

TOP NEWS

Polynesian ancestry linked to obesity, diabetes in Native Hawaiians

By [Christie Wilson](#) • Feb. 11, 2021

Lifestyle and socioeconomic factors are often associated with the higher prevalence of obesity, type 2 diabetes and cardiovascular disease in Native Hawaiians, but new research has found that Polynesian genetic ancestry also elevates the risk for certain chronic ailments.

Using genetic data from nearly 4,000 individuals involved in a long-term multiethnic health study, a team of researchers lead by Charleston Chiang of the University of Southern California Center for Genetic Epidemiology found that for every 10% increase in a person's Polynesian genetic ancestry, the odds of being diabetic and suffering heart failure rose by 8.6%, and 11%, respectively.

A greater amount of Polynesian genetic ancestry also was linked to a higher body mass index, a measure of body fat, according to the study published today in PLOS Genetics.

But genetics isn't the only, or even the major, determinant of obesity and chronic illness in any ethnic group, the study emphasized, saying "lifestyle, socioeconomic and other environmental factors could play as big or a bigger role. However, we hope the genetic studies will be a window into understanding the biology behind these diseases, in a way that is targeted and eventually beneficial to the health of the underserved population."

Epidemiological studies have shown that 49% of adult Native Hawaiians are obese, compared to 21% of European Americans and 13% of Japanese Americans living in Hawaii, according to the new report, whose co-authors include Lynne Wilkens and Loic Le Marchand of the University of Hawaii Cancer Center. Native Hawaiians also are two to three times more likely to develop Type 2 diabetes and 1.7 times more likely to develop cardiovascular diseases than European Americans.

So Chiang said the team's findings didn't surprise him as much as the dearth of genomic resources for studying Native Hawaiians, which he described as "almost nonexistent."

"I know from previous epidemiology studies that Native Hawaiians are known to have an elevated risk for various cardio-metabolic diseases or traits when comparing them to European or Asian Americans, but from a genetic standpoint I think they are very understudied, so we were there to kind of fill in the gap."

Filling in the gaps to understanding the genetic underpinnings to disease risk within ethnic populations is a particular interest for Chiang and his team at the USC Center for Genetic Epidemiology.

"The genetic field has always focused a lot on European populations because there's a long history for it, and, obviously, a lot of the genetic studies have been driven by European or Western researchers who had a long history of these well-maintained cohorts of European populations. So in some ways it made sense that a lot of these genetic studies were done in Europeans," he said.

To broaden the research, USC and the UH Cancer Center established the Multiethnic Cohort Study in the mid-1990s, enrolling 104,000 Hawaii residents and 112,000 Los Angeles residents representing five ethnic groups including Native Hawaiians. Participants completed a comprehensive questionnaire on their diet, medications, physical activity, family medical history and other personal information, with updates every five years to track the development of cancer and chronic diseases.

From that larger group, Chiang's team reached its findings by examining the genome-wide genetic data of about 3,940 self-identified Native Hawaiians, locating the components inherited from Polynesian ancestors and connecting them to the health conditions reported by study participants.



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“To me this is the first step toward more personalized medicine, knowing these are the particular attributes of a person for disease or risk assessment,” Chiang said.

While an individual's ancestry doesn't determine his or her destiny in terms of health outcomes, the study said further research “may be able to identify genetic variants and underlying biological factors specific to Polynesian populations, which would allow the election of lifestyle or pharmaceutical interventions to reduce their higher risk of these diseases.”



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