American	78.4	75.5	80.6
American Indian	78.2	76.6	79.6
Pacific Islander	74.0	70.5	77.8

Source: Public Policy Institute of California, 2004

NR = not reported; life expectancies are not reported in cases where the 90% confidence interval exceeds one year around the estimated life expectancy.

¹ Calculations are three-year averages using data from 1999–2001 death certificates.

² Calculations are two-year averages using data from 2000–2001 death certificates.

Table 12. Age-adjusted death rates*: California, 2007

Race/ethnicity	Age-adjusted death rates		
	All	Men	Women
Total	662.8	782.5	564.5
2 or more races	282.9	321.2	246.6
White/other/unknown	721.3	847.4	618.8
Black	990.7	1185.8	836.0
AI/AN	483.5	543.3	424.2
Asian	427.5	520.8	356.3
NHPI	695.0	759.7	632.9
Hispanic/Latino	525.4	622.6	440.8

Source: California Department of Public Health, 2007

Note: The race and ethnic groups in this table utilize seven mutually exclusive race and ethnicity categories. These categories are Hispanic and the following non-Hispanic categories: two or more races, AI or AN, Asian, Black or AA, NHPI, White, other race, and unknown (includes refused to state).

* Rates are per 100,000 population in specified groups. Age-adjusted rates are calculated using Year 2000 U.S. standard population.

HEALTH BEHAVIORS

Alcohol Use

From 2005 to 2007, the percentage of current alcohol use (defined as having at least one drink in the past 30 days) for NHPIs (46.4%) was lower than for Whites (64.2%) and similar to other racial groups. However, the percentage of heavy drinking, (defined by 5 drinks or more in a row within one day on at least 12 days in the past year), may be higher among NHPI adults (13.7%) than among all other racial groups. When stratified by gender, NHPI men (23.6%) had one of the highest percentages of heavy drinking among men of all other racial groups. The current drinking percentage for NHPI women (46.4%) was among the highest but exceeded by White women (59.0%). (See Table 13.) Data on heavy drinking among women were unavailable.

Table 13. Age-adjusted percentages of alcohol drinking status for adults 18 years of age and over: United States, 2005–2007

All	Current drinking ¹		Heavy drinking ²	
	%	SE	%	SE
Race/Ethnicity				
White	64.2	0.3	10.0	0.2
Black	47.7	0.6	5.9	0.3
AI/AN	51.5	3.1	11.7	1.7
Asian	43.1	1.0	3.8	0.4
NHPI	46.4	5.6	13.7	4.0
Hispanic/Latino	50.8	0.6	8.6	0.3
Men	Current drinking¹		Heavy drinking²	
Race/Ethnicity	%	SE	%	SE
White	69.9	0.4	15.6	0.3
Black	57.3	1.0	10.7	0.6
AI/AN	57.5	3.5	17.2	2.7
Asian	55.3	1.5	6.2	0.7
NHPI	45.0	8.0	23.6	6.5
Hispanic/Latino	63.1	0.8	14.3	0.5
Women	Current drinking¹		Heavy drinking²	
Race/Ethnicity	%	SE	%	SE
White	59.0	0.4	4.6	0.2
Black	40.2	0.7	2.0	0.2
AI/AN	45.3	4.3	6.1	1.5
Asian	31.8	1.3	1.5	0.4
NHPI	46.4	7.2	-	†
Hispanic/Latino	38.2	0.8	2.6	0.2

Source: 2005–2007 NHIS data reported in CDC, 2010

† Estimates with a relative standard error greater than 50% are indicated with a dagger but are not shown.

¹ Had at least 12 drinks in lifetime and at least 1 drink in the past year.

² Adults who had at least one drink in the past year (current drinkers) were asked on how many days in the past year they had five or more drinks.

Cigarette Use

According to the national data available, overall prevalence of cigarette use among NHPs in the U.S. is not relatively high. From 2005 to 2007, NHPs (16.5%) had one of the lowest current cigarette smoking frequency among all racial and ethnic groups with the exception of Asians (10.9%) and Hispanics/Latinos (14.2%). Stratified by gender, the prevalence of cigarette use among men is high: about one in four NHP adult men (26.1%) were current smokers, this rate being potentially higher than men of all other races but American Indian/Alaska Native (30.3%). (See Table 14.) The current smoking percentage for NHP women was unavailable.

Table 14. Age-adjusted percentages of cigarette smoking status for adults 18 years of age and over: United States, 2005–2007

Race/Ethnicity	Current smoking*					
	All		Men		Women	
	%	SE	%	SE	%	SE
White	20.9	0.2	23.0	0.4	18.8	0.3
Black	20.7	0.5	25.3	0.8	16.9	0.5
AI/AN	27.2	3.1	30.3	4.7	24.3	2.8
Asian	10.9	0.6	17.3	1.1	4.8	0.5
NHPI	16.5	4.2	26.1	6.7	-	†
Hispanic/Latino	14.2	0.4	18.6	0.7	9.6	0.4

Source: 2005–2007 NHIS data reported in CDC, 2010

† Estimates with a relative standard error greater than 50% are indicated with a dagger but are not shown.

* Smoked at least 100 cigarettes in lifetime and currently smoked.

However, other data show higher smoking percentages among NHPs. In California, the current smoking percentage for NHP adults (21.0%) was higher than that for all adults (14.4%) (California Health Interview Survey, 2005 and 2007). Using various state and local data, a review of tobacco use behaviors among Asian Americans and NHPs reported that Native Hawaiians, American Samoans, Chuukese, and Palauans had use prevalence approximately ranging between two to three in five men (42.0% to 58.3%) and between one to seven in ten women (11.0% to 67.2%). While smoking among Asian Americans is more prevalent among men, that is not the case for Pacific Islanders, with almost one in four NHP women (24.4%) reporting current smoking (Lew and Tanjasiri, 2003).

Health risks associated with cigarette use have been well established. Cigarette smoking is a major risk factor for a number of life-threatening illnesses, including heart disease, several kinds of cancer (lung, larynx, esophagus, pharynx, mouth, pancreas, kidney, cervix, and bladder), and chronic lung disease. Smoking during pregnancy causes spontaneous abortions, low birth weight, and sudden infant death syndrome (Difranza and Lew, 1995). Smoking-related health risks may be even greater in persons with hypertension or diabetes, because smoking increases the risk of atherosclerotic vascular diseases in patients with hypertension (Omvik, 1996), as well as coronary heart disease and stroke in type 2 diabetic patients (Eliasson, 2003). Interventions to help NHPs to quit smoking might be warranted.

Physical Activity

From 2005 to 2007, about two in five NHP adults (42.0%) were physically inactive, with others getting at least some exercise or regular exercise. This estimate is similar to other races such as Whites (38.1%), American Indians/Alaska Natives (38.4%), and Asians (39.7%) and significantly lower than Blacks (51.2%) and Hispanics/Latinos (53.5%). (See Table 15.) However, given the burden of chronic diseases already present in many NHPs and health benefits physical activity may provide for such individuals, such as lowering blood pressure in hypertensive patients (Halm and Amoako, 2008) and glucose-lowering and insulin-sensitivity-improving effects for type 2 diabetes (Albright et al., 2000), NHPs might particularly benefit from interventions to increase physical activity.

