
Healthy People in Hawaii?: An overview of ethnic health disparities in Hawaii for the Healthy People 2010 initiative targeted health concerns

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Abstract

Significant health disparities exist between ethnic groups in the United States. The authors reviewed literature examining the epidemiology of health disparities in Hawaii's multiethnic population. One of the primary goals of the Healthy People 2010 initiative is to eliminate health disparities, specifically cancer, cardiovascular disease, diabetes, infant mortality, child and adult immunizations and HIV/AIDS. However, the research on ethnic health disparities is fragmented, especially in Asian/Pacific Islanders. Unclear definitions of ethnicity (i.e., self-report, mixed ethnicity, etc) and aggregated study populations (i.e., combining multiple ethnic groups into one category) obscure the true health status of ethnic minorities in Hawaii. This paper presents an overview of the state of the literature on Hawaii ethnic health disparities.

Race and Ethnicity in Health: A National Concern

The elimination of ethnic health disparities is one of the three overarching goals of the Healthy People 2010 initiative, a national health promotion and disease prevention plan implemented by the United States government.¹ The initiative targets six health areas relevant to all ethnic groups, including Caucasians:^{1,2} infant mortality, cancer screening and management, cardiovascular disease, diabetes, HIV infection/AIDS and immunizations.³ However, the burden of these diseases and associated mortality fall disproportionately on ethnic minorities. Addressing this urgent need, President Clinton created the Race and Health Initiative in 1998 to supplement the Healthy People 2000/2010 initiatives. Despite this, ethnic health and disease demography is still understudied,⁴ and data that are available show that the situation is worsening for some ethnic groups.^{1,3} Those who experience poorer health in general are increasing as a proportion of the United States population³ and broad-based assumptions about the relationships of ethnicity to

health status obscure real patterns and crucial areas of concern in ethnic health. Further, factors contributing to ethnic health disparities are confounded by complex relationships between access to care, health care quality, personal behavior, racism, lack of research, socioeconomic status, and significantly, the definitions and conceptualizations of race and ethnicity. The purpose of this paper is to provide an overview of the health status of Hawaii ethnic minorities in relation to the six targeted health concerns of the Health People 2010 initiative.

Methods

This review included 125 publications listed on Medline through the autumn of 2002 relating to national ethnic health disparities and health disparities specific to the state of Hawai'i. Publications with results or conclusions that illustrated broad trends in health disparities in Hawai'i were cited. Descriptive studies that limited their focus to specific ethnic groups but lacked comparative data to other ethnic groups were omitted, due to the difficulty in interpreting these data and the imposed space limitation of this review. It is acknowledged that some of these later studies may be important to a more comprehensive review. Once the initial version of the manuscript was prepared, local clinical researchers reviewed and edited portions of the review relating to their areas of expertise. After near final edits were made by the authors, the manuscript in its entirety was reviewed again by several local experts in epidemiology and biostatistics.

Overview of Hawaii Health Disparities

The health status of minority groups in the United States is assumed to be similar across groups and worse than the average Caucasian health status.⁵ Yet compared to the populations of other U.S. states, the people of Hawaii live longer lives and have lower rates of cancer and heart disease.⁶ However, recent data have shown that significant disparities exist within the ethnic category of Asian/Pacific Islander. This is the category to which a majority of Hawaii residents belong, although it compresses many ethnicities into one group, obscuring the true incidence and prevalence of morbidity and mortality rates from diseases affecting these diverse populations. When ethnic groups in Hawaii are disaggregated from the general Asian/Pacific Islander category, significant health differences between groups are revealed. One of the most marked revelations is the health status of

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Native Hawaiians as among the poorest in the nation.⁶ Since Asian and Pacific Islanders constitute the fastest growing minority group in the United States,⁷ and these ethnicities are predominant in Hawaii, inquiry into these groups' health status in Hawaii is integral to achieving the Healthy People 2010 *Elimination of Ethnic Health Disparities* goal.

