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Sierra Leone, Malnutrition

Sierra Leone: Fishing for a healthier country

Billions around the world suffer from malnutrition. Malnutrition is caused by a number of variables; lack of nutrients, inability to absorb nutrients, and lack of food consumed. The illness can lead to stunting of growth, anemia, respiratory infections, lack of immunity, physiological issues, and even death.

Malnutrition is often seen in third world countries. Sierra Leone, a country located on the west coast of Africa, has some of the highest malnutrition rates. In Sierra Leone, over 30,000 children suffer from malnutrition and are at an extreme risk of death and around half of a million children have suffered from stunted growth because of malnutrition (UNICEF). The issue of malnutrition is a challenge that areas around the globe face; however, ending malnutrition in Sierra Leone can create a path for other countries to follow.

Home to over eight million people, Sierra Leone is a developing country bordered by Guinea, Liberia, and the Atlantic Ocean. The land in Sierra Leone is various; swamp, mountains, forests, and plains. The tropical climate creates good conditions for farming; however, some of the land has sandy soil: making it difficult to cultivate vegetation. Other parts of the country have clay and swamp soils, which create good farming land. Three-fifths of the population in Sierra Leone engage in farming and the production of goods is solely by small farmers (Fyfe). Rice is the largest food crop in Sierra Leone. Other crops include: peanuts, cassava, sweet potatoes, oil palms, cocoa, coffee, piassava, and ginger. Families use the food that they grow to provide for their families or to trade with other families (Fyfe). Households are large, the men of the household often have more than one wife. The men of the house are in charge of the laborious jobs; clearing fields and plowing the swamps; however, women are in charge of planting, harvesting, weeding, cooking, and cleaning (Henry). Being able to produce your own food may make life seem easier, but for the people in Sierra Leone: that is not the case. The average income for a family in Sierra Leone is less than \$3.20 per day (Partners In Health).

The low income and severe food scarcity in Sierra Leone are two of the major challenges that are causing malnutrition to be a significant problem. 70% of the children in Sierra Leone consume bland diets (UNICEF). These diets consist of mainly two things: rice and cassava (a nutty, starchy, root vegetable). Neither of these items provide much dietary aid: few vitamins and minerals. Not only does their accessibility to highly nutritious food items limit their nutritional needs, but cultural beliefs also have an aspect (UNICEF). Some villages and families hold beliefs of taboos or resentment from consuming certain foods. The taboo can be a restriction against certain foods, or oils, or even against food prepared a specific way. Violation of these taboos would be considered a sin to most, and can ignite ill feelings of living guardians or ancestors. Aside from village and household beliefs, religion also plays a factor. 60% of Sierra Leone's population is Muslim (Henry). In the Muslim religion it is forbidden to eat a number of meats that could be nutritionally valuable. Any swine products, frogs, squirrels, and predatory birds are not allowed to be consumed (Henry).

Malnutrition can lead to a series of issues: lowered immune system (unable to fight off simple illnesses like malaria), stunting of growth, respiratory issues (acute respiratory illnesses), gastrointestinal issues (diarrhoeal disease), physiological problems, or possibly death (Saunders and Smith). In Sierra Leone, five hundred thousand children have had their growth stunted due to malnutrition and thirty thousand children are severely malnourished with an immediate risk of death (UNICEF). The constant battle of trying to grow and protect their immune system makes it impossible for the children's body to complete anything beneficial for themselves (UNICEF). One illness that malnutrition can cause is anemia. Anemia occurs when the body does not have enough red blood cells or can not produce enough red blood cells. Anemia can cause reduced oxygen flow to organs, fatigue, shortness of breath, dizziness, or a rapid heartbeat (Saunders and Smith). Though rapid blood loss can be a cause of anemia, the common cause in Sierra Leone is iron and vitamin B deficiencies. If anemia is left untreated, issues with pregnancies (low birth weight, premature labor, and postpartum depression are more likely to occur) and lowered immune systems (Saunders and Smith).

