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**Nauru: Addressing obesity and malnourishment through nutrition education and improved eating behaviors (dietary diversification, food selection, portion-size control etc).**

The Republic of Nauru is the world's smallest republic with an estimated population of 9,300. Located twenty-five miles south of the equator, this republic is a western Pacific island with a land area of approximately twenty-one square kilometers. The island is a raised coral reef and about sixty percent of the land's composition is a central plateau. Most of the population has settled on the fertile land belt around the outer edge of the island. Climate is considered tropical, and daily temperatures average around ninety degrees Fahrenheit. The climate is moderated by sea breezes, and a rainy monsoon season is from November to February; rainfall is unreliable and frequent droughts do occur.

Families in Nauru have close ties with extended family and often, up to ten people from three generations can be found living in the same house. Usually, family members that are not living together live near each other and visit often. Estimates suspect that about ninety percent of the population is unemployed (Nauru Health Insurance). Most of the employed population has occupations from the government or in the phosphate industry. Other job opportunities include public administration, education, and transport. Workweeks are set on an average of thirty-six hours in office jobs and forty hours in manual labor occupations. Seventeen years of age is the minimum age for employment, but there are small numbers of family-owned operations in which young children work part time.

As a child in Nauru, it is a requirement to attend school from age five until age sixteen. This is a new requirement as of 2010. There are coeducational schools for students to receive up to an intermediate level of education. Government-run schools as well as schools run by the Roman Catholic Church are on the island. For students who desire higher education opportunities, scholarships for education off of the island are available.

In Nauru, the Ministry of Health is responsible for providing mental, physical, and dental health care. Healthcare is available for citizens through the two hospitals on the island, Nauru General Hospital and Nauru Phosphate Corporation Hospital. Nauru General Hospital offers free treatment for all citizens, but the Phosphate Corporation Hospital is for phosphate employees and expatriates. Even though healthcare is free and available to all citizens because it is government-funded, the quality of care isn't sufficient due to the medical staff not having the training, equipment, or resources to perform serious medical procedures. Statistics show that there are about .71 physicians for every 1000 people on Nauru; this would mean that the estimated number of doctors on Nauru is six (Nauru Health Insurance). There is a shortage of doctors for the amount of citizens and medical concerns on the island. Both the Nauru General Hospital and the Nauru Phosphate Corporation Hospital are capable of completing routine and basic healthcare, but due to the lack of resources and low quality of the hospitals, it is often necessary for patients with more in-depth medical situations to be sent to Australia to receive further medical attention.

Phosphate mining has long been the main source of income and exports for Nauru. Germany and the United Kingdom began mining in 1907, the British Phosphate Company took over the mining industry in 1920, and the Nauru Phosphate Corporation gained control in 1970. Extensive mining took place on the central plateau. Phosphate mining was the main economic activity and the main field of employment, and its revenue supplied the island with wealth and prosperity. Reserves have been over-mined and are running low, which has caused a slowdown in mining, leading to job loss and a lower GDP. There may be opportunity for phosphate mining to continue, but until recently, reserves were thought to be empty. No

oil, natural gas, or coal reserves are known to exist on the island. Energy and transportation rely on imported fossil fuels. In order to have electrical power, almost all buildings are connected to the diesel oil generator.

Agricultural production is low due to the limited amount of farmable land area. Only five hundred to six hundred acres of land are cultivated; little commercial agriculture occurs (Nauru). The fertile land exists around the Buada Lagoon of the Central Plateau and on the narrow belt around the island's coast. The area around the lagoon is where vegetables, bananas and pineapples are harvested. Coconut palms, indigenous hardwood trees, and pandanus trees are located along the coast.

Fresh, local food is extremely difficult if not impossible to purchase. Most food must be imported from Australia, therefore, food from the grocery store is canned, processed and has added preservatives. Fresh fruits and vegetables are more expensive, and are not usually imported. Even when fresh food is available, energy-dense or high calorie foods are generally consumed by choice. Because of reliance on imports, inconveniences occur such as store shelves often being low on supplies while waiting for the next shipment of goods.