Table 15. Age-adjusted percentages of leisure-time physical activity status¹ for adults 18 years of age and over: United States, 2005–2007

All	Inactive		At least some ² (some+regular)		Some, less than regular		Regular	
	%	SE	%	SE	%	SE	%	SE
Race/ Ethnicity								
White	38.1	0.43	61.9	0.43	30.0	0.30	31.8	0.32
Black or AA	51.2	0.75	48.8	0.75	25.6	0.54	23.2	0.55
AI or AN	38.4	2.39	61.6	2.39	35.3	2.19	26.3	2.30
Asian	39.7	1.07	60.3	1.07	30.6	0.99	29.7	0.96
NHPI	42.0	6.78	58.0	6.78	27.1	4.97	30.8	5.48
Hispanic/ Latino	53.5	0.65	46.5	0.65	24.2	0.52	23.3	0.52
Men	Inactive		At least some ² (some+regular)		Some, less than regular		Regular	
Race/ Ethnicity	%	SE	%	SE	%	SE	%	SE
White	37.2	0.51	62.8	0.51	29.6	0.41	33.2	0.42
Black	46.6	1.03	53.4	1.03	24.8	0.81	28.6	0.92
AI/AN	38.0	3.68	62.0	3.68	35.0	3.27	27.0	3.34
Asian	36.5	1.41	63.5	1.41	30.9	1.38	32.6	1.41
NHPI	45.6	9.86	54.4	9.86	31.1	8.06	23.3	6.18
Hispanic/ Latino	51.5	0.91	48.5	0.91	24.2	0.75	24.3	0.78
Women	Inactive		At least some ² (some+regular)		Some, less than regular		Regular	
Race/ Ethnicity	%	SE	%	SE	%	SE	%	SE
White	38.9	0.48	61.1	0.48	30.5	0.36	30.6	0.40
Black	55.0	0.87	45.0	0.87	26.2	0.69	18.8	0.58
AI/AN	38.2	3.12	61.8	3.12	36.4	2.70	25.4	2.62
Asian	42.9	1.49	57.1	1.49	30.3	1.35	26.8	1.27
NHPI	40.5	5.38	59.5	5.38	*19.5	7.02	39.9	9.83
Hispanic/ Latino	55.4	0.80	44.6	0.80	24.1	0.65	20.5	0.65

Source: 2005–2007 NHIS data reported in CDC, 2010

* Estimates preceded by an asterisk have a relative standard error of greater than 30% and less than or equal to 50%. These should be interpreted with caution as they do not meet the standard of reliability or precision.

¹ Questions related to leisure-time physical activity were phrased in terms of current behavior and lack a specific reference period. “Inactive” is no light-moderate or vigorous leisure-time physical activity lasting at least 10 minutes; “At least some” is some light-moderate or vigorous leisure-time physical activity lasting at least 10 minutes, regardless of the frequency or duration of the activity; “Some, less than regular” is some light-moderate or vigorous leisure-time physical activity lasting at least 10 minutes but the activity did not meet the definition for regular leisure-time physical activity; “Regular” is vigorous leisure-time physical activity at least three times per week lasting at least 20 minutes each time or light-moderate leisure time physical activity at least five times per week lasting at least 30 minutes or both.

² Any vigorous or light-moderate leisure-time physical activity, regardless of frequency or duration.

ORAL HEALTH

Poor oral health and untreated oral diseases and conditions can have a significant impact on quality of life. They can result in needless pain and suffering; difficulty in speaking, chewing, and swallowing; increased costs of care; loss of self-esteem; decreased economic productivity through lost work and school days; and, in extreme cases, death. Oral and pharyngeal cancers, which primarily affect adults over the age of 55, result in significant illnesses, disfigurement, substantial cost associated with treatment, and more than 8,000 deaths annually (DHHS, 2000; Landis et al., 1999).

National data on NHPI oral health are scarce. Baseline data for Healthy People 2010, the only national data currently available, reveal poor oral health of NHPI children: more than three in four NHPI youth (79.0%) aged 6 to 8 years have tooth decay or cavities. While this percentage is lower than American Indians/Alaska Natives (91.0%) and Asians (90.0%), it is much higher than those for Whites (51.0%) and Blacks (50.0%). Prevalence of having untreated dental decay for NHPI children in the same age group (39.0%) was higher than for Whites (36.0%) and Blacks (26.0%), though much lower than for Asians (71.0%) and American Indians/Alaska Natives (69.0%). (See Table 16.)

Table 16. Oral health for children ages 6 to 8 years: Hawai'i and California, 1988–1994

Race/Ethnicity	Percent dental caries	Percent untreated dental decay
White	51.0	26.0
Black	50.0	36.0
AI/AN ¹	91.0	69.0
Asian ²	90.0	71.0
NHPI ³	79.0	39.0
Hispanic/Latino	DSU	DSU
Mexican American	68.0	43.0

Source: National Institute of Dental and Craniofacial Research, 2010.

DSU = data are statistically unreliable

¹ Data are for HIS service areas, 1999

² Data are for California, 1993-1994

³ Data are for Hawai'i, 1999

Data collected in Hawai'i also demonstrate oral health disparities disproportionately affecting NHPs. The 2008 Hawai'i State Behavioral Risk Factor Surveillance Survey (BRFSS) found that NHP adults were less likely to access oral health care than Hawai'i's other major racial and ethnic populations. About half of non-Native Hawaiian Pacific Islander adults (44.6%) had visited a dentist or dental clinic in the past year—one of the lowest frequencies among all the major racial and ethnic groups in Hawai'i, along with Native Hawaiians (61.6%) and Filipinos (63.1%). (See Table 17.) Similarly, Native Hawaiians adults (60.8%) and other Pacific Islander adults (52.4%) had the lowest percentage of having their teeth cleaned by a dentist or hygienist in the past year. (See Table 18.)

Table 17. Last visit to dentist or dental clinic: Hawai'i, 2008

Race/ Ethnicity	Never		<1 year		1 to <2 years		2 to <5 years		More than 5 years	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Caucasian	0.0	(0.0, 0.0)	78.5	(76.4, 80.7)	8.9	(7.3, 10.5)	6.6	(5.4, 7.8)	6.0	(4.8, 7.1)
Native Hawaiian	0.3	(0.0, 0.8)	61.6	(56.6, 66.6)	13.3	(9.9, 16.7)	14.0	(10.3, 17.6)	10.8	(7.6, 14.0)
Chinese	0.1	(0.0, 0.3)	83.2	(78.4, 88.0)	5.3	(2.5, 8.1)	6.8	(3.4, 10.1)	4.6	(2.0, 7.2)
Filipino	0.8	(0.1, 1.5)	63.1	(58.0, 68.3)	15.2	(11.0, 19.3)	11.2	(7.9, 14.6)	9.7	(6.5, 12.9)
Japanese	0.4	(0.0, 0.8)	80.0	(77.1, 82.8)	8.4	(6.2, 10.5)	5.2	(3.7, 6.7)	6.1	(4.5, 7.6)
Black	0.0	NA	84.8	(75.9, 93.6)	5.3	(0.7, 9.9)	8.2	(0.8, 15.6)	1.7	(0.0, 4.3)
AI/AN	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Other Asian	0.0	NA	75.1	(66.0, 84.3)	8.3	(3.1, 13.5)	13.7	(6.2, 21.1)	2.9	(0.0, 5.9)
Other Pacific Islander	3.5	(0.0, 8.3)	44.6	(30.6, 58.7)	13.9	(4.7, 23.0)	25.8	(12.6, 39.1)	12.2	(2.3, 22.1)
Other	0.2	(0.0, 0.5)	69.1	(58.5, 79.7)	12.0	(5.5, 18.5)	11.3	(3.8, 18.9)	7.4	(1.7, 13.1)