Mortality in Hawaii

Mortality rate differences between groups are one of the best indicators of ethnic disparities, since examining disease incidence alone may be misleading. For example, Caucasians and Hawaiians have similar cancer incidence rates, although Hawaiians have higher mortality from this disease.⁷ The reasons for this discrepancy range from economic barriers to health care access, to cultural attitudes about health and illness, to distrust and discomfort with the dominant health care system. In one study, the stage of disease at diagnosis was the most important variable explaining ethnic differences in mortality.⁸

In Hawaii, heart disease, malignant neoplasms and cerebrovascular disease were the top three causes of death in 1990, in that order, regardless of race or ethnicity, except for Caucasian males for whom HIV was the third leading cause of death and CVD the fourth.⁷ According to data available for ethnic groups in Hawaii, Japanese and Chinese have the longest life expectancy, while Native Hawaiians have the shortest. Reassuringly, data describing mortality rates over the century demonstrate that while ethnic life expectancy discrepancies still exist, the differences between groups have steadily converged over the last 80 years from a 28-year discrepancy in 1920 to less than nine years in 1990. Still, Hawaiians have the lowest life expectancy of all ethnic groups in the state⁹ with a life expectancy five years less than the state average.⁶

Healthy People 2010 Targeted Diseases in Hawaii

Cancer

Ethnic groups in Hawaii have varying rates of cancer incidence and mortality, depending upon the type of cancer and the time of diagnosis. Lifestyle and economic changes continually shift the balance of these disparities, indicating a need for ongoing research that compares the difference in incidence rates, survival, and cancer burden between ethnic groups. Research conducted by the Cancer Research Center of Hawaii suggests that ethnic disparities in cancer rates and mortality exist even after adjusting for socioeconomic factors.¹⁰ In the year 2000, age-adjusted mortality rates in Hawaii for lung, colorectal, breast and prostate cancers were significantly lower *overall* than the national average.¹¹ At the same time, the cancer mortality rates for Asian and Pacific Islanders in Hawaii were 50% higher than the national average. After combining malignant neoplasm categories, Caucasians have the highest incidence rates, with Native Hawaiians following, while Chinese and Filipinos have the lowest total cancer incidence rates for both men and women.

Yet, the incidence rates for specific cancers are different between ethnic groups.¹² For example, Native Hawaiians have the highest rates of lung cancer, even though the rates of cigarette smoking in the Native Hawaiian population is only 7-18% greater than that of Japanese or Filipino men, which corroborates other evidence that

Native Hawaiians are particularly susceptible to the carcinogenic effects of tobacco smoke. Japanese men and women have the highest rates of stomach cancer, with Native Hawaiians following while Filipino, Chinese, Japanese and Native Hawaiians have the highest rates of liver cancer.

The data for Samoans living in Hawaii is still preliminary, but the available data shows a variation in the distribution of cancers between Western Samoans, American Samoans, and Hawaiians. Compared with Western Samoans, American Samoans have higher rates of lung and thyroid cancers, with men having higher rates of prostate cancer and females having higher rates of corpus uterine and pancreatic cancers as well as leukemia.¹³ Compared with Hawaiian males, American Samoan men have higher rates of oral, pharynx, liver, prostate, and thyroid cancers, as well as leukemia, while American Samoan females have higher rates of pancreas, cervix uteri, corpus uteri, ovary and thyroid cancers, and leukemia, compared with Hawaiian females.

The health status of Native Hawaiians requires particular attention because this population has one of the highest overall cancer incidence and mortality rates in the nation, and the highest rates for breast, endometrium, stomach and lung.¹⁴ Further research that disaggregates part-Hawaiians from pure Hawaiians has shown striking disparities in mortality rates between pure Native Hawaiians and other ethnic groups. The reasons for the disparate mortality rates are believed to be the later stage of diagnosis for the pure Native Hawaiians as well as the effects of the lower socioeconomic status generally suffered more by Native Hawaiians compared to the rest of the population.