Traditionally, being a larger person has been a sign of beauty and social dominance. This perspective still remains in parts of Nauru, but large has become larger to a point where it is no longer healthy. Today, one of the leading concerns in Nauru is overweight and obesity. In the Nauru STEPS survey from 2004, 82.2 percent of surveyed people were considered overweight or obese, and the obesity rate was 58.1 percent (NAURU NCD). This trend has been brought on by factors such as tobacco and alcohol abuse, poor nutrition from a westernized diet, and increasing sedentary lifestyles.

Obesity is a condition where people have enough excess fat to increase health concerns. Amount of body fat in a person is hard to accurately measure, so height to weight ratio measurements like the Body Mass Index, or BMI, system are common ratio tools used for displaying overweight or obesity statistics. The World Health Organization classifies obesity in adults having a BMI of over 30 kg/m<sup>2</sup>.

There is evidence that overweight and obesity issues greatly increase health risks for an individual. Chronic diseases, including cardiovascular disease, Type 2 diabetes, gall bladder disease, and hypertension, are more common as BMI increases past a level of twenty-one percent (Stone). Each year, forty-four percent of Type 2 diabetes cases, twenty-three percent of Ischaemic heart disease cases, and at least 2.8 million deaths worldwide are contributed to by overweight and obesity (Overweight). Obesity also increases immobility, which can impair a person's ability to actively contribute to the community and be a productive member of society.

Obesity and overweight is not just a concern in adults, childhood obesity is an issue as well. Childhood obesity is often linked to improper nutrition. Overweight and obesity in childhood raises the chances of obesity in adulthood, as well as shortening life expectancy. Insulin resistance, challenges with breathing, higher risk of fractures, hypertension and psychological effects also burden overweight and obese children; this means that more medical attention is needed. Increased health issues place strain on healthcare systems. When amount of medical attention needed increases, there is a strain placed on the government's budget to cover healthcare costs for all citizens.

Being a large person has long been a cultural statement of beauty and high-ranking social status, but over the years, people have continued thinking this way and don't see the health risks and negative effects as reasons to change their thinking. BMI levels have increased in Nauru; approximately eighty-five percent of men are classified as obese (ABC). These numbers have placed Nauru as the fattest country in the world. Nauru also has extremely high levels of Type 2 diabetes, with nearly fifty percent of adults being

diabetic. The high BMI percentages also decrease life expectancy rates. The average life expectancy of a Nauruan is 65.7 years, as of 2012(Country).

Nauru hasn't always had such extreme obesity troubles, since phosphate mining required intensive physical labor, and diet consisted of fish, coconuts, and root vegetables. As mining profits brought wealth, goods and services could be imported, people didn't have to be self-sufficient, and more sedentary lifestyles evolved. The newly found wealth brought the opportunity for new, popular westernized foods to be imported, and the focus shifted from local fish being a staple food to relying mainly on more energy-dense and processed imports, such as canned spam, salty snacks, and sugary drinks. Now, Nauru is dependent on imports from Australia to provide most of their food products.

The 2004 STEPS survey on non-communicable disease risk factors in Nauru showed that 52.9 percent of the population smoked tobacco, and the majority of smokers consumed high amounts of tobacco daily. The percentage of survey participants who drank alcohol in the twelve months prior to the survey was 46.2 percent, and current drinkers consumed an average of about twelve drinks per day. This number was much higher than the amount of fruits and vegetables, seeing that 93.7 percent of survey participants consumed less than five combined servings of fruit and vegetables in one day(NAURU NCD).