Source: 2008 Hawai'i BRFSS data reported in Hawai'i State Department of Health, 2010

NA = not applicable; NR = not reported

Table 18. Last time teeth were cleaned by dentist or hygienist: Hawai'i, 2008

Race/ Ethnicity	Never		<1 year		1 to <2 years		2 to <5 years		More than 5 years	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Caucasian	0.2	(0.0, 0.4)	76.9	(74.7, 79.1)	9.1	(7.6, 10.7)	7.7	(6.3, 9.1)	6.1	(4.8, 7.3)
Native Hawaiian	0.8	(0.1, 1.6)	60.8	(55.6, 65.9)	13.3	(9.7, 16.9)	14.5	(10.7, 18.4)	10.5	(7.4, 13.6)
Chinese	0.2	(0.0, 0.7)	83.8	(78.9, 88.7)	6.3	(3.2, 9.4)	5.9	(2.6, 9.2)	3.7	(1.2, 6.2)
Filipino	0.5	(0.0, 1.3)	65.7	(60.6, 70.9)	14.1	(10.2, 18.0)	10.7	(7.4, 14.0)	9.0	(5.8, 12.2)
Japanese	0.1	(0.0, 0.3)	80.6	(77.8, 83.5)	7.9	(5.8, 9.9)	5.1	(3.6, 6.7)	6.2	(4.6, 7.8)
Black	0.0	NA	85.8	(77.7, 93.9)	6.9	(1.4, 12.3)	4.4	(0.0, 9.7)	3.0	(0.0, 6.0)
AI/AN	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Other Asian	2.1	(0.0, 5.1)	71.1	(61.3, 80.9)	6.8	(2.1, 11.5)	18.3	(9.8, 26.7)	1.8	(0.0, 3.9)
Other Pacific Islander	0.0	NA	52.4	(37.5, 67.3)	9.5	(1.4, 17.6)	19.6	(8.1, 31.1)	18.5	(5.1, 31.9)
Other	0.9	(0.0, 2.2)	66.2	(55.0, 77.4)	9.3	(3.4, 15.3)	14.4	(5.4, 23.3)	9.2	(3.1, 15.2)

Source: 2008 Hawai'i BRFSS data reported in Hawai'i State Department of Health, 2010

NA = not applicable; NR = not reported

Given the low prevalence of dental care use, it may not be surprising that NHPs had poorer oral health than other groups in Hawai'i, as indicated by the number of permanent teeth removed. Only about one in three other Pacific Islanders (33.0%) had no permanent teeth removed, the lowest proportion among all the major racial and ethnic groups in Hawai'i, followed by the rates for Filipinos (51.3%) and Native Hawaiians (54.4%). Native Hawaiians (12.6%) had one of the highest percentages of having more than 6 (but not all) teeth removed, and other Pacific Islanders (3.0%) had high percentages of having all teeth removed among all racial and ethnic groups but Blacks (3.5%). (See Table 19.)

Table 19. Number of permanent teeth removed: Hawai'i, 2008

Race/ Ethnicity	None		1 to 5 teeth		6+ but not all		All	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Caucasian	63.6	(61.1, 66.1)	27.2	(24.9, 29.4)	6.9	(5.7, 8.2)	2.3	(1.6, 3.0)
Native Hawaiian	54.4	(49.3, 59.5)	30.4	(25.9, 35.0)	12.6	(9.2, 16.0)	2.6	(1.4, 3.7)
Chinese	63.9	(57.6, 70.2)	28.6	(22.6, 34.5)	5.2	(2.8, 7.5)	2.3	(0.8, 3.9)
Filipino	51.3	(46.1, 56.5)	36.9	(32.0, 41.8)	9.7	(7.0, 12.4)	2.1	(1.2, 3.0)
Japanese	59.0	(55.5, 62.4)	29.0	(25.9, 32.2)	9.3	(7.5, 11.1)	2.7	(1.8, 3.6)
Black	60.5	(47.0, 74.0)	27.5	(15.9, 39.1)	8.5	(0.0, 17.5)	3.5	(0.0, 9.0)
AI/AN	NR	NR	NR	NR	NR	NR	NR	NR
Other Asian	71.6	(62.3, 80.9)	24.0	(15.3, 32.7)	4.4	(1.1, 7.7)	0.0	NA
Other Pacific Islander	33.8	(20.6, 47.0)	61.2	(47.6, 74.8)	2.0	(0.0, 4.9)	3.0	(0.0, 7.7)
Other	62.9	(51.6, 74.2)	30.3	(19.6, 41.1)	6.0	(1.9, 10.1)	0.7	(0.0, 2.1)

Source: 2008 Hawai'i BRFSS data reported in Hawai'i State Department of Health, 2010

NA = not applicable; NR = not reported

NHPI CHILDHOOD AND ADOLESCENT HEALTH

As is the case for NHPI adults, many NHPI youth and adolescents experience a host of health problems including overweight/obesity, diabetes, asthma, mental health problems, and violence.

OVERWEIGHT, OBESITY, AND DIABETES

Data from the 2009 Youth Risk Behavior Survey (YRBS) data indicate that about one in five of NHPI high school youth (20.4%) were obese (defined as being in the 95th or higher percentile for body mass index), with this percentage being possibly the highest among all racial groups in the United States. Together, about one in three of all NHPI high school youth (33.5%) were likely to be overweight (defined as being in the 85th percentile or higher, but less than the 95th percentile) or obese. (See Table 20.)

Table 20. Percentages of overweight and obesity among high school students: United States, 2008

Race/Ethnicity	Overweight ¹		Obese ²	
	%	CI	%	CI
Total	15.8	(14.7, 17.0)	12.0	(10.9, 13.1)
White	13.6	(12.0, 15.4)	10.3	(8.8, 12.0)
Black	21.0	(18.6, 23.6)	15.1	(13.4, 17.0)
AI/AN	21.8	(15.0, 30.7)	8.5	(5.0, 14.1)
Asian	11.4	(8.8, 14.5)	7.6	(5.4, 10.5)
NHPI	13.1	(7.9, 20.9)	20.4	(13.2, 30.2)
Hispanic/Latino	19.6	(17.9, 21.3)	15.1	(13.5, 16.8)

Source: 2009 YRBS data reported in CDC, 2009

¹ Overweight: students who were \geq 85th percentile but $<$ 95th percentile for body mass index.

² Obese: students who were \geq 95th percentile for body mass index.

There seem to be some ethnic differences in the prevalence of overweight or obesity among NHPI ethnic groups. For example, a large study of young children, 12 to 59 months old, in Hawai'i found that Samoan children were the heaviest among all the racial and ethnic groups included in the study, including Native Hawaiians, Blacks, Whites, and Asians. This was the case both at 1 year old (17.5% overweight) and 2 to 4 years old (27% overweight), with these rates far exceeding those for Hawaiians (5.7% and 11.3% for 1 year and 2 to 4 years old, respectively) (Baruffi et al., 2004). (See Table 21.)

