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Middle Africa: Chad, Factor 11: Malnutrition

Malnutrition in Chad

Malnutrition is an issue that impacts countries all over the world. It impacts them for a number of reasons, including a lack of monetary resources to purchase nutritious meals; natural disasters like tornados or hurricanes wipe out crops and take away income needed to purchase food for families; or even like this past year has proven, pandemics make people sick and unable to work. Chad, like many other countries, cites malnutrition as one of the leading causes of death (Chad Institute," n.d.). Chad is also a country that can have severe climate shifts throughout the year and droughts are very common in the hot and dry areas. Many people living in Chad are farmers and depend on the weather to make a living and feed their families, but when the weather is too hot to grow crops and raise livestock, they suffer tremendously and making a living becomes a struggle for over 60% of the population ("Chad's Triple," 2021). There are more factors that contribute to the number of malnourished citizens in the country, and it is important to look at these factors to understand why the country is struggling, the best ways to help them, and how to create a healthier place for them to grow up, work, and live.

Chad, also known of as The Republic of Chad, is an established republic type of government that operates under the leadership of President, Idriss Deby Itno. It is located in Central Africa and has a population of about 16,775,000 people living there as of 2020 (Chad Population 2021). The typical size for a family in Chad is about six people per household ("International Indicators," 2020). A typical home or dwelling in Chad is made of adobe clay, straw, and really whatever other resources a family can find ("Chad LandLinks," 2010). Of those Chadians, roughly 23% of them reside in urban areas and the remaining 77% live in rural homes ("Chad Urbanization," 2019). Rural landscape is common in Chad. About 39% of the countries area is dedicated to agriculture and farming ("Chad LandLinks," 2010). In fact, 80% of the people that make up the work force in Chad are employed by agriculture ("Agriculture In," 2021).

Agriculture and subsistence farming are very important industries to Chadians, who practice slash-and-burn style growth methods. The most important crop they grow, and export is sorghum followed by berbere ("Agriculture In," 2021). The country also grows more common crops found in other countries which include rice, wheat, and corn along with their secondary crops like sesame, legumes, peanuts, tubers, and a large selection of garden vegetables ("Chad-Agriculture," 2020). They utilize a crop rotation schedule like most other countries to maintain healthier soil and make the most out of their harvest season.

The geographical location of the country can make it difficult however to support the large agriculture sector and all of the people who work in it. There is competition for land, making it tough for small farmers to make a profit. Another concern is the soil type in Chad, which is often considered acidic to very acidic, which means it is ideal to grow trees and not crops (Sant'Anna, 2021). When soil is not properly managed, growing crops sustainably to feed their increasing population is difficult, especially when coupled with the harsh climate.

An average size for a farm in Chad is about one hectare of land which would be equivalent to about 2.47 acres or about one and a half football fields ("Chad LandLinks," 2010). However, many of the farm sizes vary based on location, family size, and house-hold income. For most of the subsistence farmers, their farms are smaller and the crops they grow in their fields can feed their households and not much more.

Looking at the climate and agricultural practices utilized in Chad can help us understand why malnutrition is such a severe issue not only in this country, but many other countries around the globe. Throughout the world, one in ten children are malnourished and, in some countries, that number increases like in parts of Southeast Asia where one in four children are food insecure (“Malnutrition is” 2019). Malnutrition affects men, women, and children all differently. For adults, they are larger and need more food to sustain a healthy lifestyle. While malnutrition impacts all members of a population, when an adult individual is malnourished, they struggle to find and keep work, which provides an income for their families. When they cannot support themselves, there is no way that they can feed more mouths too. Perhaps the largest impact is on young children and babies who cannot provide the nutrition for themselves. This adds additional stress for parents and can cause illness. Since children are still growing and developing, their need for nutrients goes up.

