

## **DIET, HEALTH AND LONGEVITY IN OKINAWA**

Bradley J. Willcox MD MSc (P)

Pacific Health Research Institute, Honolulu, Hawaii

The Okinawa Centenarian Study, now in its 29<sup>th</sup> year, is the world's longest-running population-based study of centenarians. A consistent finding in our study population of older Okinawans, which includes centenarians and other elderly individuals, has been that they exhibit several characteristics of the caloric restriction phenotype. This includes a small body size, low body fat levels, low risk for chronic disease, high physical and cognitive function, and long life expectancy. Since long term caloric restriction is a robust means of reducing age-related diseases and extending lifespan in multiple species but the effects in humans are uncertain, we analyzed six decades of population data for evidence that nutrition-related factors, particularly those related to caloric restriction, may have played a role in the healthy aging seen in older Okinawans. Data on caloric intake, energy expenditure, other nutritional variables, anthropometric measures, age-related hormones and morbidity/mortality outcomes support a caloric restriction phenotype for elderly Okinawans that may have contributed to their exceptionally healthy longevity. These data include low caloric intake, an energy deficit at younger ages, low body mass index, and relatively high plasma DHEA levels at older ages with concomitant low risk for morbidity/mortality.

This study is consistent with the well-known animal literature on caloric restriction-linked phenotypes and longevity and provides support for the caloric restriction hypothesis in humans. Further study of the potential role of caloric restriction and other nutritional interventions for improving human health and longevity is warranted.