Hypertension and Cardiovascular Disease

Heart disease was the leading cause of death among Asian or Pacific Island men and women in 1980, and for men again in 1995.¹⁵ Since 1966, the Honolulu Heart Program (HHP) has monitored stroke incidence and mortality rates in a targeted population of men of Japanese ancestry.¹⁶ Japanese Americans have lower rates of heart disease and stroke than the U.S. white population.¹⁷ In the HHP, 53% of the men aged 60-64 were diagnosed with hypertension; as were 59% of those aged 65-74; and again, 67% of men aged 75-81 were hypertensive.¹⁷

Similar to the Honolulu Heart Program, the Molokai Heart Study investigated heart disease in native Hawaiians aged 20-59. By ages 55-59, 31% of men and 33% of women were diagnosed with hypertension. Due to age differences and other factors, it is difficult to compare this study with the once cited above. However, in the baseline examination for Japanese men aged 45-54, 36% had hypertension, as compared to 30% of Hawaiians in the same age bracket.¹⁷ In fact, the age-specific incidence of hypertension in Native Hawaiians was similar to that of U.S. whites, indicating that native Hawaiians, like Caucasians, may be at high risk for premature cardiovascular disease. Japanese, despite having higher rates of hypertension, have lower rates than both Hawaiians and Caucasians of the diseases that are usually associated with this risk factor, such as CVD and stroke. Furthermore, Verderber notes that Pacific Islanders have a more difficult postoperative course than Japanese for coronary artery bypass surgery, and often complicated by arrhythmia.¹⁵ The generally higher obesity rates of Pacific Islanders may help explain this discrepancy. These results further demon-

strate that compressing all ethnic Asian and Pacific Islanders into one group risks the loss of information about the variations in health status between ethnic groups.

Risk factors associated with heart disease, such as diabetes, hypertension, obesity and smoking, are especially prevalent among Hawaiians⁶ who die of cardiovascular disease at a rate that is more than twice the state overall average.¹⁸ In one study, 65% of the participants were 20% or more above the average body mass index, with 45% being more than 40% overweight by that standard.⁹ Thirty-four percent of women and 42% of men reported current regular smoking habits with an additional 26% of males and 15% of females with a prior history of smoking. About 25% of the Hawaiians were currently taking antihypertensive medications. Finally, between 10-12% had elevated blood sugar levels, and levels of glycosylated hemoglobin increased with age, indicating glucose intolerance and/or poor diabetes control. Higher rates of obesity may be genetically linked or attributable to cultural practices, smoking, socioeconomic status, hypertension, and diabetes.

Diabetes

Comprehensive data on Type II diabetes mellitus for Pacific Islanders are sparse, although the prevalence rate for pure Hawaiians is nearly 50 per thousand, which is twice the rate of white residents of Hawaii.^{19, 20} The Behavioral Risk Factor Surveillance System reports a rate of 52 per thousand of all adults in Hawaii ever having been told they have diabetes, a number which is twice as high as the Healthy People 2000 goal.²¹ Further data shows that native Hawaiians die of diabetes at a rate of 117 per 100,000 compared to the average rate of 53 per 100,000 for other ethnic groups.²²

Although the overall rate of Type I diabetes in children is 1.16 per 1000,²³ diabetes shows higher rates in some ethnic groups in Hawaii than in others. The rate for Type I diabetes in part-Hawaiian children is 2.5 times as high as white children and ten times higher than the rate for Japanese children in the same environment.²⁴ Despite these alarming discrepancies, emphasis on Type I diabetes is overshadowed by the rapidly increasing rates of Type 2 diabetes in Pacific Islander populations in Hawaii. Indeed, the age-adjusted prevalence rates for Type 2 diabetes in Hawaiian Polynesians are among the highest reported for any Polynesian or part-Polynesian population in the world.²³ Furthermore, mixed Hawaiian ancestry has not been shown to diminish the risk of Type 2 diabetes, unlike in other Native American populations. This discrepancy may be due to inaccurate ethnic self-reporting or to the mixed ancestry including other ethnic groups also known to have high rates of Type 2 diabetes.²³