Key factors such as behavior, economic environment, and physical environment have a large impact on physical and emotional health. In order to improve the well-being of citizens in a struggling area, efforts would need to impact all people regardless of age, gender or location on the island. Public health interventions, as well as clinical interventions should be made to form an awareness that there are many harmful effects of tobacco and alcohol usage, poor eating habits, lack of activity, and being overweight. There should be plans to prevent critical factors, like tobacco abuse, overweight, obesity, high blood pressure, lack of physical activity and not eating a wide variety of foods that raise risk for non-communicable diseases.

There are annual weight-loss competitions, as well as weekly aerobics classes, but attendance at the weekly sessions are low due to fuel shortage(ABC). Football is a popular sport, and citizens are encouraged to walk laps around the airport. National guidelines for amount of physical activity should be put in place to encourage more adults and adolescents to engage in more physical activity. Improvements should be made in recreational activity areas, such as providing another place besides the airport for walking, or adding a new football field.

The government of Nauru should form a nutrition council to set guidelines and regulations. Their nutrition council should consist of some of government leaders and fitness specialists as well as nutritionist or trained health personnel. They should work together to set goals for the country, such as lowering BMI percentile and lowering the diabetic rate. The nutrition council should form guidelines for schools to promote healthier eating, encourage businesses to increase exercise among employees, collaborate with restaurants to create healthier meal options, and work with grocery stores to see if it is possible to import more healthful food options. Other countries' established guidelines, such as the USDA MyPyramid or Mayo Clinic Healthy Weight Pyramid, should be used as a reference.

The number of available health workers should increase to be able to serve the whole population more effectively. Health workers should receive training to be able to address negative health factors, counsel struggling citizens, and promote healthy ways to lower risk factors. Health support, and mentoring should be more easily accessible.

Health workers should be trained as nutrition counselors and should be made readily available to meet with citizens. The trained counselors could help establish personalized meal plans to help give Nauruans

healthy eating options, as well as exercise regiments. They should motivate and encourage through support groups, food preparation demonstrations, and personal counseling.

Health workers should help to set personal goals with patients, such as lowering weight or blood sugar levels. The health employees should monitor blood sugar glucose levels, heart rate, BMI, cholesterol, weight, and other health concerns in order to track progress and address other issues that need to be improved.

The nutrition council should bring in a dietitian to hold information clinics and demonstrations of how to prepare healthy meals. The dietitians could introduce healthier cooking methods as alternatives to frying, such as steaming, baking, or roasting, as well as new lightened recipes. If Nauruans could see what appropriate serving sizes and a balanced meal looked like, that would serve as a visual reminder of what they should be consuming. Citizens should be taught visual measuring tools to serve as a reference to help them control their portion sizes, such as one serving of chicken being two-thirds of the size of a deck of cards (Staff). People often overlook the fact that the portions they put on their plate are much larger than the recommended serving size. Other visual references for more balanced meals could include half of a plate being filled with fruits and vegetables, one fourth containing grains or starchy foods, and the last fourth consisting of protein.

An emphasis is currently put on school-aged kids for healthy eating and getting enough exercise, but more education is needed. If information pamphlets were sent home with children, their whole family could benefit from the education. Being healthier includes making changes like making better eating choices and getting more physical activity. Setting and achieving health goals are easier to accomplish if a family works together, and working together means that everyone benefits from the goals. Parents can help their children by starting healthy routines at a young age, because bad habits are easier to correct at younger ages and once healthy routines are established, they are easier to carry out into adulthood.

It is common for Nauruans to eat one large meal per day. This is not healthy for the human metabolism. If Nauruans began to eat three to five smaller and more balanced meals a day they would be getting more adequate nutrition, by eating more of the food groups and consuming more necessary nutrients. A wide variety of nutrients benefit the body by strengthening the immune system, maintaining bone strength, and improving overall health. They would also be less likely to overeat large portions. Eating more frequently helps to speed metabolic rate and burn calories at a more constant rate. Since weight management is a balance equation between calories consumed and calories burned, boosting metabolic rate would help to maintain or lose weight.