Table 21. Percentages of young children in WIC¹ program who were overweight: Hawai'i, 1997–1998

Race/Ethnicity	1 year old ²	2 to 4 years old ³
Asian	2.3	9.0
Black	10.0	7.3
White	5.9	8.5
Filipino	2.4	12.4
Hawaiian	5.7	11.3
Hispanic/Latino	6.5	10.1
Samoan	17.5	27.0
Other	6.6	11.9
Total	5.9	11.4

Source: Baruffi et al., 2004

¹ WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

² Overweight = weight-for-age \geq 95th percentile. Differences between ethnic groups in the prevalence of overweight (χ^2 with 8DF = 172.53) significant at $p < 0.0001$.

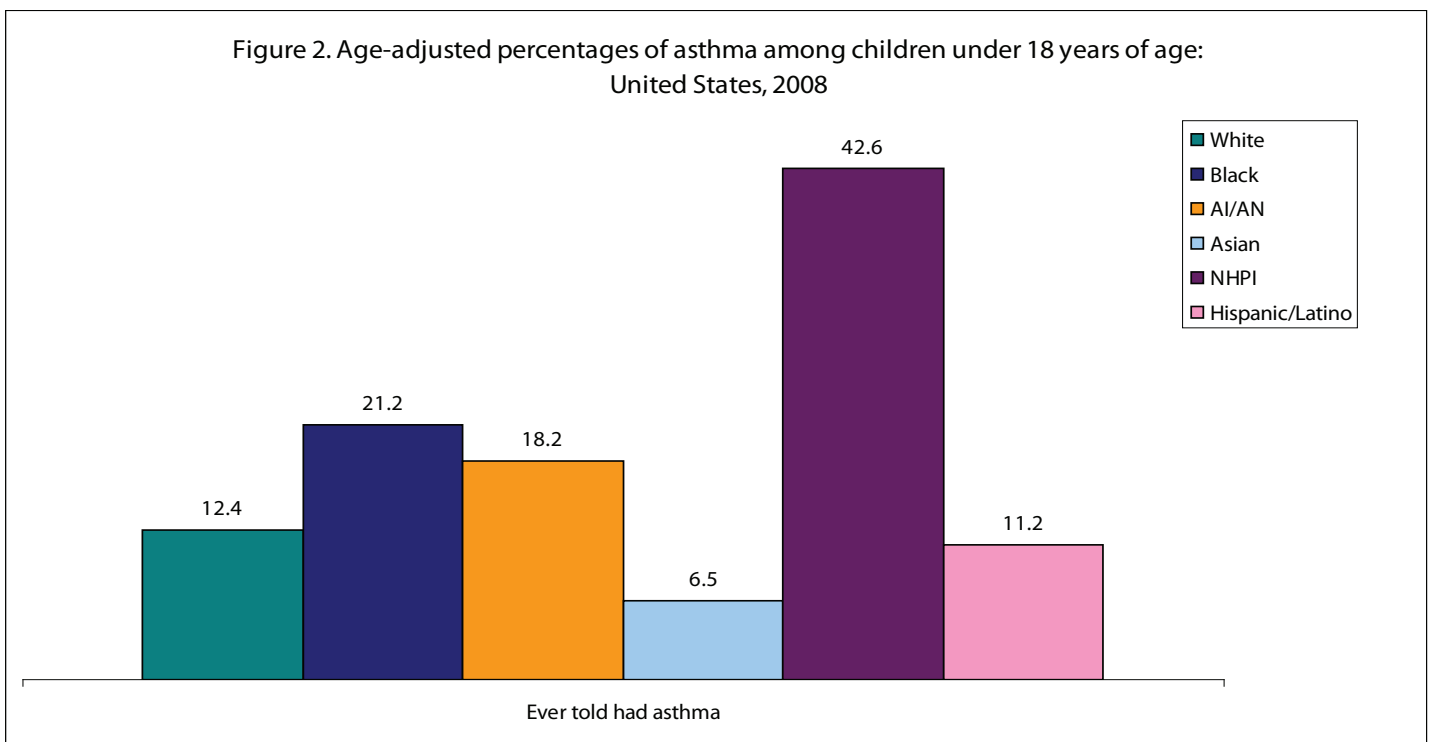
³ Overweight = BMI \geq 95th percentile. Differences between ethnic groups in the prevalence of overweight (χ^2 with 8DF = 189.28) significant at $p < 0.0001$.

Research has shown that the prevalence of overweight or obesity is higher in NHPI children in the continental U.S. compared to children in the Pacific Islands. For example, it has been reported that Samoan children in more Western environments tend to have more excess body weights than those in more traditional environments and have greater obesity compared with weight-for-height and BMI standards for U.S. children (Bindon and Zansky, 1986). These genetic and environmental risk factors for NHPI adult obesity may also apply to their children, perhaps to a greater degree, as youth and adolescents are more likely to embrace Western lifestyles, including unhealthy eating habits.

Youth who are severely overweight are at high risk for high blood pressure, dyslipidemia, and cardiovascular disease (Morrison et al., 1999), as well as for type 2 diabetes and increased asthma symptoms (Gower et al., 1998; Luder et al., 1998). Obese children and adolescents are at greater risk of bone and joint problems, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem (Daniels et al., 2005; DHHS, 2001; French et al., 1995). Obese youth are more likely than youth of normal weight to become overweight or obese adults (Guo et al., 2002; Whitaker et al., 1997) and are therefore at high risk for associated adult health problems and morbidity, including heart disease, type 2 diabetes, stroke, several types of cancer, and osteoarthritis (DHHS, 2001; Dietz, 1998; Must et al., 1999). For these reasons, there is a dire need for interventions to reduce obesity in NHPI youth and adolescents.

CHILDHOOD ASTHMA

The doctor-diagnosed asthma percentage for NHPI children is staggeringly high: about two in five NHPI children (42.6%) under 18 years of age reported having asthma in 2008. The highest among all racial groups in the United States, this proportion is about three times that for Whites (13.7%) and more than twice that for both Blacks (21.2%) and American Indians/Alaska Natives (18.2%). (See Figure 2.) Due to the small number of NHPIs in the sample, the current asthma rate for NHPI children was unavailable.



Source: 2008 NHIS data reported in CDC, 2009

ALCOHOL, TOBACCO, AND OTHER DRUG USE

According to the results of the 2009 Youth Risk Behavior Survey (YRBS) data, alcohol use prevalence for NHPI high school students is among the lowest, along with Asians. About two in three NHPIs (68.4%) had ever used alcohol in their lifetimes, about one in three (34.8%) were current drinkers (defined as having at least one drink in the past 30 days), and about one in five (20.6%) had engaged in heavy episodic drinking (defined as having five or more drinks in a row within one day). (See Table 22.)

Table 22. Percentages of alcohol use among high school students: United States, 2008

Race/Ethnicity	Lifetime alcohol use ¹		Current alcohol use ²		Heavy episodic drinking ³	
	%	95% CI	%	95% CI	%	95% CI
Total	72.5	(70.6, 74.3)	41.8	(40.2, 43.4)	24.2	(22.6, 25.9)
White	73.8	(70.8, 76.6)	44.7	(42.4, 47.1)	27.8	(25.9, 29.9)
Black	67.6	(63.9, 71.1)	33.4	(30.5, 36.4)	13.9	(11.8, 16.0)
AI/AN	74.0	(64.2, 82)	42.8	(32.3, 53.9)	29.9	(21.2, 40.5)
Asian	48.9	(46.0, 51.7)	18.3	(15.3, 21.8)	8.8	(6.6, 11.7)
NHPI	68.4	(62.4, 73.9)	34.8	(26.6, 44.0)	20.6	(14.3, 27.5)
Hispanic/Latino	76.6	(78.4, 78.9)	42.9	(40.1, 45.8)	24.2	(21.7, 26.8)

Source: 2009 YRBS data reported in CDC, 2009

¹ Had at least one drink of alcohol on at least 1 day during their life.

