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American Samoa, Factor 10: Dietary Diseases

American Samoa: Food, Family, and the Future

“Food is the moral right of all who are born into this world”- Dr. Norman Borlaug

‘O le fogava ‘a e tasi, in Samoan, means “One Family”. Food production and consumption patterns shape the life of the family and the community in American Samoa, a small island archipelago in the South Pacific. As a developing country, American Samoa faces poverty and a lack of food security. Within the past forty years it has also developed an obesity epidemic. American Samoa is “a global harbinger” of how obesity and related diseases may emerge in other developing countries, making this an urgent global challenge (“Obesity in Samoa”). This paper will explore food production and consumption in American Samoa, analyze the ramifications of obesity for a typical family, and propose a three-part plan to solve this problem.

The typical family in American Samoa consists of a nuclear family with an average of three children, the father’s grandparents, and extended family, adding up to seven or more people per household. The larger community is made up of *‘aiga*, kin groups descended from a common ancestor, with a *matai* as an elected chief of traditional councils. While the society is somewhat hierarchical, it does not have a true class division, and work is shared between women and men. Women form their own organizations, responsible for their part of communal labor, hospitality, and ceremonial activities. Most of the land in American Samoa is owned communally (“American Samoa”).

Traditional diet in American Samoa was based on taro, a starchy perennial plant utilized worldwide as a subsistence crop, as well as banana, breadfruit, and coconut. It also included animal protein (chicken, pork, seafood), fruit (mango, papaya, melon), and vegetables (lettuce, cabbage, cucumber) (“American Samoa”). During the modern era, a new diet emerged which was based on processed foods such as potato chips, pancakes, turkey tails, microwavable meals, and mutton (Baylin *et al.*). This added 900 calories to an average daily intake, most of them from fat (“Obesity in Samoa”). The community continues to practice ceremonial celebrations serving large amounts of fancy foods such as roast pig and puddings to all guests (“American Samoa”).

Because American Samoa is an unincorporated territory of the United States, its education and medical systems are aligned with American standards, but the population has limited access to services due to poverty. In 2002, only 39% of the population had a high school degree; 19% had some college and 7% have a bachelor's degree or higher. Compared to both American Samoan men and US women, women in American Samoa have less education on both high school and college level (“American Samoa”). Medicaid assists 87% of the American Samoan population under a broad waiver based on the overall poverty level. This results in affordable healthcare for all natives (Faleomavaega p.1). Nevertheless, the average family has trouble accessing services, as only one hospital on the major island can perform emergency care and minor surgery. Basic care is provided across several islands in five health centers, which are run by nurses. (“American Samoa Intro”).

The population of American Samoa is about 58,000 people; of those, 87% live in small-town urban developments along the coast of the main island, Tutuila. The rest of the population lives in widely spread out rural areas. 60% of households raise or grow agricultural products, representing a 20% decline since 2003. Urban gardens can be adjacent to residences or located on undeveloped communal lots. The average size of a rural farm is 1-2 acres (Census of Agriculture p.9); traditional farming methods such as “slash and burn” are combined with modern farming techniques such as the use of defoliant and herbicides (“American Samoa Environment-Current

Issues”). Paid farm labor is uncommon as less than 300 people are temporarily employed on farms. Both urban and rural producers grow taro, bananas, coconuts, and a variety of vegetables. From 2003 to 2008, there has been a decrease in farming of these traditional high-nutrient foods, but an increase in farming of cash crops such as corn, cocoa, avocados, and sugarcane, in both commercial and non-commercial farms (Census of Agriculture p.10-14).

The urban population in American Samoa is employed in government jobs (approximately 27.6 %) or as manual laborers in tuna canneries (45.8 %), while the rest work in service industry or are unemployed at the rate of 26.6% (“Insular Area Summary for American Samoa”). The average per capita income is \$6,311. The average household income is \$34,254, putting 56% of the population below the US poverty line (Wolman p.1). The rate of urbanization is 1.8% a year; it also represents a step towards emigration out of American Samoa, which is one of the highest in the world at -22/1000 (“Economy: American Samoa”). The US Army is a popular option for young men: the American Samoan Army recruiting station ranked #1 in 2014 out of America’s other 885 stations (Chen p.1). American Samoa is also known to turn out many professional athletes, and has been nicknamed the “football nation”. Amazingly, even though high school sports only began there in 2011, 30 current NFL players and 250 college athletes come from American Samoa, a place with the population of a typical suburban US town (Sonny p.2).

