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Barbados, Factor 10: Dietary Diseases

Addressing Food Insecurity: Barbados' Hidden Hunger

Barbados is a Caribbean island-nation with a population of 300,000 people. Located just northeast of Venezuela, the 166.4 square mile island is currently experiencing an economic boom, with tourism being the main industry ("Key Facts"). Logic would lead to the belief that Barbados is thriving when it comes to nutrition, as the climate is hospitable to farming. However, Barbados is beset with many health issues, where diet and access to fresh produce are contributing factors. Hypertension, obesity, and diabetes are rampant. With only 14% of the population consuming the daily recommended amount of fruits and vegetables, 17% of men and 29% of women suffer from hypertension; 26% of men and 41% of women are obese; 12% of men and 16% of women have diabetes (Assessing Dietary Patterns). All of these conditions lead to cardiovascular disease: the world's biggest killer ("Treating Cardiovascular Disease"). Small efforts have been made to alleviate the situation. The Barbadian government and small nonprofits have made their efforts to improve nutritional habits; however, success was limited, as the rates of dietary diseases remain high ("Barbados." 2018). However, many solutions to this problem do exist, mostly relating to agriculture. One of the solutions is to empower Barbadians, so that agriculture can play a larger role in their lives. Agriculture, specifically small scale farming and a land lease program, can have extreme benefits when it comes to improving the typical Barbadian diet. These practices would allow Barbadians to grow their own produce, therefore increasing the nutrients they receive and lessening their risk of dietary diseases.

Farmland in Barbados is abundant, with about 75% being arable. Current farms vary from commercial farms of 60 acres to small holdings of 1/2 acre. The number of commercial farms is on the decline because of falling sugar prices and efforts by the Barbadian government to promote agricultural diversification and limit land settlement. This has led to only a slight increase in food production and abundance of small farms. Crops are cultivated by hand in open fields with minimal irrigation, as Barbados lacks most farming technology. The main crops are sugar, cassava, yams, sweet potatoes, corn, eddo, and beans ("Barbados - Agriculture."). While these crops have nutrients, they are full of calories, as they are all carbohydrates or starches. Introducing plant diversity is essential when it comes to improving the nutrition of Barbadians.

In Barbados, a typical family consists of approximately three people, one of which is a child (*Household*). Most live in urban areas. About 98,000 live in the capital, Bridgetown, alone. (*Barbados - Urban*). Over the past decades, the economy has shifted from agriculture to tourism, as the Barbadian government thought tourism would transform Barbados. This transition has taken place alongside a diet shift, from fresh and nutritious to unhealthy and pre-made. These shifts occurred simultaneously because more tourism brought more commercialization, which resulted in more fast food opportunities, making unhealthy food cheap and accessible to all Barbadians. With tourism now being the main source of income, farming has been on the decline. In the 1960's, 70,000 acres were arable, but only 50,000 acres can be farmed now (*Barbados: Country*). Barbadians import most of their food, so the country spends \$321 million a year on food alone ("Barbados - Agriculture."). Importing makes it so fresh produce is at a premium. In recent studies, it has been found that sugar, whole wheat and multigrain breads, rice dishes, and bananas are the most frequently eaten items (*The Barbados Food Consumption*). Furthermore, it has been found that the likelihood of a Barbadian eating a nutritious meal greatly depends on one's economic status. Lower-income households are less likely to consume sufficient fruit and vegetables, leading to them being more likely to have inadequate intakes of micronutrients (*Assessing Dietary Patterns*). The number of lower-income households is rising, as Barbados has chronically high

unemployment. Currently, the rate is about 10.7% (“Facts on Barbados.”). (To compare, the United States’ rate is about 3.9% (United States).) A high unemployment increases the number of families with lower-income, therefore decreasing the likelihood of access to nutritious fruits and vegetables for those families.

In addition to the economy being a factor, education plays a role in the lack of nutrition. There is required schooling for Barbadian children ages five through sixteen: primary and secondary school, with 100% and 99% enrollment rates, respectively (“Facts on Barbados.”). All of these schools are administered by Barbados’ Ministry of Education and are free to citizens. However, the Barbadian school system lacks a nutritional program. Currently, students are fed milk and biscuits, a meal without fruits or vegetables (“School Meals.”). Furthermore, there are no universities or colleges on the island, meaning most Barbadians do not receive any education past secondary school. Any student who would like to continue their education must leave the country. The average Barbadian adult receives 8.7 years of education, showing post-secondary education rarely occurs (*Barbadian and Bajan*). This lack of education is detrimental when it comes to healthy living. The high unemployment is mostly due to the fact that many Barbadians do not have anything above high school diplomas, and college degrees are more needed because of the rise in the tourism industry, as many tourism jobs (such as hotel managers and restaurant owners) require further education. Also, supplementary education would provide many opportunities and resources for Barbadians to explore, in regards to healthy living. Overall, there is a paucity of thought leaders and higher education institutions to influence policies and practices for better farming and nutrition.