The government of Nauru should get assistance from an agricultural council in order to increase crop production. There should be research conducted to find the most effective way to productivity in the arable land that is currently available. In order to make the best use of the limited land space, the crops that are most suitable to Nauru's growing conditions should be planted, and the agricultural research team should determine which crops those are. Also, nontraditional growing methods should be considered to increase the crop yield, or to decrease the amount of water and other precious natural resources required to farm. Growing methods to consider would include hydroponics.

A lack of agricultural productivity is also a concern in Nauru. The central plateau, which makes up roughly sixty percent of the land area, has become un-farmable because of years of phosphate mining. Fertile land is located around the coastal belt. This land supports the growth of coconut palms, pandanus trees, and indigenous hardwoods. The other area of fertile land is around the Buada Lagoon of the Central Plateau, where bananas, pineapples and some vegetables are grown. The lack of agricultural productivity on the island causes a dependence on imports, which are costly and unhealthy. If more crops could be grown on the island, less money would be spent on importing and more healthful options would be

readily available to eat. There is not enough land area to cultivate for commercial activity currently; non-traditional farming practices would have to be put into practice until the island's surface could be restored. Hydroponics, the method of using nutrient solutions to grow crops, is often used when soil area isn't available. This method of agriculture is used in parts of Europe, Taiwan, China, and the Middle East to grow crops like fruits, vegetables and flowers.

Nauruans could use a self-contained method of hydroponics, which would require growing plants in jars or tubs and adding water and nutrient solution. All necessary components, which include the growing medium, nutrient solution, and grow light, are contained completely inside a self-contained system. Different methods of self-contained hydroponic systems can produce herbs, fruits, vegetables, and flowers including pineapple, lettuce, kale, mustard greens, and tomatoes. In order to produce sprouts and wheat grass, sprout gardens could be used.

Since hydroponics doesn't require soil, the risk of soil-borne diseases doesn't affect produce. Weeds deprive plants of nutrients, take up land space, and require time to pull in traditional farming practices; weeds do not pose issues in hydroponic farming. Also, hydroponics uses considerably less water than regular agriculture; the amount of water needed in hydroponics is an estimated five percent of water used in traditional farming.

The Nauru Rehabilitation Corporation, or NRC, has been established to sustainably rehabilitate the mined out land for the future inhabitants of Nauru(Homepage – Pinnacle). The NRC should work with rehabilitation groups such as Utah State University Institute for Land Rehabilitation or Florida Institute of Phosphate Rehabilitation to develop plans to reclaim the phosphate stripped land through contouring and revegetation. Members of the NRC should attend a symposium held by the Florida Institute of Phosphate Rehabilitation about land rehabilitation. Rehabilitated land is often used for industry, recreation, lakes, and can also be used for pasture and other agricultural purposes (Reclamation).

Producing more crops on the island would mean that the government could gain more money from exports, or have to spend less money on imports if the citizens could consume some of their daily intake as fresh produce. Produce grown on the island would be healthier than the processed and imported foods that citizens usually consume, and there would not be as severe of a burden of empty store shelves while waiting on imports if imports weren't the main provider of nutrition. Fresh produce generally has fewer calories, lower fat, and less sodium than processed foods. When more fresh food is available, it will be more affordable and people will be more likely to consume it. If the amount of citizens regularly eating fruits and vegetable would increase from the current estimation of three percent, more nutrients would be consumed. Well balanced diets can lead to weight-loss and ultimately a healthier country.

The Republic of Nauru is facing serious social and economic struggles. Ways to decrease the burden on this country would be to become a healthier country, which could be accomplished through education, an increase in agriculture productivity, healthier eating habits and more physical activity. Becoming a healthier community would lower physical and mental health issues, decrease the cost that the government must pay for healthcare by lowering the amount of medical attention needed, allow citizens to be more productive in agriculture, and give citizens more pride if they were not part of the most obese country in the world. Increasing agriculture production on the island would decrease the cost spent on importing food supplies, increase the amount of crops available for export, and make fresher, healthier food choices more accessible and affordable. Medical support and education needs to be available for citizens so that they have knowledge and help to achieve goals. By increasing medical staff, and the education of medical staff on the island, counseling would be accessible, and public health programs could be created and well managed.