An increasingly Westernized and sedentary lifestyle is correlated with the increasing prevalence of diabetes in other populations and may be a factor in the high diabetes rates in native Hawaiian populations. A study comparing Japanese-American men who maintained either a traditional Japanese or a modern American lifestyle demonstrated the influence of a Western lifestyle on diabetes risk. Japanese-American men who maintained a more Japanese lifestyle had lower rates of diabetes than those Japanese-American men who were more acculturated to a Western lifestyle.²⁵ Other literature further suggests that traditional cultural beliefs about the caretaking of ill family members and the concept of the spiritual unity of a person with the environment may prevent individuals from taking

preventive measures and/or from seeking conventional medical care.²⁶

Further research on diabetes in other ethnic groups in Hawaii is needed. Available data suggests higher rates of diabetes for ethnic groups in Hawaii than for their counterparts in their native countries, which is perhaps attributable to the more Western lifestyle available here. Furthermore, while data from specific ethnic groups living on the mainland USA may be extrapolated to the same groups living in Hawaii, the unique location and cultural influences of Hawaii makes applying statistics from elsewhere to Hawaiian ethnic groups potentially inaccurate and misleading.

Infant Mortality

Infant mortality rates are often used as an indicator of the overall health status of populations, since infant mortality rates often reflect the impact of other risks such as infectious disease, malnutrition and injuries.²⁷ Several studies have been conducted to evaluate and compare infant mortality rates between ethnic populations in Hawaii. Overall, the infant mortality rates in Hawaii have declined from 19 per thousand live births in 1968 to 9.2 per 1000 in 1983,²⁸ and then further declined to 6.2 per thousand in 1997.²³ This was lower than the national average of 7.1 for that year, and lower than the Healthy People 2000 target of 7.0 deaths per thousand live births. However, infant mortality rates in Hawaii began to increase in 1997, even as national rates declined, and in 2000, was an alarming 7.6 deaths per 1000 live births,²⁹ exceeding the Healthy People 2000 goal of 7.0 deaths per 1000 births. In 2001, the overall infant mortality rate had dropped to 5.8 deaths per 1000 births, lower than any of the preceding four years.³⁰ This sharp decrease is believed to be the result of targeting of high risk communities to encourage early entry into prenatal care.

The etiology of infant mortality is often linked to the incidence of low birth weight (LBW) infants, which in turn is correlated with maternal characteristics such as ethnicity, maternal age, marital status, socioeconomic status and access to prenatal care.³¹ The higher rates of unemployment, low educational attainment, and young maternal age in Hawaiian and Pacific Islander populations put these groups at higher risk for LBW infants, which usually is concomitant with higher rates of infant mortality. However, though Hawaiian and Pacific Islander infants have a high rate of infant mortality, these populations have low rates of LBW infants.³² The accepted belief that LBW correlates directly with infant mortality is challenged by Hawaiian and Pacific Islander LBW and infant mortality data. The causes of infant mortality would seem to be more complex, and more ethnic-specific, than once believed.

One study used live birth-infant death vital record files and compared Hawaiian and Caucasian maternal characteristics and health status indicators in order to determine the role of maternal sociodemographic risk factors in these populations.³² Forty percent of Hawaiian mothers were unmarried, compared with 13% of white mothers, and were four times as likely to have their first child before the age of 18. Although the Hawaiian infants had LBW percentages below the national average, they were also less likely than Caucasian infants to have high birth-weights, but were more likely to be preterm. Furthermore, these infants also experienced postneonatal mortality rates that were double those of white infants. For example, Hawaiian infants died of infectious diseases twice as often as white