Minimal access to healthcare exists on Barbados. There is one hospital on the island, Queen Elizabeth Hospital, with 600 beds. While a hospital does exist, emergency evacuations are often needed for more serious cases. There are also eight government-run polyclinics, which provide free medical treatment for minor ailments. Annually, the Barbadian government sets a budget for the healthcare sector to ensure universal accessibility to all Barbadians. The government also provides a drug benefit service that provides free drugs for Barbadians with major chronic illnesses, under age sixteen, or over age sixty-five. While this is a program in place to help people with dietary diseases, there is, however, no effective government-funded program in place to change the population’s dietary habits (“Health Care.”).

Nutritional issues have their roots in the sugarcane plantations where Barbadians were enslaved. From the 1600s to 1700s, about 37% of the country’s arable land was used for sugarcane. Mood Patel, a documentary filmmaker turned farmer, is studying Barbadian farms. He found that, “Most Barbadians are of African descent. Agriculture reminds [them] of slavery. To be involved in planting food and working in the sun, it’s a remembrance of that time.” The connection between slavery and farming is extremely valuable when it comes to providing solutions for the lack of nutrition (Nanowski). Education and marketing will be needed to teach Barbadians about the trend away from this stigma and the importance/benefits of farming.

Since plantation days, the push away from farming occurred because Barbadian leaders believed that capitalizing on tourism would boost the economy. The tourism industry currently boasts 83% of the country’s GDP and employs more than 14,000 people, while the agriculture sector contributes a mere 4% with the minimum hourly wage being \$2.50 (“Facts on Barbados.”). Because of this, farming has significantly decreased. According to a 2010 report by the Barbadian Environment Minister, Barbados is one of the rare countries that has reforested itself naturally because its farmed fields were abandoned (Nanowski).

With the end of many plantations and farms, food needs to be imported, which results in nutritionally low products and expensive produce. Most families cannot afford to buy the nutritious items to prevent dietary diseases. With the rise in tourism came the rise of fast food. In addition to 5 Kentucky Fried Chickens and

4 Burger Kings, Barbados is home to 14 Chefettes, a Barbadian favorite known for its fried chicken (“Facts on Barbados.”). For every 7 square miles, there is one fast food restaurant, making it easy for every Barbadian to consume fast food. More fast food means a higher calorie intake. Furthermore, almost half of Barbadian families eat fast food twice weekly. This is detrimental when it comes to dietary diseases because an increased caloric intake is linked to increased obesity, hypertension, and diabetes. With sugar consumption exceeding the recommendations, as well as low rates of calcium, iron, and zinc, dietary diseases must be addressed (*Assessing Dietary Patterns*).

Poor nutritional choices lead to heart disease and diabetes: the leading killers in Barbados. Approximately 1/3 of Barbadians die of heart disease. This is an illness that is largely preventable with patterns of healthy living. These diseases also cause the most premature deaths. Barbados has a higher number of premature deaths when compared to the global average. Furthermore, diabetes is the 3rd most common disability, and Barbados has a higher average number of deaths from diabetes than the mean (out of all countries) (“Barbados.” 2018).

To compare, Barbados is the 22nd highest country when it comes to the percentage of citizens with hypertension, obesity, and diabetes, which is significant when taking into account the climate and environment of Barbados. Trends like this occur throughout the Caribbean. The Bahamas, Saint Kitts and Nevis, Saint Lucia, and Costa Rica are all ranked within the top 65 countries, with obesity rates of at least 24%. To put this in perspective, Japan (which is also a highly populated island nation) has an obesity rate of 3.30%, a diabetes rate of 7%, and a hypertension rate of 17%, showing how high Barbadian rates are and the need for solutions (“Report: Obesity Rates”).