² Had at least one drink of alcohol on at least 1 day during the 30 days before the survey.

³ Had 5 or more drinks in a row within a couple of hours on at least 1 day during the 30 days before the survey.

While there was a smaller percentage of NHPI high school students (44.5%) who reported having ever used cigarettes compared to their peers in most other racial and ethnic groups, the current cigarette use percentage was high for NHPI adolescents (24.8%) in comparison to their peers in other groups in the U.S., as was the case with American Indians/Alaska Natives (37.1%). (See Table 23.)

Table 23. Percentages of cigarette use among high school students: United States, 2008

Race/Ethnicity	Lifetime cigarette use ¹		Current cigarette use ²	
	%	95% CI	%	95% CI
Total	46.3	(43.7, 48.9)	19.5	(17.9, 21.2)
White	46.1	(42.3, 50.0)	22.5	(20.5, 25.2)
Black	43.5	(39.0, 48.0)	9.5	(8.2, 11.1)
AI/AN	67.2	(55.7, 76.9)	37.1	(26.8, 48.7)
Asian	26.5	(21.0, 32.9)	7.5	(5.3, 10.5)
NHPI	44.5	(30.7, 59.2)	24.8	(17.4, 34.1)
Hispanic/Latino	51.0	(47.4, 54.6)	18.0	(16.0, 20.2)

Source: 2009 YRBS data reported in CDC, 2009

¹ Ever tried cigarette smoking, even one or two puffs.

² Smoked cigarettes on at least 1 day during the 30 days before the survey.

The high prevalence of cigarette use among NHPI adolescents are worth noting. As reported above, smoking causes a host of potentially life-threatening health conditions, and the health risks associated are even higher for those with hypertension and/or diabetes. In addition, research on the developmental stages of adolescent drug involvement has found that the use of cigarettes and/or hard liquor precedes that of marijuana and other illicit drugs (Kandel et al., 1992), posing further health and social problems in adolescence and beyond.

Indeed, marijuana use was high among NHPI adolescents in the U.S., which was also the case for adolescents in other racial groups, particularly American Indians/Alaska Natives. About two in five NHPI high school students (40.5%) in the U.S. reported having ever used marijuana, a proportion similar to those for their peers in other racial groups, but much higher than that for Asians (13.1%). Prevalence of current marijuana use among NHPI adolescents (24.8%) in the U.S., defined as using it one or more days during the past 30 days, was higher than that of all the other racial groups, with the exception of American Indians/Alaska Natives (31.6%). (See Table 24.)

Table 24. Percentages of marijuana use among high school students: United States, 2008

Race/Ethnicity	Lifetime marijuana use ¹		Current marijuana use ²	
	%	95% CI	%	95% CI
Total	36.8	(34.8, 38.8)	20.8	(19.4, 22.3)
White	35.7	(33.3, 38.2)	20.7	(18.9, 22.6)
Black	41.2	(37.7, 44.9)	22.2	(19.4, 25.3)
AI/AN	50.8	(41.7, 59.9)	31.6	(22.0, 43.0)
Asian	13.1	(9.2, 18.2)	7.5	(5.1, 10.8)
NHPI	40.5	(29.1, 53.1)	24.8	(15.4, 37.4)
Hispanic/Latino	39.9	(37.1, 42.8)	21.6	(19.6, 23.8)

Source: 2009 YRBS data reported in CDC, 2009

¹ Used one or more times during their life.

² Used one or more times during the 30 days before the survey.

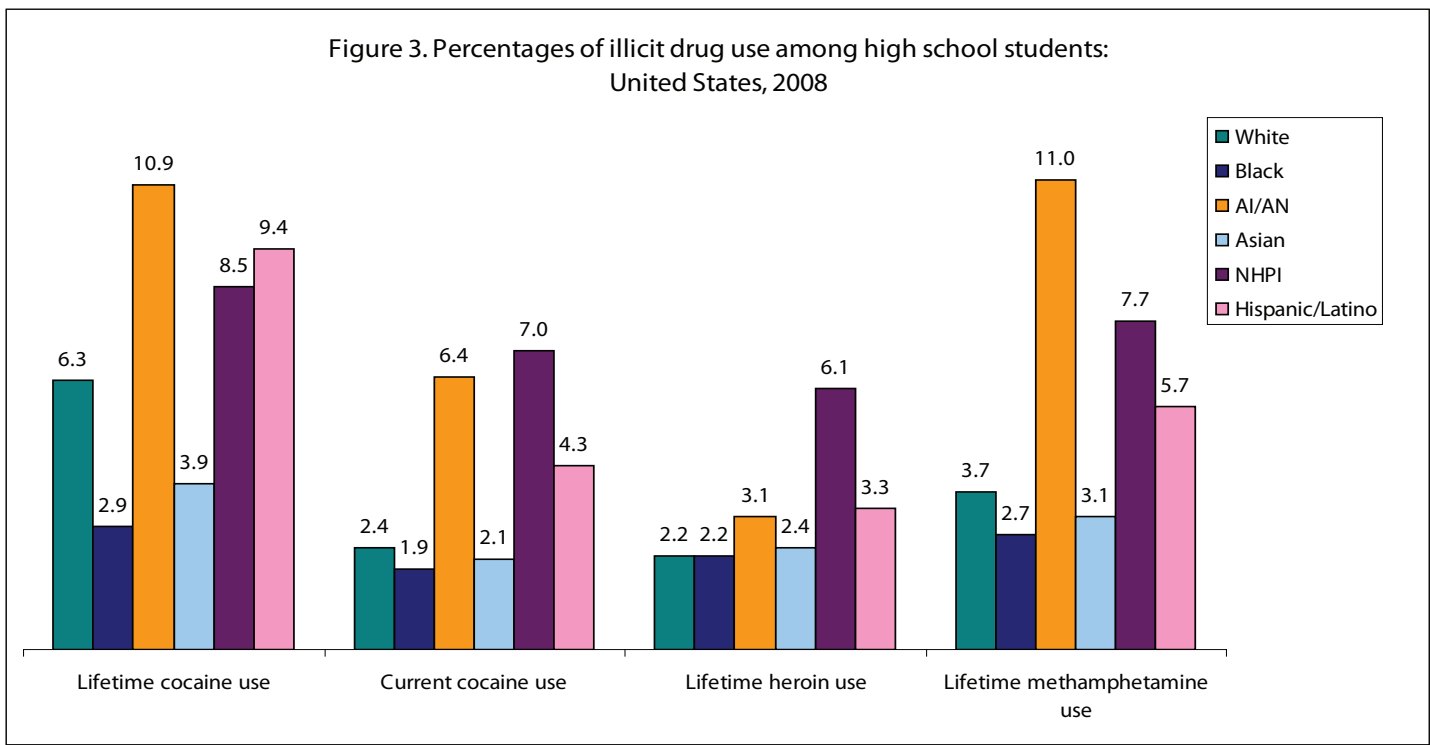
Even more troubling is the high prevalence of illicit drug use among NHPI adolescents. About one in ten NHPI high school students (9.4%) had used cocaine, this proportion being one of the highest among all racial groups, along with American Indians/Alaska Natives (10.9%). Moreover, NHPIs (7.0%) may have the highest frequency of current cocaine use of all the racial groups. NHPI adolescents (6.1%) also had extremely high percentages of heroin use, with this rate being about three times as high as Blacks (2.2%) and about twice as high as for both Hispanics/Latinos (3.3%) and American Indians/Alaska Natives (3.1%). Like cocaine use percentages, high use percentages of methamphetamines were dominated by NHPIs (7.7%) and American Indians/Alaska Natives (11.0%). (See Figure 3.)