Being healthy isn't just an image; it's a lifestyle. Changing diets and habits completely may not seem possible or appealing to Naurans, but small steps make a difference. Small improvements in diet and exercise can lead people to want to make bigger changes. As a country, Nauru should set goals for health and economical growth and make plans to take small steps forward together. There is hope, because obesity is a preventable disease.

## Works Cited

- ABC News. Perf. Terry Moran, Mathew Batsiua. ABC News. ABC News Network, 03 Jan. 2011. Web. 20 Mar. 2012. <<http://abcnews.go.com/Nightline/video/fattest-place-earth-12533987>>.
- "Australia-Oceania :: Nauru." Central Intelligence Agency. 23 Feb. 2012. Web. 25 Feb. 2012. <<https://www.cia.gov/library/publications/the-world-factbook/geos/nr.html>>.
- "Background Note: Nauru." U.S. Department of State. U.S. Department of State, 31 Aug. 2011. Web. 18 Mar. 2012. <<http://www.state.gov/r/pa/ei/bgn/16447.htm>>.
- Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. Rep. no. 98-4083. National Institutes of Health, 1998. Print.
- Colt, Johnny. "Canary in a Phosphate Mine." CNN. Cable News Network, 17 June 2011. Web. 25 Mar. 2012. <[http://www.cnn.com/2011/IREPORT/06/17/nauru.colt/index.html?hpt=hp\\_c1](http://www.cnn.com/2011/IREPORT/06/17/nauru.colt/index.html?hpt=hp_c1)>.
- "Country Comparison :: Life Expectancy at Birth." CIA.com. Central Intelligence Agency. Web. 07 Mar. 2012. <<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2102rank.html>>.
- "Homepage - Pinnacle." *Nauru Rehabilitation Corporation*. Pinnacle, n.d. Web. 14 Aug. 2012. <<http://www.nrurehab.org/>>.
- "Hydroponics Information, Resources, Buying and Growing." Hydroponics.com. Web. 5 Feb. 2012. <<http://www.hydroponics.com/>>.
- Keating, Joshua E. "Foreign Policy Magazine." Foreign Policy. 08 Feb. 2011. Web. 22 Feb. 2012. <[http://www.foreignpolicy.com/articles/2011/02/08/why\\_do\\_the\\_worlds\\_fattest\\_people\\_live\\_on\\_islands](http://www.foreignpolicy.com/articles/2011/02/08/why_do_the_worlds_fattest_people_live_on_islands)>.
- Laurance, Jeremy. "How Tiny Nauru Became World's Fattest Nation." The Independent. Independent Digital News and Media, 04 Feb. 2011. Web. 11 Jan. 2012. <<http://www.independent.co.uk/life-style/health-and-families/health-news/how-tiny-nauru-became-worlds-fattest-nation-2203835.html>>.
- Lucivero, Michael. "Nauru's Unhealthy Relationship with Western Food." Foreign Policy Blogs. Foreign Policy Association, 06 Jan. 2011. Web. 18 Jan. 2012. <<http://foreignpolicyblogs.com/2011/01/06/naurus-unhealthy-relationship-with-western-food/>>.
- Marks, Kathy. "Fat of the Land: Nauru Tops Obesity League." The Independent. Independent Digital News and Media, 26 Dec. 2010. Web. 24 Feb. 2012. <<http://www.independent.co.uk/life-style/health-and-families/health-news/fat-of-the-land-nauru-tops-obesity-league-2169418.html>>.
- "Nauru." Worldmark Encyclopedia of Nations. Encyclopedia.com, 2007. Web. 25 Mar. 2012. <<http://www.encyclopedia.com/topic/Nauru.aspx>>.
- "Nauru Health." World Map, Map of the World. Web. 24 Mar. 2012. <<http://www.mapsofworld.com/nauru/health/>>.