Another group that malnutrition impacts is pregnant mothers. In most third world countries, the forms of birth control are not well regulated, and many families are large and consist of multiple children. When a woman is pregnant, she is feeding two people and her nutrient needs double. She also needs prenatal and other vitamins but because of the cost and availability, it can be hard for mothers to access them. When a child is malnourished in the womb, the chances of them being healthy growing up is very slim. Unfortunately, in many cases the mother does not have access to additional sources of nutrients causing her child to be born at a low birthweight and without the proper organ development, which leads to chronic health problems later in life (“Under-Nutrition,” 2021). The chances of the mother getting sick because she carried the child so long and it took the majority of her nutrients is also quite high.

Malnutrition is an issue that impacts all countries but mostly people in third world countries or developing ones that are too poor to afford food and adequate healthcare for their citizens. In terms of religion or ethnicity, anyone can be impacted by malnutrition, and it does not matter what you look like or what you believe.

Rural and urban populations are affected by malnutrition in similar ways because no matter where people live, they can be malnourished and have a hard time getting access to foods and medication they might need. However, there is a better chance that a family living in a rural area will have more access to nutrients than a family living in a poor urban city. This is because when you live on a farm, you at least can eat the food that you grow. The status of nutrient availability in urban and rural areas also changes based off the country in which you live.

Malnutrition can impact the environment in a few ways but the ways that the environment impacts malnutrition are easier to understand. When there are more people trying to use the land and harvest crops to survive, the land is over-worked. Natural disasters and weather issues also impact the growth and harvesting of crops. If a farmer’s field is knocked out by a hefty windstorm, their food for the year and what is keeping their family alive will be gone. When a country faces drought or flooding, their crops tend to die, and this takes away crops those consumers would have eaten or it takes away the income that was going to be provided from the sale of those crops. For example, Chad has experienced extreme drought, which is causing places that have previously been fertile to dry up. This drought is spreading to the Southern parts of the country, creating desertification across the land (“How climate,” 2021).

Along with natural disasters, there are several other factors that contribute to malnutrition that include climate instability, population, biofuel production, and other variants based on country and region (“Chad World,” 2021). Population often leads to malnutrition. When farmers are only producing enough food to feed their families, they do not have additional crops to sell to those living in urban areas. The cost of importing food is often high, causing many to go without. It is also commonplace for families to have

multiple children, which increases pressure on food sources. Using family planning methods is one way to lower the population in Chad and reduce the strain on resources.

Biofuel is not often thought to be a cause of malnutrition because it is a more cost effective and environmentally friendly form of energy. However, biofuel production plays a large role in malnutrition and hunger because when crops are sold to make biofuel, it takes away from the food products that could have been made with the crop and fed to a family. This creates a big argument worldwide because in developing countries where there is not much food security, citizens do not use biofuel and would much rather use the crops to eat rather than using them for fuel. But in food secure countries, finding a way to fuel their everyday lives at a price that is affordable and does not harm the environment is more important. When biofuel is produced, there are also fluctuations in the markets for biofuel crops and since they are wanted by more people to make fuel, the price goes up, making it nearly impossible for struggling countries to stay afloat.

To counteract these problems, there has been research done in hopes of finding ways to maximize biofuel production without creating more food insecurity. Research has been done by Michigan State University on cellulosic biofuels which are non-edible green plants. In an article written by Emma Bryce, she states that “Cellulosic biofuels, made from the fiber of trees and crops like switchgrass, has huge potential to reduce the global emissions impact of conventional fuel” (“How to,” 2017). If fiber crops can be used rather than food crops, a balance could be maintained between developing and developed countries, which may help reduce malnutrition.

Since malnutrition is such a big issue that impacts so many people around the world, the big question is: how can we help feed those suffering from this problem? It is something that countries have been trying to work on for the past several years and it is something that will continue to grow because the population continues to grow. There are different things that wealthier countries can do to lend a hand to third world countries that might need help. Ways that we can do this is by doing volunteer work within schools and communities.