A group called Partners in Health (PIH) has begun helping the people of Sierra Leone. At Koidu Government Hospital, Partners in Health has created an inpatient feeding program, which provides intensive care to malnourished children. To help the people who are not in the hospital, PIH created a new program: the moderate acute malnutrition program, MAM (Partners in Health). The moderate acute malnutrition program has been expanding malnutrition treatment, providing support to hundreds of families and ensuring that children have access to the care they need to restore their health. The MAM program lasts six weeks for each individual; they are provided with amoxicillin, deworming medication, and vitamin A tablets, to eliminate underlying infections and to boost their immune system (Partners in Health). While at the MAM program, they are provided with Bennimix - a porridge mixture containing most of the key nutrients: carbs, protein, calcium, and iodine. Bennimix contains rice, sesame seeds, fish, beans, iodized salt, and sugar to help the people of Sierra Leone. Within one year, Partners in Health was able to help eight hundred children through their program (Partners in Health).

Though Partners in Health is a great organization and is doing an amazing thing to help combat the malnutrition in Sierra Leone, it is a project that is hard to manage long term. Providing aid and food for these people is not cost friendly and won't help the country grow on its own. A program needs to be created to help Sierra Leone become independent and healthy. I believe that in order to help the people of Sierra Leone reach their full health potential, their agriculture systems and produce must be increased. Through providing information and expanding their economy from the help of other countries, the people of Sierra Leone should be able to produce enough nutritious food to meet daily needs. The base of the project that should be started would be called the Fish Farm Project. Fish provides high levels of iron and vitamins to help tackle the issue of anemia and help change the malnutrition rates in Sierra Leone. Many countries around the world use a form of fishing that could be very beneficial to the people of Sierra Leone: fish farms. In these farms, fish are kept in a net container within the water. This container allows the fish to move around within the water, but it also enables the fish to be easier accessed for harvesting and consumption. Many of the people in Sierra Leone are already farmers, specifically rice farmers. The rice grown in this area is already being harvested in wet swampy locations. By taking advantage of the swampy rice farms, farmers could harvest two crops in one location: fish and rice.

For years, rice-fish farm systems have been in use. These farms have proven to be effective in many ways, and specifically benefit food insecure countries. The idea of having rice-fish farms has been practiced in Asia for hundreds of years. Rice-fish farms are effective in providing health benefits, providing an income, and much more. All of these benefits would improve the health and malnutrition status of the people in Sierra Leone. Not only is the system cost efficient, eco-friendly, and provides food for those in need, but the rice and fish work together to create a better ecosystem. The fish helps the rice crop in a number of ways: efficient use of water and land resources, maintain biodiversity, regulate water quality, generate higher rice yields, and reduce the need for agrochemicals (Freed).

Catfish is native near the equator line, because of this Sierra Leone would be a great location to harvest catfish. This fish is high in protein (24 grams), high in fats (9 grams), and iron (1 milligram) for a filet of cooked meat (USDA). When a catfish reaches maximum adult age, they can weigh up to thirty pounds; meaning there would be plenty of meat to provide for the families in Sierra Leone. Catfish are used and thrive well in rice-fish farms all around the world (NOAA).

In fish farms, fish mainly consume fish food (a dog food like dry pellet) that contain vitamins, minerals, amino acids, and other essential nutrients. This is an issue for a country like Sierra Leone. If they don't have enough food to provide for themselves, how will they make a nutrient rich fish food or how will they purchase fish food with little money? Many fish farms have a different approach for feeding their fish: the natural way. These fish are able to consume scraps (fat and unedible pieces of animals), seaweed, corn, and other plant proteins (NOAA). By creating a system to salvage any scraps from meals, the people of Sierra Leone could start providing for their fish. They would also need to use the harvest that they sometimes would sell to provide for the fish. Maize (a corn like substance), millet (a legume), and the rice plants (after the rice has been harvested) would all be great options to be in the fish food (NOAA). Because fish-farms are located in rice fields, there is no need for special equipment. Other fish farms (without rice) use nets to contain the fish within a given space; however, that is not necessary for rice-fish farms.