Family life in Barbados is dramatically impacted by dietary diseases. One of the main consequences is having a shorter life span. In Barbados, males live for approximately 73.2 years, and females live for about 77.9 years (“Barbados.” 2018). To compare, the average human lifespan in Japan is 83.84 years; a 10 year increase (“Japan.”). Barbados also experiences more infant and child deaths because mothers are likely to suffer from dietary diseases (Abu-Saad). Currently, there are 14.7 deaths out of 1000 for children under 5, and 13.4 deaths out of 1000 for infants under 1 (“Barbados.” 2018). Japan has 2.6 deaths out of 1000 for children under 5, and 1.9 deaths for infants under 1 (“Japan.”). (Both countries have birth rates of approximately 1.5 births per woman.) There is a significant difference between the island nations, showing how Barbados can and needs to improve their nutritional habits.

Dietary diseases do more than affect the individual person. They contribute to a decrease in crop nutrition and diversity. With more people consuming fast food, the demand for fresh produce is decreasing. Because of this decreased demand, the government will import less produce in an effort to save money, therefore giving Barbadians a harder chance to get the nutrients they need because less produce will be accessible. Currently, food is available, but not in the price range of most families. This problem will only intensify with the decreasing demand for fresh produce. However, improvements will provide many benefits for Barbadians. There would be less unemployment because more people would be employed in the agricultural sector. Most importantly, the quality of life for all Barbadians would increase. Obesity and diabetes rates would be expected to fall, which would lead to lower healthcare costs. Barbadians would also be happier, as researchers have found that people who eat eight portions of fruits and vegetables experience an increase in life satisfaction (Blaszczak-Boxe).

As created by the Food and Agriculture Organization (FAO), the four pillars of food security are availability, access, utilization, and stability. In Barbados, the access and utilization pillars need to be addressed. To make food more accessible and utilizable, Barbadians need to be encouraged to work on smallholder farms, as they would provide better nutrition that is more accessible, as well as a source of income for those currently unemployed. In addition, the government must create programs to encourage nutritious habits, such as introducing food stamps only valid for produce or programs for educating

Barbadians on healthy meal practices, specifically preparation and storage methods.

There are several small scale projects in Barbados that could be successfully scaled up in order to lower rates of dietary diseases. The Barbados Agricultural Development and Marketing Corporation is one of these projects. This organization empowers farmers and “agripreneurs” to develop sustainable agricultural enterprises. Their main goal is to start as many non-sugar farms as possible. They manage several commercial units that help with the marketing and distribution of local produce, therefore increasing access to healthy produce. The Land Lease Program makes arable land available through lease or license arrangements to Barbadian families who otherwise would not have access. This program encourages diverse agricultural projects in an effort to increase the nutrients Barbadians consume. It also empowers Barbadians to provide for their families and to increase the productivity and diversity of agricultural products. If scaled up, both programs could make a large impact because they encourage Barbadians to grow their own diverse produce, therefore increasing the nutrients each Barbadian consumes (“Barbados Agricultural Development”).

Decreasing the incidence of dietary diseases relies on the action of local communities, government institutions, and non-governmental organizations. Neighborhoods can come together to start community gardens that allow a plot of land to be farmed by several families, therefore decreasing the amount of time each person needs to contribute, while still ensuring Barbadian families receive the nutrients they need. This solution would also enable Barbadian communities to become more connected, which will foster healthier relationships. The land for these gardens, as well as seeds and funding, may be in the form of leases from government holdings or donations. As for the government, Barbados’ leadership needs to fund a program that is specifically in place to lower the rate of dietary diseases. This program may look like food stamps that are only valid for produce or the increased taxing of fast food. The government needs to set aside funds to educate its citizens on the importance of healthy eating. These said funds may come from money usually spent on imports or chronic disease control. The educational programs may take place in local churches or schools, as fostering an appreciation for healthy eating in schools would be more sustainable and effective in the long term. Nonprofits and organizations, like the Barbados Agricultural Development and Marketing Corporation, need to continue in their efforts. More need to be formed that are specifically focused on the nutrition aspect of dietary diseases. It may be helpful if other countries, like Japan, send advisors to empower Barbados to move in the right direction. Barbadians need education on efficient agricultural practices, including irrigation methods and maximization of nutrients per hectare. More specifically, Barbados could introduce neglected and underutilized species (NUS). These plants have an under exploited potential for contributing to health. They are packed with nutrients and do not take as much effort to grow. Organizations, like the FAO, could introduce NUS seeds/saplings to Barbados and teach on proper cultivating techniques. One NUS is the Moringa Leaf. When made into a powder, one ounce provides all nine essential amino acids, 31% of daily fiber requirements, 19% of vitamin B6, 12% of vitamin C, 11% of iron, and 11% of vitamin B12. If plants like this became popular throughout Barbados, dietary diseases would drop significantly, as nutrients would be more accessible and easier to utilize (“Everything You Need”).