Despite the poverty levels, the American Samoan population relies heavily on purchased foods. Australian and American imports represent up to 95% of the everyday diet. A study by the American Samoan Community College shows that the islands are “a food desert”, an area where residents have little access to foods with adequate nutrition for a healthy lifestyle. 57% of the surveyed stores did not stock raw produce, and of those that did, very few had a selection with both variety and quality. All stores had ads for junk food at low prices (Asifoa-Lagai p.16-17).

The main barriers to agricultural productivity and economic prosperity in American Samoa are weather volatility, poor soil quality, and limited natural resources. The Samoan Islands are of a volcanic origin and have experienced volcanic eruptions, as well as tsunamis from fault lines in the Pacific Ring of Fire. Cyclones periodically occur in the Southern hemisphere and devastate crops and communities. Poor soil quality in American Samoa is a long-term effect of both volcanic activity and cyclones. The islands are made of young rock that has little water drainage and weak soil. Volcanic springs erode the valleys and leave less quality soil to farm on. The cyclones also erode the soil by tearing out rooted crops (“Geology Field notes: National Park of American Samoa”). Finally, the small size and remote location of American Samoa means that it cannot support unchecked population growth, and there are few economic opportunities. During the last 25 years, the population of American Samoa has doubled. Birth rates in teens and young adults are high, and there is a cultural appreciation for large families (“People and Society: American Samoa”). Only 30% of the total land, however, remains available for development due to rugged terrain (“Population Growth”). This leads to the paving of farmland, strain on water supply, and overfishing. Tuna canning is the only major private industry, but one company closed after the U.S. minimum wage of \$7.25 was introduced in 2008 (“American Samoa”).

Obesity is a pandemic in American Samoa, affecting every family. Obesity rates are measured by surveying population samples and measuring people’s weight, body-mass index (BMI) that represents body’s fat composition, and other health metrics. In 2007, over 74% of the population in American Samoa was obese (“Obesity: Adult Prevalence Rate) and 93.5% was overweight (“American Samoa NCD Risk Factors STEPS Report); today, the obesity rate has increased to 91%, one of the highest in the world (“Obesity in Samoa”). Average BMIs are very high in the population, 33.8 for females and 30.5 for males, while a cutoff for normal weight is 25. Similarly, average waist size is over 40 inches, which is a clinical indicator of abdominal fat and risks for obesity-related diseases. As a consequence, 99.6% of the population is at a high risk for cardiovascular disease and 47.3% are diabetic. The leading cause of death is cardiovascular disease (American Samoa NCD Risk Factors STEPS Report). The average youth is overweight,

with 35% being obese, and newborn obesity is becoming more common (“Prevalence of Obesity in American Samoan School Children”).

Obesity trends in American Samoa are likely to get worse due to genetic, cultural, and demographic factors. Scientists had postulated that people of Pacific Island heritage may have genetic predisposition to obesity on a western diet, due to thrifty metabolism that had evolved in harsh environmental conditions (“Obesity in Samoa”). Culturally, many community celebrations center around abundant food. Tall stature and high body weight are traditionally perceived as beautiful and, together with sedentary lifestyle, signify prosperity and social status (Curtis). Because of this, people may be unaware of the difference between being obese and having good muscle mass; indeed, in one survey, most overweight teens thought their weight was normal (“Prevalence of Obesity in American Samoan School Children”). Finally, American Samoa has a very young population: 46.1% of people are under the age of 24, and the median age is 27 (“People and Society: American Samoa”). Therefore, these already dire obesity statistics apply to young people whose health issues will only worsen as they age.

Other major factors contributing to the obesity epidemic are the economy and volatile climate conditions. If local food production continues to decline as it has been (Census of Agriculture p.14), there will be more reliance on junk food. Devastation due to climate volatility, while not affecting obesity directly, does impact the economy. Small farms have been shown to absorb 22% of economic impact from natural disasters in developing countries, with crops and livestock most affected (Chongaile page #3). Yet, the affected farmers receive only 3.4% of humanitarian aid and assistance (“Impacts of Natural Hazards”). This causes long-term interruptions in raising nutritious local food, leading to a more unhealthy diet.