There are many different methods for harvesting the rice and fish that are produced in the farms. When harvesting the rice, it can be done manually or using technology. The harvest process for rice includes, reaping (cutting the crop), threshing (separating the paddy grain from the rest of the cut crop), cleaning (removing immature grain or non-grain materials), hauling the crop, and leaving the rice out to dry (Rice Knowledge Bank). Each step of the process can be done manually or by using new technology. Because of Sierra Leone's pre-existing financial situation, it could be very difficult to provide more assistance with larger equipment, such as a rice combine. Technology could also need repairs throughout the course of time, meaning someone in Sierra Leone would have to have the knowledge of how to fix the machines that provide them with food each day. Because of these reasons, it seems best to have the majority of the harvest be manual. Providing Sierra Leone with traditional tools (sickles, knives, threshing racks, etc) could allow them to still work efficiently and allow their tools to function for a longer period of time with less maintenance (Rice Knowledge Bank). As for fish farming, the first are already in a smaller location and could be easy to catch with bare hands or a net.

I also believe that part of the Fish Farm Project would be with the assistance of other countries and the Sierra Leone government. Being able to provide money, fish food, and other items needed to create these

fish farms would bring the project to live faster and make an impact efficiently. The United States has the ability to send farmers and fish farmers to Sierra Leone to begin the process. Our country is known for its amazing agriculture, so it would be easy to assist the people in Sierra Leone. Countries in Asia have practiced the art of fish farming for centuries. Receiving expertise from a foreign country that has been working with this form of harvesting fish for centuries would help get the project started and it would help the people of Sierra Leone faster. Being able to educate the people of Sierra Leone prior to beginning work on the rice farms is essential to the success of these farms. When bringing in experts, it is important that they take the time to help Sierra Leoneans understand how each part of the process works to ensure they get high quality products and to ensure the products are safe for consumption.

Sierra Leone has received assistance from the United States over the course of the past decades. We have provided them with health service, strengthening their government, and economic growth (U.S. Department of State). We can take our assistance in their country a small step further, a step pushing them closer to being independent. Many could raise the concern of providing for another country when our own country and economy is facing struggles. This concern is valid, but it is also easy to overlook the many privileges we have living in the United States. The United States has some of the lowest food insecurity rates globally and malnutrition is a minimal concern for Americans around the country. The people of Sierra Leone, however; cannot say the same. Many wonder where their next meal will come from if they survive the day. As a developed country, we have the ability to assist other nations with their human rights and basic needs. Being able to create these fish farms would improve the life of the citizens and help the country's economy expand further.

As mentioned earlier, a major piece to Sierra Leone's malnutrition issue is their religious and cultural beliefs (UNICEF). 60% of Sierra Leone's population is Muslim and cannot consume many nutritionally valuable foods (Henry). There are two conditions in the Islamic religion that allow Muslims to capture and consume fish; the fish must be used for consumption or sold for a profit (Muslimiversity). Although the capture and consumption of fish is allowed, there are instances that are considered Haram, forbidden in the Islamic law. If unnecessary pain (suffocation, testing, or skinning alive) is inflicted on the fish, then it is considered Haram (Muslimiversity). Because fishing is considered Halal (permissible), many of the people of Sierra Leone could support the idea of creating fish farms. The second aspect, cultural taboos, could cause difficulty for the people of Sierra Leone to accept fish farming. Villages and households hold beliefs of taboos of consuming certain foods. Any violation of these taboos (at village or household level) would be considered a sin to most (Henry).

Thirty thousand children are near death due to malnutrition in Sierra Leone. Half of a million children have had their growth stunted from malnutrition. Seventy percent of the children in Sierra Leone have a bland diet: consisting of one or two items. These kids will lose so much if their life continues this way. The location and agriculture systems of Sierra Leone provide the perfect opportunity to help make a change in the youth of the country. By assisting Sierra Leone in their agriculture systems, the health of children can improve sufficiently. Rice-fish farms will create a harvest large enough to supply for every member within the household and provide a new source of income for the family. Billions of people around the world suffer from malnutrition and changing it begins with one step. Implementing the Fish Farm Project in Sierra Leone would create a path for other countries to follow in fighting malnutrition worldwide.

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