Typical Barbadian families can have an even larger impact on the rate of dietary diseases. A family can be involved by starting their own garden, whether it is in the form of a small plot in their backyard or vertical columns along their fence. This will allow each family to become more self-sufficient, which will lead to less purchasing of unhealthy fast food meals. The incentive for actions like this is that it will save families money, while giving them nutrition in the form of fresh produce. Families can also join together to form a community garden, specifically within church congregations. With 95% of Barbadians being Christian, religious bonds are already strong, so introducing another element into that relationship would be effective (United States).

When attempting to improve nutritional habits through agriculture productivity, there are many barriers

and challenges a Barbadian family may face. These barriers include lack of irrigation and inconsistent rainfall. Most small farmers cannot afford sufficient irrigation, which leads to crop failure and less motivation to grow produce. In order to improve the nutritional habits of Barbadian people, small scale agriculture is essential, which means more cost friendly irrigation options are needed (“Barbados - Agriculture.”). Without irrigation, production of food crops in Barbados relies on rainfall, which is undependable. Water deficits are generally experienced during the dry season (June through November), which is coincidentally the growing season. In addition, the rains are quite irregular from month to month. When the rain does fall, it typically does so in downpours or thunderstorms, often destroying crops and causing major erosion. This rain also runs into underground reservoirs, leaving the rivers and streams extremely dry. This dryness occurs to such a large extent because the rivers have a coral rock that is very permeable. Natural ground covers, such as vetiver grass, may be a good solution, as they absorb water. A system of drains into a common reservoir may also aid in this problem because it would prevent major crop destruction and conserve water for future irrigation (Brewster).

Other barriers include high labor costs and land availability. It is often hard to find hands to work the fields because labor is expensive due to high living costs. This leads farmers to finding other sources of income that are more profitable. Instead of promoting farming as a large scale task, Barbados needs to advocate for farming as something that can be done within a family on a small plot. The lack of free land makes this difficult. Though most of the island is arable, much of the land has been purchased and reserved for other endeavors because of a higher payoff available to landowners. Many Barbadians have shifted their land use from agriculture to home development (“Barbados - Agriculture.”). This brings in the role of the Barbadian government. Laws and policies need to be changed in an effort to encourage farming instead of land development. In order for Barbadians to farm, incentives, such as tax refunds, are fundamental.

When generating solutions, it is important to address how issues like population growth, water scarcity, and climate volatility may affect the occurrence of dietary diseases. As the population grows, more crops will need to be grown on the island. Increased importing is an option but very costly and inefficient. Currently, there is more than enough space to expand, but eventually, efficient farming practices (like aquaponics or vertical farming) may need to be utilized. As mentioned, Barbados has a problem when it comes to water scarcity. Efficient irrigation techniques will need to be implemented, as well as education for Barbadians on how to irrigate crops effectively. Finally, increasing climate volatility will present issues. Education is needed on what plants can withstand strong storms, such as kale or sweet potatoes. All of these factors can affect dietary diseases because they affect the ability to grow healthy crops. If healthy produce is not available, then the rate of dietary diseases will continue to increase.

Opportunities exist for meaningful change in Barbados. Jenny Williams, a Barbados native, has seen the effects of hypertension in her own life, as she is at high risk of suffering from a heart attack and stroke because of her unhealthy dietary habits. As a result of her risk factors, Jenny joined 30,000 other Barbadians in a project to create two regional polyclinics. Since the introduction of these clinics, Jenny and her neighbors have seen the benefits healthy eating has on the body (“Treating Cardiovascular Disease”). This is just one of the many examples illustrating how solutions can improve the lives of Barbadians, and therefore reduce the rate of dietary diseases. Healthy food production includes small scale farming of nutritious crops for local markets selling direct to the consumer, and community farming where individuals and families take ownership of sourcing and growing healthy dietary options. Education and leadership, with the courage for thought-change, are imperative. From small nonprofits to government programs, everyone can contribute. When put together, these efforts may create something sustainable and meaningful, as Barbados has the ability to become a healthy and nutrient-rich nation.

Word Count: 3430

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