Obesity has a huge impact on agricultural productivity, public health, and the economy. Obesity makes all manual labor difficult, leading to sick days and disability. Women are disproportionately affected even though the rates for cardiac disease and diabetes are similar between men and women. Women have higher BMI's, increasing their risk of labor problems and miscarriages (“Pregnancy and Obesity”). Also, it can be inferred that emigration patterns out of American Samoa favor educated and able-bodied men, leaving women with less education and more obesity-related problems to tend the gardens and support the family. The continued population growth and the aging of the obese population will put a strain on the health care facilities and Medicaid. The main hospital in American Samoa is not equipped to perform high-risk heart surgery such as quadruple bypass. The facilities on the other islands cannot provide the full rehabilitation and care to people with diabetes, stroke, or arthritis. Growing Medicaid expenses will overtax the American governmental health care, which may lead to federal cuts.

Solving the obesity problem in American Samoa will not only improve public health, but also diversify the economy and raise living standards. People previously unable to work or go to school will receive more education and bring in money, while decreasing strain on the healthcare system. Women and children, as the most affected, will derive most benefits from the programs geared specifically to their needs. As fresh local produce is a cornerstone of any program to combat obesity, small growers and farmers will find their work to be in high demand. American Samoan government can work together with the US government, non-profits, private companies, and local committees to better allocate funds for health programs, economic diversification, and support of sustainable agriculture.

I propose a three-part plan to fix the obesity problem in American Samoa that includes: 1) diet education and active lifestyle; 2) sustainable production of local nutritious food; and 3) disaster and population growth management. My recommendations will meet many of the Post-2015 Sustainable Development Goals set by the U.N including, but not limited to: 1) End poverty in its entirety everywhere, 2) End hunger, achieve food security and improved nutrition, and promote sustainable agriculture, 8) Promote sustained and inclusive economic growth, full and productive

employment, and decent work for all, 12) Insure sustainable consumption and production patterns, and 14) Conserve and sustainably use the ocean, seas, and marine resources for sustainable development.

To promote healthy diet and active lifestyle, I propose developing a school program in which children will learn nutrition basics and work in school gardens. The program would teach major food groups, nutrients, portion control, and good food choices. Children's Healthy Living Program, working together with the American Samoa Community College, has pioneered school gardens and hydroponic systems at four Head Start Schools. Even small children easily grew such veggies as bok choy, tomatoes, and basil. The produce was then shared with families and incorporated into the school lunches; children liked to try new foods that they themselves had grown ("Team-American Samoa"). This project can be scaled up to involve the whole island. My other suggestion is to ban junk food ads in grocery stores, and impose a higher tariff, a "health tax", on imported fatty foods such as turkey tails and mutton. These foods will become more expensive, influencing the consumer to treat it as a delicacy, not a staple. The government can then use the "health tax" money to fund these nutrition programs in schools. To promote exercise, I suggest that NFL football players and other athletes from American Samoa help develop school sports and physical education programs on their native island. They can become role models for the younger generation by volunteering to coach, sponsor teams, donate equipment, and organize competitions for all children in the community. My other suggestion is for American Samoa to develop a tourist industry geared towards athletic pursuits such as hiking, climbing, boating etc. Samoa has a beautiful undeveloped terrain that outdoor enthusiasts would gladly visit. Meanwhile, local residents can work as guides, and as a preparation, create their own Association for Nature Trails of Samoa that would support hiking and nature running. This would both promote physical activity and create more jobs as the tourist industry blossoms.