ADOLESCENT ALCOHOL, CIGARETTE, AND OTHER DRUG USE AMONG ADOLESCENTS IN THE USAPI

2007 YRBS data collected from NHPI adolescents living in the five USAPIs had higher alcohol use percentages than those in the U.S. The data collected indicated that among USAPI high school students lifetime alcohol use percentages ranged from 46.6% to 69.8%, current alcohol use rates from 29.8% to 41.7%, and heavy drinking rates from 18.3% to 26.6%.

Prevalence of cigarette use in the USAPI was somewhat higher than NHPI adolescents in the U.S. Lifetime cigarette use percentages ranged from 56.8% to 78.1%, current cigarette use percentages from 23.1% to 37.6%, and percentages of using more than 10 cigarettes per day from 4.7% to 11.8%. Lifetime marijuana use percentages in the five USAPI ranged from 13.9% to 59.8%, and current marijuana use percentages from 8.5% to 38.5%.

Adolescent illicit drug use in USAPI tended to be somewhat lower than or similar to those for NHPIs in the U.S., with percentages for lifetime cocaine use ranging from 4.6% to 7.7%, current cocaine use from 2.0% to 5.3%, lifetime heroin use from 3.5 to 9.6%, and lifetime methamphetamine use from 4.9% to 13.1%.



Source: 2009 YRBS data reported in CDC, 2009

Note: Lifetime use - used one or more times during their life. Current use - used one or more times during the 30 days before the survey.

VIOLENCE AND VICTIMIZATION

Available data indicate that NHPI adolescents live in environments more prone to violence and that both violence and victimization prevalence is high. According to the results of the 2009 YRBS, almost one out of ten NHPI high school students (9.8%) carried a weapon on school property (on at least one day in the past 30 days before taking the survey), this proportion being the highest among all racial groups in the U.S. About one in ten NHPI adolescents (12.5%) had been threatened or injured with a weapon on school property in the past year, this proportion being possibly the highest among all racial groups but American Indians/Alaska Natives (16.5%). NHPI adolescents (14.8%) also had high percentages of being in a physical fight on school property in the past year, along with American Indians/Alaska Natives (20.7%) and Blacks (17.4%). Prevalence of dating violence is also high among NHPI adolescents. About one in ten NHPIs (11.5%) had been hit, slapped, or physically hurt on purpose and about one in ten (11.9%) also had been physically forced to have sexual intercourse in the past year—both of these estimates being extremely high in comparison to the other racial groups. (See Table 25.)

VIOLENCE AND VICTIMIZATION AMONG ADOLESCENTS IN THE USAPI

Prevalence of violence was also high among adolescents in the USAPI. According to the 2007 YRBS data, the percentages of high school youth in the five USAPI who carried a weapon on school property ranged from 5.4% to 17.6%. The percentages of high school students who had been in a physical fight on school property ranged from 12.4% to 33.1%; the percentages of high school students who were injured in a physical fight ranged from 4.5% to 11.6%. Percentages of dating violence were higher than the U.S. averages, ranging from 13.3% to 30.8%, and rates of being forced to have sexual intercourse were also high, ranging from 12.9% to 35.8%.

Table 25. Percentages of violence and victimization among high school students: United States, 2008

Race/ Ethnicity	Carried a weapon on school property on at least 1 day (for example, a gun, knife, or club) ¹		Threatened or injured with a weapon on school property one or more times (for example, a gun, knife, or club)		In a physical fight on school property one or more times ²		Hit, slapped, or physically hurt on purpose by their boyfriend or girlfriend ²		Ever physically forced to have sexual intercourse (when they did not want to) ³	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Total	5.6	(5.0, 6.3)	7.7	(6.9, 8.5)	11.1	(10.0, 12.2)	9.8	(8.9, 10.8)	7.4	(6.7, 8.3)
White	5.6	(4.7, 6.5)	6.4	(5.6, 7.4)	8.6	(7.5, 9.9)	8.0	(7.1, 9.1)	6.3	(5.3, 7.5)
Black	5.3	(4.0, 7.1)	9.4	(7.9, 11.2)	17.4	(15.4, 19.4)	14.3	(12.6, 16.2)	10.0	(8.4, 11.8)
AI/AN	4.2	(2.1, 8.5)	16.5	(11.8, 22.6)	20.7	(14.2, 29.2)	13.4	(8.2, 21.1)	13.1	(8.0, 20.7)
Asian	3.6	(2.2, 5.7)	5.5	(3.9, 7.6)	7.7	(5.7, 10.2)	5.5	(3.4, 9.0)	5.7	(4.2, 7.7)
NHPI	9.8	(6.0, 15.6)	12.5	(7.5, 20.3)	14.8	(10.6, 20.2)	13.1	(9.3, 18.2)	11.9	(7.3, 18.6)
Hispanic/ Latino	5.8	(4.8, 7.1)	9.1	(8.0, 10.4)	13.5	(12.0, 15.3)	11.5	(10.6, 12.5)	8.4	(7.5, 9.5)

Source: 2009 YRBS data reported in CDC, 2009

¹ During the 30 days before the survey.

² During the 12 months before the survey.

³ During their life.

Although ethnicity-specific research on NHPI adolescent violence is rare, available evidence suggests high prevalence of violence among Samoan adolescents. A study of AA and NHPI youth violence (Mayeda et al., 2006) found that Samoan adolescents engaged in violence-related behaviors—such as hitting a family member or boyfriend/girlfriend, robbing someone, attacking someone, and being involved in gang fights—at rates that exceeded all other AA and NHPI groups in the study. High prevalence of violence among Samoan youth may be due to the high prevalence of stressful life events they experience (Baker et al., 2010), stemming from the socioeconomic deprivation and other hardships affecting them (Brady and Matthews, 2002). There are also research findings that indicate Samoan adolescents in Hawai'i have higher youth violence and alcohol and marijuana use rates compared to their peers in American Samoa, suggesting that those in more traditional American Samoa may have higher levels of protective factors—such as family support, affirming and belonging ethnic identity, and religious influence—than those in more Westernized Hawai'i (Fiaui and Hishinuma, 2009).

MENTAL HEALTH AND SUICIDE

Given the economic hardships and social and health problems many NHPI adolescents might experience—such as poverty, violence, obesity, and diabetes—it should not be surprising that many of them suffer from mental health problems. According to the results of the 2009 YRBS, about one in three NHPI adolescents (33.4%) in the U.S. were likely to have felt sad or hopeless almost every day for two weeks in a row during the past year to the extent that they had to stop doing some usual activities. This percentage may be higher than all other racial groups. (See Table 26.)

SUICIDE ATTEMPTS AMONG ADOLESCENTS IN USAPIS

The percentages of considering or attempting suicide were even higher among their peers living in USAPI: according to the 2007 YRBS data, about a quarter of high school students had seriously considered attempting suicide (with percentages ranging from 22.0% to 28.9%), had made a suicide plan (with percentages ranging from 21.4% to 30.0%), or had attempted suicide (with rates ranging from 17.3% to 25.0%).