- "Nauru Health Insurance." Expat Medical Insurance. Web. 26 Mar. 2012. <<http://www.expatrial-medical-insurance.com/country/nauru/informa>>
- "Nauru Health Insurance Advice." Global Health Insurance. Web. 24 Mar. 2012. <<http://www.global-health-insurance.com/countries/Nauru>>
- Nelson, Jennifer, and Katherine Zeratsky. "Picture Perfect Eating." *Mayo Clinic*. Mayo Foundation for Medical Education and Research, 16 Feb. 2011. Web. 25 July 2012. <<http://www.mayoclinic.com/health/healthy-meal-planning/MY01692>>.
- "Republic of Nauru." Department of Earth and Planetary Sciences. Web. 07 Mar. 2012. <<http://www.earth.northwestern.edu/people/emile/nauru.html>>.
- NAURU NCD Risk Factors STEPS Report. Rep. World Health Organization, 2004. Print.
- "Obesity and Overweight." WHO. World Health Organization, Mar. 2011. Web. 11 Mar. 2012. <<http://www.who.int/mediacentre/factsheets/fs311/en/index.html>>.
- "Online Journalism." Online Journalism. Wetpaint, 17 Dec. 2006. Web. 17 Jan. 2012. <<http://tojou.wetpaint.com/page/Obesity%20Trends%20by%20Geographic%20Location>>.
- "Reclamation." *Florida Institute of Phosphate Research - Reclamation*. Florida Institute of Phosphate Research, n.d. Web. 14 Aug. 2012. <<http://www.fipr.state.fl.us/research-area/reclamation.htm>>.
- Resture, Jane. "Jane's Nauru Home Page." Jane's Oceania Home Page. Web. 05 Mar.
- Roy, Dr. Kshirode C. "Hydroponics." The Daily Star. 12 Jan. 2010. Web. 26 Feb. 2012. <<http://www.thedailystar.net/newDesign/news-details.php?nid=121413>>.
- "Self Contained Hydroponic Gardening." Squidoo. Web. 25 Mar. 2012. <[http://www.squidoo.com/Self\\_Contained\\_Hydroponic\\_Gardening](http://www.squidoo.com/Self_Contained_Hydroponic_Gardening)>.
- Staff, Mayo Clinic. "Guide to Portion Control for Weight Loss." *Mayo Clinic*. Mayo Foundation for Medical Education and Research, 29 Apr. 2010. Web. 25 July 2012. <<http://www.mayoclinic.com/health/portion-control/NU00267>>.
- Stone, Emily. "Fat and Fatter: The World's 10 Fattest Countries 2010." GlobalPost. 22 Nov. 2010. Web. 08 Mar. 2012. <<http://www.globalpost.com/dispatch/health/101118/fat-and-fatter-worlds-10-fattest-countries>>.
- Streib, Lauren. "World's Fattest Countries." Forbes. Forbes Magazine, 08 Feb. 2007. Web. 23 Mar. 2012. <[http://www.forbes.com/2007/02/07/worlds-fattest-countries-forbeslife-cx\\_ls\\_0208worldfat.html](http://www.forbes.com/2007/02/07/worlds-fattest-countries-forbeslife-cx_ls_0208worldfat.html)>.
- Thompson, Derek. "Meet Nauru, Once the World's Richest Island, Now With 90% Unemployment." The Atlantic. 17 June 2011. Web. 27 Mar. 2012. <<http://www.theatlantic.com/business/archive/2011/06/meet-nauru-once-the-worlds-richest-island-now-with-90-unemployment/240639/>>.