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Tanzania, Malnutrition

### **Tanzania: Analyzing the Issue of Malnutrition and Proposing Possible Solutions**

Tanzania is an Eastern-African country bordering Kenya, Uganda, Rwanda, Burundi, the Democratic Republic of the Congo, Zambia, Malawi, Mozambique, and the Indian Ocean. Tanzania has an estimated population of 58.5 million people, distributed over an area of 947,300 square kilometers (Central Intelligence Agency 2019). The coastal city of Dar es Salaam is the capital of Tanzania, currently housing 6.7 million citizens in its jurisdiction (World Population Review 2020). Although almost half (43.7%) of Tanzania's land is used for agriculture, only 16.6% of the land is occupied by crops, with the rest being reserved as permanent pasture for livestock (Central Intelligence Agency 2019). Around 85% of this arable land is used for subsistence farming (Food and Agriculture Organization of the United Nations 2019), and due to a lack of nutritional education, there is very little crop diversity in these family farms. This lack of crop diversity leads to shockingly high levels of childhood malnutrition and vitamin deficiencies, leaving many youths underweight, as well as stunting their growth and development. Women and expectant mothers are also at high risk for diseases such as anemia due to malnutrition. This issue of widespread malnutrition that is rampant in these rural subsistence farming communities in Tanzania puts its increasingly large population of children at high risk for developmental obstacles and stunted development. This must be remediated through nutritional education and the introduction of subsistence-grown sweet potatoes and soybeans, in addition to government-rationed iodized salt for struggling communities.

In a typical rural Tanzanian household, five children live with both of their parents and extended family members. Although single-parent families are more common in urban areas of Tanzania, these rural areas are those struggling most with nutritional deficiencies. Extended family is very important in Tanzania, with a sense of tribal kinship among most rural communities. For food, Tanzanians typically eat three meals per day, although breakfast rarely consists of more than tea or coffee and a small serving of bread (Lonely Planet). According to Mary Long, a missionary with Beautiful Feet Ministries in the Mwanza region of Tanzania, lunch is the largest meal of the day, consisting of items such as: steamed rice, ugali (a paste of cassava flour and water), tomatoes (stewed into a dip for the ugali), daga fish (the Lake Victoria silver cyprinid), occasional fruit (likely mangoes, watermelon, avocados, or pineapple) and a once-weekly serving of meat. Dinner meals are similar to lunch, although smaller. Long notes that in her region, dishes are prepared primarily on an open woodfire outdoors. Although food is not necessarily scarce, lack of diversity in food is the main issue leading to malnourishment. This could be resolved with better education. Lack of nutritional education is an issue in rural Tanzania. For children, education is provided for free through grade 7 and many children only attend school through grade 6 in the Mwanza region, according to Long. Primary education teaches subjects such as Swahili, arithmetic, and history; however, subjects like nutrition are never covered. Medical care in Tanzania is very limited. Healthcare is difficult to access, and many doctors are not properly licensed to practice. This lack of formal training from doctors and a general distrust of modern medicine causes some Tanzanians to even turn to

witchdoctors for medical assistance. In a malnourished population, diseases can be devastating without proper care.

Proper nutrition can alleviate many issues in the Tanzanian population. Because agriculture accounts for around \$11.1 billion dollars of Tanzania's economy, increasing the nutritional value of crops would likely boost the value of agricultural products, increase the general health of the population, and give the youth of Tanzania a brighter outlook for their futures (World Bank 2018). The addition of these agricultural products into the subsistence agriculture -- and subsequently the diets -- of Tanzanian citizens is critical to solving the widespread malnutrition in the country. In time, this improvement in nourishment will decrease the shocking mortality rates across the entire country, and across all ages and sexes. Disease is a significant killer of Tanzanians; however, with a nutritionally fulfilling diet, immune response will be strengthened and the health of Tanzania's rural and urban populations will improve. Although the improved diet may not heal devastating diseases such as malaria and HIV, a healthy immune system will give a better chance for survival, or at least more time for medical care to be accessed and treatment to begin.

The victims of malnutrition are largely rural children and rural expectant mothers. Children are culturally less prioritized during mealtime, giving the elders and adult men the first servings of a meal. What is grown in the family's subsistence farm is eaten, but due to a lack of education in nutrition, these farms are often monocultures of cassava, rice, corn, or sorghum. While these foods are all rich in calories, the nutritional value is lacking. According to data compiled by the Fanta Project, "57% of children under 5 are anemic," "45% of women of reproductive age...are anemic," "36% of women of reproductive age...are iodine deficient," and "33% of children under 5 are vitamin A deficient." The Scaling Up Nutrition Movement also notes that 30% of women of childbearing age are iron deficient (2014). With the addition of two new staple crops: soybeans and sweet potatoes, a farmer's nutritional education plan, and government-rationed iodized salt, all current major nutritional deficiencies will cease.

To combat female and youth anemia, it is important to educate the population so that they understand anemia and its causes. Anemia is a condition characterized by abnormally low red blood cell counts. It can be caused by deficiencies in multiple different micronutrients, which is the primary cause in Tanzania. Micronutrient-deficiency anemia is mainly caused by a deficiency in iodine, iron, folic acid, vitamin C, or vitamin B12 (Mayo Clinic Staff 2019). A vitamin B12 deficiency can be disqualified as a major cause of anemia in Tanzania due to the common presence of fish and/or dairy in the Tanzanian diet, both of which are sources of B12. Vitamin C can also be discarded as a major factor in anemia because of the fresh fruits often included in most Tanzanian meals. The remaining micronutrients, however, could all be possible candidates for the cause of Tanzanian anemia.