Table 26. Percentages of feeling sad or hopeless among high school students: United States, 2008

Race/Ethnicity	Felt sad or hopeless	
	%	95% CI
Total	26.1	(24.8, 27.5)
White	23.7	(22.1, 25.3)
Black	27.7	(25.1, 30.4)
AI/AN	30.8	(23.0, 39.7)
Asian	23.5	(19.3, 28.2)
NHPI	33.4	(25.4, 42.5)
Hispanic/Latino	31.6	(29.8, 33.4)

Source: 2009 YRBS data reported in CDC, 2009

* Almost every day for 2 or more weeks in a row so that they stopped doing some usual activities during the 12 months before the survey

Similar findings have been reported in research using state data: a study using a large sample of high school students in Hawai'i found significantly higher percentages of psychiatric disorder, mood disorder, and anxiety disorder among Hawaiian adolescents than among their non-Hawaiian peers (Andrade et al., 2006). (See Table 27.)

Table 27. Percentages of depressive disorders among Hawaiian and non-Hawaiian adolescents: Hawai'i, 1992–1996

Ethnicity	Major depression		Overanxious		Generalized anxiety	
	%	95% CI	%	95% CI	%	95% CI
Hawaiian male	4.5	(1.7, 11.4)	6.8	(3.1, 14.3)	2.3	(0.6, 8.2)
Hawaiian female	9.7	(5.2, 17.4)	9.5	(5.1, 17.0)	8.4	(4.3, 15.6)
Non-Hawaiian male	4.0	(2.1, 7.4)	1.0	(0.3, 3.4)	1.0	(0.3, 3.4)
Non-Hawaiian female	7.1	(4.3, 11.4)	6.9	(4.2, 11.2)	6.2	(3.7, 10.3)

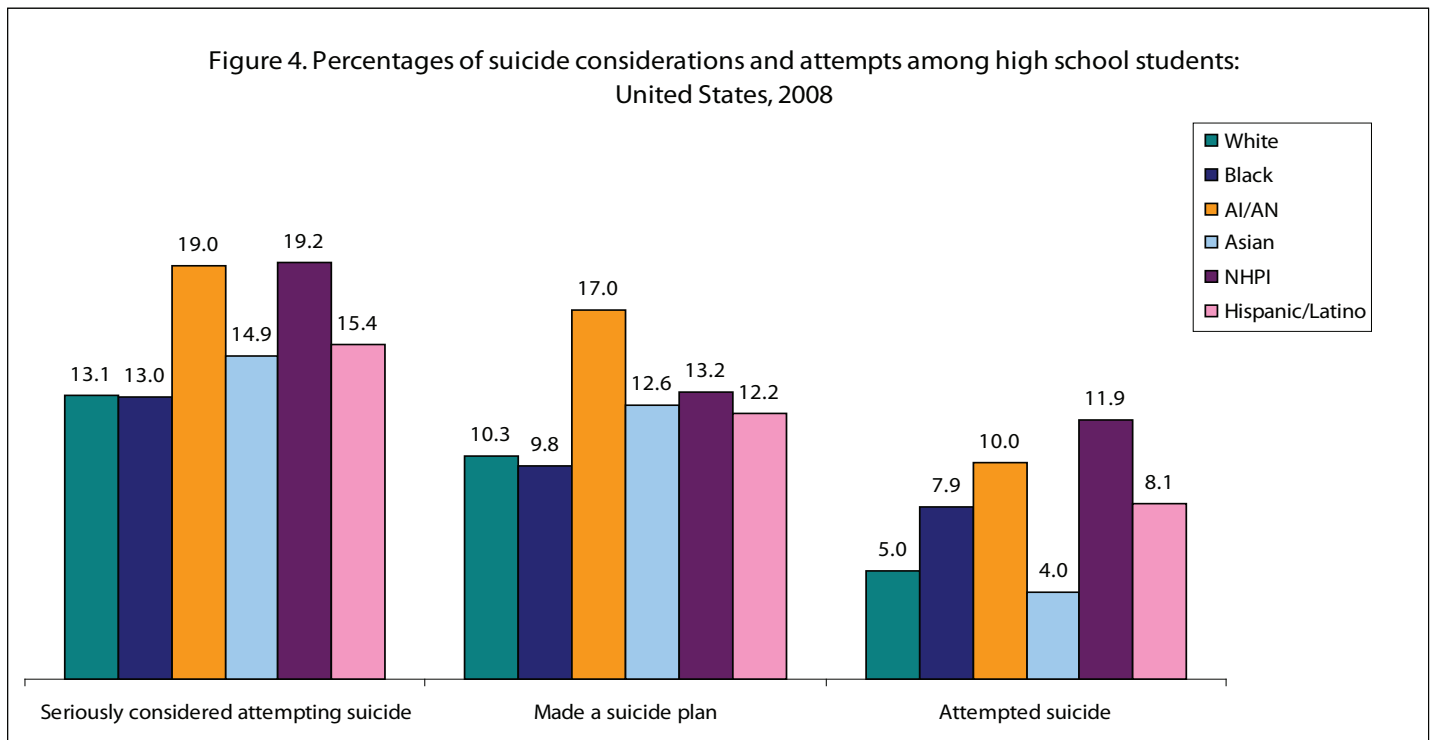
Source: Andrade et al, 2005

Suicides and suicide attempts, often attributed to mental health disorder such as depression (Yuen et al., 2000), are highly prevalent among NHPI adolescents. It has been documented that Hawaiians and indigenous Pacific Islanders from Micronesia, Guam, and Western Samoa have percentages of completed suicide that increase sharply from adolescence to young adulthood, with percentages then dropping from the 30-year age group and continuing to drop for middle age and elderly groups (Booth, 1999; Else et al., 2007). Results of the 2009 YRBS lend support to this. Of all racial groups in the United States, NHPI and American Indian/Alaska Native adolescents had the highest percentages of having seriously considered attempting suicide (19.2% and 19.0%, respectively) and of having made a plan about how they would attempt suicides (13.2% and 17.0%, respectively). About one in ten NHPI high school students (11.9%)—the highest proportion among all racial groups—attempted suicide one or more time in the past year. (See Figure 4.)

An epidemiological study of mental disorders conducted in Hawai'i found that Native Hawaiian high school youth (12.9%) had a significantly higher suicide attempt percentage than their non-Hawaiian counterparts (9.6%) (Yuen et al., 2000).

While depression may be a factor for NHPI adolescent suicides (Yuen et al., 2000), past research has identified other important socioeconomic and cultural factors. Higher rates of suicide attempts associated with the transitions to high school and to adulthood may indicate that these youth perceive fewer opportunities for their future and are distressed by this perception (Else et al., 2007). Research has also demonstrated that adolescent suicide attempts are related to interpersonal violence, including both violence perpetration and violence victimization (Borowsky et al., 2001).

Figure 4. Percentages of suicide considerations and attempts among high school students: United States, 2008



Source: 2009 YRBS data reported in CDC, 2009

High counts of suicide among indigenous NHPI youth has been attributed to Western role designations that do not match traditional family roles especially at the beginning and end of lifespan (children/adolescents and elders), with males being particularly alienated (Else et al., 2007; Else et al., 2009b). Other studies have found that higher levels of understanding, identifying, and/or engaging in Hawaiian cultural practices and beliefs were a risk factor for Hawaiian youth suicide attempts (Else et al., 2007; Yuen et al., 2000). Suicide may be consistent with NHPI cultural preferences for dealing with serious interpersonal domestic problems by methods of withdrawal rather than confrontation (Ran, 2007). Some research has identified protective factors from adolescent suicide attempts in finding that Hawaiian adolescents raised in families with high cohesion, parental bonding, and family support had significantly lower rates of suicide attempts (Else et al., 2007).