infants and three times as often from injuries.^{28,32}

Comparing Samoan and Hawaiian mothers, Samoan mothers were more likely to have their first child after age 17 and to have attained higher levels of education.³⁰ Samoan infants were twice as likely to have high and very high birth weights, a trend possibly related to parental size. On the other end of the weight scale, when maternal characteristics such as educational attainment, prenatal care, primiparity, high parity, marital status and rural residence were controlled, Samoan ethnicity decreased the odds of LBW by 67%.³¹ ³³ The Hawaiian postneonatal infant mortality rate was three times that of Samoan infants, despite there being no differences in low, normal or high *birth weight-specific* neonatal mortality between Hawaiian and Samoan infants.³¹ Possibly, LBW is not an adequate indicator of infant mortality risk in Hawaiian and Samoan populations since the Hawaiian infant mortality rate is twice that of Samoans despite Hawaiian infants having a mean birth weight similar to, and Samoan infants having a mean birth weight greater than the national average.

Postneonatal mortality rates that exceed neonatal mortality are rare in developed countries and are limited to Native American groups, including Hawaiians.³¹ Samoans had postneonatal infant mortality rates similar to the national average. However, their neonatal mortality rates were significantly higher despite a low rate of LBW infants. One possible factor explaining these increased mortality rates is late access to care preventing diagnosis of maternal diabetes and other problems that can affect infant health status.

Korean-American mothers in Hawaii are more likely to be older, have lower educational status, and be less likely to be single, adolescent or have received prenatal care than Caucasian mothers.³² While Japanese-American mothers are also older and more likely to be married, they have higher levels of educational achievement and receive more adequate prenatal care than their Caucasian and Korean counterparts.³³ Despite having few risk factors for LBW, Japanese-American infants have a higher rate of LBW, preterm and very preterm births and more infants that are small for gestational age. However, it may be that the category of Japanese infants that are recognized as LBW are not actually low birth weight or small for gestational age relative to their ethnic group, but rather to the standard set of Caucasian infant averages. This is misleading. Indeed, Japanese infants having average birth-weights that are low compared to the national average may be normal for this population. In contrast, Samoans, as noted above, often have higher than average birth-weights, but still suffer higher rates of neonatal mortality. Thus, the higher-than-national-average birth-weight of these infants is not necessarily an indication of lower risk, suggesting that different and better birth weight standards should be implemented.

Immunizations/Infectious Disease

Ethnic-specific data on child and adult immunizations in Hawaii are sparse. Data on the incidence and prevalence of many infectious diseases are also inadequate. Susceptibility to infections and severity of infectious diseases are determined by multiple factors, including route of exposure, dose of pathogen, genetic predisposition, nutritional status, social and environmental factors and underlying conditions which might compromise immune function.

Research conducted with American Samoans suggests that higher levels of stress arising from social tensions of race, class, and

economics have significantly compromised immune function.³⁶ Samoan children have also been found to have the highest incidence rate of rheumatic fever. Indeed, while the incidence rates in other ethnic groups have decreased since 1966, the rate for Samoan children has not.³⁷ Pediatricians and other primary health care providers in Hawaii have also anecdotally noted higher rates of skin and soft tissue infections, bacterial pneumonia, and other bacterial infections in Polynesian children. A study based at Kapi'olani Medical Center for Women and Children in Honolulu found a predominance of bacterial pneumonia (49%), skin and soft tissue infections (62%), septicemia (36%), and osteomyelitis (49%) in patients of Polynesian descent compared to the total population of children admitted to this hospital. Indeed, in another study, 52% of all bacterial pneumonia have also been demonstrated in children of Polynesian descent in Hawaii,³⁸ consistent with other literature reporting higher rates of infections in Pacific Islanders^{39,40,41}.