The first piece of the solution to combating anemia involves resolving the high prevalence of iodine deficiencies. This issue has been addressed before by the Tanzanian government, with an initiative for universal salt iodization (MoHCDGEC 2016); however, with the continued deficiency across the population, a more effective initiative would involve a government ration, a ration from the United States funded by foreign aid, or a ration from the United Nations of iodized salt to be given to communities at risk. A previous program has attempted to do exactly this in Tanzania, but due to the high rural population in Tanzania, these efforts failed to reach the communities that needed its help the most. The United

Nations has significant humanitarian aid reach and would be more able to reach the many rural communities stricken with iodine deficiencies. Because there is precedent in combating this issue, providing for this initiative in the government's budget would be more easily done than starting an entirely new program if it were necessary for Tanzania's government to fund the new salt iodization program.

The next component of solving the issue of anemia caused by nutrient deficiencies involves including soy in the Tanzanian diet. To do so, soybeans must be added into the subsistence farms of rural citizens. Soybeans bring with them many important micronutrients, including iron, calcium, and folate. Both iron and folate micronutrients are essential to maintaining healthy blood. Lacking either will significantly contribute to anemia. Calcium is important to healthy bone structure, muscular health, and even heart health. Soybeans have shown to be perfect candidates to be included in the agriculture of Tanzania, but these plants and their numerous benefits have yet to be exploited (Wilson 2015). Soybean crops are easy to care for, heat tolerant, and introduce nitrogen into the soil as they grow, rejuvenating the soil for future crops. Even in seasons when growing soy is less favorable, soybeans dry very easily and can be stored in dry form for up to three years. If implemented effectively, soy could easily be the largest agricultural export out of Tanzania in just a decade, while also solving many health issues of the Tanzanian people domestically.

To address the issue of vitamin A deficiencies in Tanzanian youth, orange-fleshed sweet potatoes should also be introduced into subsistence farms of rural Tanzania. Favoring hot, humid climates, sweet potatoes are very prolific plants that have been named by many as a "superfood." Sweet potatoes are rich in an orange compound called beta-carotene, also known as provitamin A, which the body processes into vitamin A. According to Megan Ware of Medical News Today, just 124 grams of mashed sweet potato includes an adult's recommended daily intake of vitamin A (2019). For infants and young children, their health and development could be drastically improved with mere grams of mashed sweet potato per day. Sweet potatoes can be eaten and prepared in a variety of ways, giving many choices even to families with limited means to cook. Sweet potatoes could be cooked in stews or soups, roasted over a fire or directly in coals, and even baked pies or pureed to feed to young children. Cooked sweet potatoes are naturally sweet and soft, and would be highly appealing to children, the age demographic that needs vitamin A the most. Sweet potatoes store well in root cellars over periods where growing is less favorable, and even the tubers less suitable for eating can be used to seed the next crop. As sweet potatoes are not traditional in Tanzania, effective education on the cultivation and nutrition of sweet potatoes would likely be necessary.

To assist with controlling for the diverse conditions that Tanzania presents agriculturally, education on composting and simple fertilizer production could be implemented into the education plan given by humanitarian aid and social workers where necessary. Some areas of Tanzania have more arid soil than others, while some areas have more sand in their soils. While some farmers with higher production can afford to occasionally purchase and use fertilizers, many common Tanzanian farmers simply cannot afford to purchase the amount of fertilizer necessary for their crop. Duncan Sones of Africa Soil Health Consortium writes about the development of a government subsidized fertilizer program that has been in effect since 2003 (2017). Sones goes on to mention SAGCOT, the Southern Agricultural Growth Corridor of Tanzania Centre Ltd, "a public-private partnership that aims to develop the area's agricultural productivity and profitability," as a very major force in giving Tanzanian farmers access to fertilizer

products (2017). In the same way that SAGCOT raises awareness about the need for more fertilizer in the hands of Tanzanian farmers, education programs would raise awareness while also providing farmers with the knowledge of how to make basic fertilizers themselves. For example, farmers could work with their villages to communally compost food scraps and unwanted plant debris. This increases the closeness of the community and fosters a mutually beneficial relationship between a community and the farmers on which it relies. Education and awareness of the need for fertilizer will encourage the growth of subsidy programs and create a positive cycle of higher yields and profits for Tanzanian farmers. Healthier crops and healthier communities create healthier individuals.

The most important benefit of this entire solution is its low cost. The United States gave \$27 million dollars in agricultural aid to Tanzania in 2019 (U.S. Foreign Aid by Country 2020). A China-DAC Study Group report on foreign aid programs found themselves “impressed by USAID’s commitment to supporting Tanzania’s agricultural development as demonstrated by its staffing and other capacities in place in Tanzania to help deliver on this commitment (China-DAC Study Group 2012)”. Seeing that the US has a good reputation and a clear dedication for using its aid money effectively in Tanzania, a proposal with such positive benefits for the receiving country would not be unreasonable to integrate. Putting this solution into action would require a slight alteration in the form in which foreign aid is given. Doing so would need evident action in the Department of State’s foreign aid division. However, even if a small percentage of this aid budget was instead given as iodized salt, seed sweet potatoes, and seed soybeans, the health of Tanzania’s citizens would be transformed. Iodized salt, soybeans, and sweet potatoes are all widely available in the United States and easily storable for shipment to rural Tanzania. Working in conjunction with missionaries and humanitarian aid workers, as well as Tanzanian social workers, the implementation of salt, soy, and sweet potatoes can liberate Tanzania from the plight of malnutrition. With humanitarian programs providing agricultural, fertilizer, and nutritional education to the subsistence farmers of the rural areas, Tanzania could easily become a healthy, economically active nation leading the agricultural industry in Sub-Saharan Africa.

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