The historical trauma that NHPIs have experienced, such as loss of land, language, customs, and much of their culture and population, may contribute to ongoing intergenerational trauma, unresolved grief, and historical trauma response often linked with self-destructive behaviors and mental health disorders such as suicide, substance abuse, depression, anxiety, anger, and other risk behaviors prevalent among NHPI adolescents (Else et al., 2009a).

INFANT MORTALITY, LOW BIRTH WEIGHT, AND PRETERM BIRTH

Research has demonstrated that infant mortality and other birth outcomes are influenced by the parent's socioeconomic status (SES): persons with lower incomes or education levels are more likely to have adverse birth outcomes than those with higher SES (Yen and Syme, 1999). It is thus not surprising that NHPs, many of whom have lower incomes or lower levels of education, are more likely to have adverse health outcomes than other racial groups.

A study using birth certificate data in California and Hawai'i collected from 2003 to 2005 (Schempf et al., 2010) found that NHPs had much higher percentages of preterm births than non-Hispanic Whites (7.5%), the referent group. Estimates ranged from about one in ten for Tongans (10.8%) to one in five for Marshallese (18.8%). NHPs in California and Hawai'i also had higher proportions of low birth weight, ranging from approximately one in twenty for Samoans (4.2%) to one in ten for Marshallese (8.4%), compared to Whites (4.1%). (See Table 28.)

There seem to be some differences in the rates of preterm birth and infant mortality among NHP ethnic groups, with the Marshallese being worst off. The single-race Marshallese had the highest percentage of preterm births among all the racial and ethnic groups and the highest percentage of low birth weights among all those groups but Laotians (9.2%) and Cambodians (8.8%). It has been documented that the high risk of adverse birth outcomes for Cambodians and Laotians may correlate with their recent immigration and the trauma and hardships they endured as political refugees (Reeves and Bennett, 2004). The high rates of negative pregnancy outcomes for the Marshallese women may also be accounted for by social determinants of health, as the Marshallese had the highest proportion of births to mothers who were unmarried or had less than a high school education; is also consistent with U.S. Census data indicating that the Marshallese had the lowest median family income and highest poverty rates among Pacific Islanders. Adverse perinatal outcomes affecting NHPs may be due in part to the low prevalence of prenatal care access, which ranged from less than half for the Marshallese (48.4%) to about three in four for Native Hawaiians (75.1%), compared to more than nine in ten Whites (90.4%) (Schempf et al., 2010).

Table 28. Percentages of AA and NHPI mothers' characteristics: California and Hawai'i, 2003–2005

Race/Ethnicity		Maternal education ≥ college, %	Early prenatal care, %	Low birth weight, %	Preterm birth, %
Non-Hispanic White		43.1	90.4	4.1	7.5
Asian Indian	Only	67.8	92.4	7.1	7.1
	In combination	51.5	89.1	7.3	9.3
Cambodian	Only	12.8	78.2	8.8	14.0
	In combination	20.4	81.5	7.7	12.5
Chinese	Only	66.2	93.0	4.5	6.5
	In combination	28.1	83.0	6.4	11.0
Filipino	Only	41.8	87.2	7.6	11.2
	In combination	17.5	82.1	7.1	11.8
Hmong	Only	10.1	62.0	5.4	10.8
	In combination	NA	NA	NA	NA
Indonesian	Only	51.3	89.5	4.4	9.6
	In combination	NA	NA	NA	NA
Japanese	Only	59.8	93.0	6.1	7.9
	In combination	33.5	85.0	6.4	10.4
Korean	Only	71.2	93.2	3.4	5.6
	In combination	34.6	85.2	4.2	8.7
Laotian	Only	12.6	75.8	9.2	13.7
	In combination	NA	NA	NA	NA
Pakistani	Only	37.9	85.0	7.6	9.1
	In combination	NA	NA	NA	NA
Thai	Only	48.5	87.3	4.8	9.4
	In combination	28.7	82.4	8.4	11.8
Vietnamese	Only	36.0	89.6	5.1	8.1
	In combination	43.4	89.9	4.8	8.3
Native Hawaiian	Only	15.1	75.1	5.6	11.1
	In combination	13.4	78.3	6.6	11.9
Guamanian	Only	15.3	76.9	6.0	11.8
	In combination	17.7	79.1	6.0	11.7
Marshallese	Only	1.3	48.4	8.4	18.8
	In combination	NA	NA	NA	NA
Samoan	Only	5.3	69.7	4.2	12.0
	In combination	10.3	74.8	5.5	10.7
Tongan	Only	9.8	62.7	5.0	10.8
	In combination	NA	NA	NA	NA

Source: Schrepf et al., 2010

NA = not available; total number of mothers fewer than 300

Note: "In combination" includes one or more other race/ethnicity; it is not mutually exclusive of other "In combination" subgroups

CONCLUSION

In summary, many NHPs of all ages face serious health issues. Prevalence of chronic health conditions associated with heart disease, the leading cause of death in the United States, is high among NHP adults. Heart-related chronic health conditions—such as hypertension, diabetes, and obesity—are also associated with other life-threatening illnesses. Cancer incidence and deaths are disproportionately high for both NHP men and women, especially Samoans and Native Hawaiians. Both NHP adults and adolescents have disproportionate burdens of mental health problems, and the latter contemplate, plan, or attempt suicides at a higher rate than all other racial groups in the U.S. Both NHP adults and children had some of the highest asthma rates of all the races in the U.S. Rates of marijuana and illicit drug use were higher among NHP adolescents than among their peers in most other racial groups, as are rates of violence and victimization. Health disparities affect NHPs early on in the life cycle, with infant mortality, low birth weight, and preterm births of some NHP ethnic groups disproportionately higher than for most other racial and ethnic groups.

Research during the last few decades has clearly demonstrated that social determinants—such as income, education level, and occupational status on the individual and community level—fundamentally affect one's health (Drewnowski, 2009; Skodova et al., 2008; Yen and Syme, 1999). This brief illustrates that NHPs may be a strong case in point. NHPs, many of whom have low income or education and live in disadvantaged areas, bear a disproportionate burden of diseases. There are other challenges they face, due to historical trauma and its ongoing repercussions.

Many of the health problems they experience are interrelated and likely stems from the same root causes, which potentially further exacerbating them. There is a need for individual-level interventions for certain behaviors, such as obesity or smoking. While such interventions might be useful in reducing specific health risks, a broad-based approach geared towards policies to improve the conditions of NHPs may be critical to address the challenges NHPs collectively experience.

Collection of accurate and timely data is critical for identifying and addressing the health and health care needs. Without knowing a population's current baseline of health, it is difficult to project what that population's health status needs are or what efforts are required to reach it (Ghosh, 2010). Limited data available on NHP health, due in large part to the extremely small NHP samples included in national health surveys, have hindered efforts to establish and map progress toward national health objectives for NHPs. Therefore, oversampling of NHPs for national health surveys is critical and long over due. Collection of data using sufficiently large national samples of NHPs would be the first step in helping to understand the disparities affecting the health and health care access of NHPs, which in turn will help guide future policy and other intervention efforts.

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