Another study shows a higher incidence of acute rheumatic fever (ARF) in Polynesian children in Hawaii, while systemic lupus erythematosus (SLE) is higher in Samoans, Filipinos, and Japanese. In contrast, Japanese and Filipino children have low rates of juvenile rheumatoid arthritis while Samoans have no diagnosed cases.⁴² A study of adult immunizations in a long-term care facility in Hawaii found that 89% of residents were immunized against influenza, but that pneumonia immunizations were more underutilized.⁴³ Further studies are needed to clarify the relationships between ethnicity and infectious diseases.

HIV/AIDS

Because of the prolonged asymptomatic or disease-free phase of HIV infection, AIDS surveillance data provide limited information and do not clearly describe the full HIV burden within a given population. However, data on AIDS are the only population-based data available for the epidemic in the United States.⁴⁴ A study investigating the incidence of AIDS in Asian and Pacific Islander groups in the United States from the time of the first report in 1983 through 1998 showed that 12% of the total AIDS cases came from Hawaii with 10% from Honolulu.⁴⁴ Men accounted for 89% of the total cases, with men who have sex with men (MSM) constituting the largest exposure category (74%), followed by injection drug use (5%), MSM plus drug use (4%), and transfusion (2%). Ten percent of men reported no risk, the highest proportion among persons born in South Asia (38%). Of the AIDS cases affecting women, 46% were attributable to heterosexual contact, 17% to injection drug use, and 16% to blood transfusion. From 1996 through 1997, the incidence rates of AIDS for Asian and Pacific Islanders was 12.8 per 100,000, as compared to 23.9 per 100,000 for Caucasians.

Epidemiologic data indicate that the HIV risk behavior of most concern among Asians and Pacific Islanders is MSM. Data on Asians and Pacific Islanders who list MSM as a risk behavior predict HIV infection rates comparable to those among white MSM of the same geographic regions.⁴⁴ The rate of transfusion-acquired AIDS in Asian and Pacific Islander women is comparable to that of white women while the risk for AIDS due to injection drug use and heterosexual contact is lower than for other ethnic groups. Accordingly, the high proportion of AIDS cases without risk information, especially among women from South and Southeast Asia suggest that language and cultural barriers may impede the determination of

risk assessment. Furthermore, the number of AIDS cases among Asians and Pacific Islanders may be underestimated because of race or ethnicity misclassification on medical records.

According to the AIDS Surveillance Quarterly Report,⁴⁵ Asian and Pacific Islanders accounted for 26% of the total reported cases from 1982-2000, with Caucasians comprising 63.4% of the total 2454 cases. African-American cases accounted for 4.3 % of the total,, Hawaiian/Part Hawaiian 12.5%, Hispanic 5.1%, Filipino 5.1%, Japanese 4.7%, Chinese 2.1%, and Other Asian/Pacific Islander 4.5%. In every ethnic group, MSM accounted for between 53-83% of the reported cases, with African-American having the lowest and Chinese the highest. More data on the incidence of AIDS in each ethnic group in Hawaii are urgently needed.

Discussion

Although initiatives have been implemented and resources directed toward eliminating ethnic health disparities in the United States, there is still a long road ahead. The six targeted health concerns for Healthy People 2010 reflect disparities across all U.S. ethnic groups. When considering that each of these health concerns manifest in different ways and for different reasons, ranging from access to care to racism issues, and occur between as well as within ethnic groups, the magnitude and complexity of the problem becomes evident.

Even as health and social programs tackle the most glaring ethnic health disparities in the nation, the body of literature on the clinical, social, and cultural relationships suggests additional strategies to eliminate health disparities. Hawaii's unique position as a state of predominantly ethnic minorities which provides universal health care to its citizens creates opportunities to explore the processes of health care seeking, care delivery, and health status within and between minority groups. This is needed especially for those that comprise the Asian and Pacific Islander ethnic categories, the fastest growing and most understudied in the nation. A full and detailed accounting of the health disparities in Hawaii's ethnic groups is needed to further identify high risk populations in need of intervention and care, while segregating them from the misleading aggregate data which commonly represents Hawaii as a healthy state for healthy people.

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