Community gardens and sustainable farming can increase local food production in American Samoa. Community gardens are a perfect fit for American Samoan culture due to communal land ownership and close relationships of the people within the '*aiga*'. One such non-profit project, on a budget of \$55,000 and geared towards tsunami survivors, trained 95 people in traditional Samoan farming. A 2011 hurricane, however, wiped away the gardens ("Native American Samoan Advisory Council"). To help prevent hurricane damage, vetiver grass or tropical lalo can be used as a ground cover. Vetiver grass is a closely overlapping, highly adaptable plant. Grown as a hedge, it protects soil from erosion and conserves rainwater (Webb). Tropical lalo is another ground cover, used successfully in tree farms that yield nuts and fruits (Joy & Rotar). Then, community gardens can be maintained by different '*aiga*' throughout the urban areas. In a rural area of American Samoa, Sosene Asifoa is a pioneer of sustainable farming. He uses vetiver grass to control erosion and grows fresh produce such as dry-land taro, cucumbers, tomatoes, and cabbage. He also raises 80-100 pigs, and not only uses their manure as a fertilizer for his crops, but also sells topsoil to other growers (Saumweber). Mr. Asifoa could mentor others, so that his good farming practices can be scaled up throughout the island, and provide the population with nutritious food.

Offshore aquaculture is another way to improve the health and economy of American Samoa. Fish is high in protein and rich in omega-3 fatty acids that help prevent cardiovascular disease ("The Benefits of Eating Fish"). Wild fish such as albacore tuna are threatened by overfishing, while traditional inshore fish farming has horrible effects on water quality and fish health. Offshore aquaculture is a way to grow fish in cage-like enclosures that are located in deep ocean water. It does not appear to damage the ecosystem because of the constantly circulating ocean water that carries away waste (McQuaid). Fisheries are less affected by hurricane devastation, compared to crops or livestock ("Impacts of Natural Hazards"). As an unincorporated territory, American Samoa has less federal regulations, making it a good place to invest in offshore aquaculture. An Aquapod cage for raising fish costs \$140,000; the cost of owning and operating one is comparable to that of a fishing boat (Maine Business Journal). NOAA National Marine Aquaculture Initiative provides grant awards of up to \$400,000 for experimental new aquaculture,

to establish environmentally safe and sustainable fish production (“About NMAI”). Such a grant can be used as a base, to be combined with private investments. Aquaculture is estimated to produce 60% of the world’s seafood by 2020, and is very profitable (Richardson). American Samoa could become a center for offshore aquaculture, creating the whole new industry in the area. Tuna from offshore could be sold fresh or brought to the existing tuna canneries for processing. This would both create jobs and provide a healthy food source.

Quick restoration of community gardens and small farms after natural disasters should be a priority. The U.S. Government gives American Samoa up to \$86 million in agricultural aid through the Recovery Act (Territorial Planning Commission). I propose that a portion of this be set aside to create a fund to aid small producers if hurricanes or tsunamis strike. I further suggest that American Samoa, in cooperation with USDA, creates Pacific Cultivar and Seed Exchange Program. This program would partner American Samoa and eventually other Pacific islands with universities and bioresearch facilities in hurricane danger zones, such as University of Hawaii. Each program member would maintain a stock of seeds and perennial plants used in farming. If a natural disaster strikes in one location, program partners can deliver seeds and cuttings that would be distributed to community gardens and small farms to quickly replenish them.

To balance population growth, population caps of 115,000 residents, immigration reform, and contraception education in rural areas have already been proposed (“Population Growth”). I also propose that women should be encouraged to finish high school and receive advanced education. The government of American Samoa, in partnership with the US Department of Education, can again use Recovery Act aid to give women scholarships in biotechnology and healthcare, with a stipulation that these women will later work in American Samoan industries. Women’s committees can promote this opportunities in local communities. This would not only create more jobs but also allow women to delay the birth of the first child, ensuring that there are ample resources to help the current generation.

Everyone in the typical family in American Samoa can benefit from proposed measures. Older adults could work in the community gardens and eat the fresh produce, adding nutrients to their diet and creating a more active lifestyle. They could find better jobs in offshore aquaculture and tourist industry. Young adults could apprentice with local growers who use sustainable farming skills, or work as nature guides. Girls will have more options to study for a career in biotechnology or healthcare. Small children can tend school gardens and participate in newly opened school sport clubs. American Samoa serves as a microcosm for the world’s obesity problem. If sustainable improvements are achieved, other countries that face both the third-world problem of poverty and the first-world challenge of obesity can use the pioneering example of American Samoa. After all, the whole world is *‘O le fogava ‘a e tasi*, one family.

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