A way that my school participated and helped those in need was by holding a meal packaging event. We got in touch with a program called “Meals of the Heartland” and they helped us with this project. They came to our school with all of their supplies, and we supplied the labor for packaging. There were many components to the meal that would provide nutrients and a filling portion that would feed a family of four with one pouch. The meal itself contained rice, which is very filling, vitamin flavoring which added extra nutrients that citizens might not get anywhere else, soy, and vegetables for a more balanced diet. We then sealed the packages with a heat press, which allows them to be shelf stable for a few months. They were then sent to countries in Africa and will be what keeps a family fed for at least one meal. Even though this event could not feed everyone, nor could it feed them for the rest of their lives, it took stress off parents struggling to feed their kids and gave them a bit more time to figure out what they were going to do for the next day. If we could get more meal packaging events started and have them more often, we would be able to feed more people and save more lives.

While the event sounds like it is a win-win, there are some drawbacks in that it was not easy to put on and it was expensive. Having enough volunteers was a challenge because there had to be students who were not only packaging but who were also in charge of refilling supplies, stacking boxes, and explaining directions to everyone else. To package about 50,000 meals, our FFA chapter had to pay \$7,000. A way that this process was easier for our chapter was finding sponsors to help us pay for the expense. We were able to raise about \$2,000 towards the event by looking for help in our small community. If larger communities stepped up and sponsored these events in larger cities, it may be easier to raise the funds necessary to package meals.

Another way that malnutrition can be helped in countries like Chad is by helping the farmers that produce this food. By improving the quality and increasing productivity of farms, the amount of food that can be grown and the rate in which it is grown will increase. To do this, the first thing that must be addressed is the slash and burn style of farming. Slash and burn farming is when farmers burn the trees, shrubs, and grasses on a patch of land to clear it for farming ("Innovation in," 2021). Once this takes place, the land gives a good crop during the first year, but production often falls completely off between the third and fifth years because the soil has been so heavily depleted ("Innovation in," 2021).

Rather than constantly trying to clear more land for farming, it would be more sustainable for farmers to work with the soil they currently have and build it up, so it can produce a crop. The first step in doing this is to apply nutrients such as lime to the ground. Lime helps balance the soils acid levels and makes the soil more neutral (Bast, 2015). As mentioned previously, Chad's soil is known for being acidic, which is what allows them to use the slash and burn method because acidic soil is ideal for growing trees. According to the African Minerals Development Center, limestone is one of the minerals that is readily available in Chad ("Chad | ASM," 2021). If farmers can find a way to access this limestone, they could use it to spread on their fields. Before they spread lime, however, farmers need to make sure to have their soil tested. If they cannot access soil testing at one of the universities in Chad, they can send it to the United States and labs like the one at Iowa State University will test the soil and send back the results.

In addition to lime, another method that works to help reduce the soil pH is the application of wood ash. Wood ash is created after wood is burned down over an open fire. Since most of the women in Chad cook over open fires and serve their food from a large communal pot, accessing ashes is a plausible option ("Customs and," 2021). Ashes from cooking fires could be kept throughout the year and stored until it is time to prepare the soil for planting. From there, the ash could be applied to the top of the soil and spread throughout the field to help improve balance and increase soil nutrients. Wood ash works quickly to increase pH levels because it is more soluble than lime (Saunders, 2014). Like with lime, it is important to soil test before applying wood ash to the soil to make sure it will have the desired effect.

Lastly, farmers in Chad may benefit from using a micro-dosing fertilizer system on their land. Micro-dosing is the application of small amounts of fertilizer, about one-fifth of the actual recommended dose (Bafana, 2016). This gives the crops an extra boost of nutrients, while being more cost effective than total application. Farmers who are currently practicing micro-dosing in other parts of Africa have noted significant increases in production, which means the family may have additional products to sell (Bafana, 2016). Those farmers can then put part of their profits into purchasing more fertilizer for the following year, which will help them continue to increase yields and earn even more.

Malnutrition is perhaps one of the most serious issues facing Chad and one that can only be diminished by creating partnerships with food secure nations and by improving farming practices to create a fertile environment. These solutions pose significant challenges and will require multiple parties working together to reach the common goal. Small steps like saving cooking ashes and larger steps like hosting meal packaging events can be used to reduce malnutrition not only in Chad but perhaps in other parts of the world as well.

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