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## **Liberia: How Providing Liberians Advantageous Nutrition Solutions Can Increase Food Security**

As Norman Borlaug once said, “Food is the moral right of all who are born into this world”. While food may be a moral right to all, it is not something to which all people have access. On the African coast of the Atlantic Ocean is a small country named Liberia, with a population of 4.9 million people who are stricken with food insecurity. In Liberia, 720,000 people live with food insecurity (“Liberia”). The food insecure only make up a small portion of the 3.9 million people who live under the poverty line of \$1.25 United States Dollars a day (World Food Programme). In recent years, Liberia has faced many setbacks, ranging from a massive civil war that ended in 2003 to a deadly Ebola virus outbreak in 2015, both of which have contributed to their ever-growing problem of food insecurity. Currently in Liberia, the largest threat to food security is a lack of education. Many of the problems Liberia is currently facing, such as human rights violations by local tribes and malnutrition in the first 1000 days of life are caused by a lack of education on these topics.

A typical mother in Liberia gives birth for the first time at the age of 19. She will have an average of 5 children throughout her life (World FactBook: Liberia). The typical family relies on agriculture as its main source of income; Emmet Murphy, Kalli Erickson, and Macon Tubman, authors of “USAID Office of Food for Peace Food Security Desk Review For Liberia, 2016-2020”, point out that 67% of Liberians rely on agriculture to support themselves and that 71% of those families grow rice on their farms (Murphy, Emmet, et al.). Rice and cassava are staple foods in Liberia, they tend to be the cheapest, and are the foods lacking the most in micronutrients (Bodnar, Anastasia). Murphy, Erickson, and Tubman note that in the capital city of Monrovia only 2.19% of citizens lack diversity in their diets because they have increased access to diverse food options while 41% of people outside of Monrovia lack dietary diversity because they are limited to what they grow themselves. This absence of diversity is a problem because it often leads to malnutrition, stunting, and anemia in rural communities.

According to the U. S. Agency For International Development, 32% of Liberian children under the age of five are stunted, 15% of children under five are underweight and 8% of children under five are severely anemic (“Liberia: Nutrition Profile”). Such a high prevalence of stunting, underweight births, and anemia are often the result of female genital mutilation and are indicators of malnourishment. Malnourishment is considered one of Liberia’s greatest weaknesses because a malnourished child means a malnourished village, county, and country. According to Unicef, stunting, one of the main effects of malnourishment in the first 1000 days, can “negatively affect a child’s brain function, organ development, and immune system, which can result in poor achievement at school, decreased productivity and earnings in adult life, and a greater risk of developing obesity and diabetes later in life” (“Combating Malnutrition”). The best way to prevent stunting, underweight births and anemia from occurring are through proper nutrition in the first 1000 days of life. The reason why the first 1000 days of life are so important is that, in that period, a child gains all of the “building blocks” they need for a healthy life full of learning, growing, and potential. The 1000 Days organization says, “a growing body of scientific evidence shows that the foundations of a person’s lifelong health are largely set during this 1,000-day window”. Malnutrition early in life causes irreversible damage to a child, including delayed brain development, a weak immune system, and decreased ability to learn.

In addition to the Liberian population's malnutrition and lack of dietary diversity, they also suffer greatly from a lack of education. The literacy rate for women in Liberia is 32.8%, and the literacy rate for men is 62.4% ("The World Factbook: Liberia."). The huge deficit between male and female literacy rates can be explained in part by females' experiences in rural bush schools. In these Sande Society Schools, girls go through an initiation ritual of female genital mutilation and are taught traditional beliefs on motherhood and marriage (The World Factbook: Liberia). Sande Societies in 11 out of 16 Liberian tribes support female genital mutilation, also known as FGM, for the traditional beliefs that it "cleanses" a woman (Brune, Adrian). Other beliefs include that FGM makes a woman more fertile. In reality, the brutal tradition of FGM ensures girls are married young, that they do not continue their education and they do not have a chance to leave their communities for better opportunities. This tradition affects 25% of Liberian women and can lead to complications during labor, underweight infants and infant breathing issues ("Female Genital Mutilation (FGM) Frequently Asked Questions."). These afflictions mean that children are even more at risk for malnutrition, and the effects of malnutrition in these children are even worse.

Women's rights activists like Equality Now are currently campaigning to put an end to female genital mutilation. Equality Now's goal is to spread awareness on the harm FGM causes women, and put an end to it by passing legislation that would outlaw the practice ("Liberia: Enact a Comprehensive Anti-FGM Law"). There has been one previous example of FGM being outlawed in Liberia: On January 19, 2018, President Ellen Johnson Sirleaf signed an executive order in effect for one year that made FGM illegal for minors ("Liberia: Enact a Comprehensive Anti-FGM Law"). FGM most commonly occurs in infancy, which explains why this law only protected girls under the age of 18. Unfortunately, this was not a law that was regularly enforced due to the taboo nature of FGM. The children that needed the protection most went unprotected because their families and villages either did not know or did not care that the tradition was illegal. Female genital mutilation is a human rights violation that is ingrained into the culture and lives of people in Liberia, but is needless violence that should and can be stopped to improve the quality of life and health for women and their children. One of the opportunities available to end this practice is to educate the people participating in it about the effect on women's health.

Liberia's general appetite for learning and education can be seen with their advancements with the Liberian Educational Advancement Plan. According to USAID, "Liberia is significantly behind most other African countries in nearly all education statistics" ("Education: Liberia."). When this was recognized, LEAP was put into place to find the best way to revitalize the Liberian school system. As stated by the Liberian Ministry of Education, with LEAP, 93 state schools were taken over by private school companies, while remaining the property of the government, to find the best way to manage the public schools in Liberia (Liberia Ministry of Education). These operators helped improve the schools by removing illiterate teachers, providing adequate supplies to students, restructuring the school day and limiting classroom sizes (Naame, Saaim W). The results from this program were promising with Liberian students in LEAP schools scoring "0.18 standard deviations higher in English and 0.18 standard deviations higher in mathematics compared to students in regular public schools. This is the equivalent of 0.56 extra years of schooling for English and 0.66 extra years of schooling for math" (Can a Public-Private Partnership Improve Liberia's Schools?). The gains shown with LEAP highlight the difference the Liberian Government can make when they utilize their resources

In Kenya, a program is empowering women through nutrition education called the FoodSmart Initiative. FoodSmart delivers education through "participatory cooking classes, nutrition training, and door-to-door educational outreach" (Vital, Madelyn). The FoodSmart program was highly successful, with the dietary

diversity scores for women in Kenya increasing 20% after becoming involved with FoodSmart. Key elements such as participatory classes that got women physically involved and the information on how the food they make affects their families health, helped make this program such a success. In Liberia, a similar program has been attempted. The program called Scaling Up Nutrition (SUN) was supposed to decrease stunting and underweight births by educating Liberians about proper nutrition through outreach programs, but the program failed due to a lack of government funding. SUN was one of the many programs the Liberian government joined to regain food security, which fell by the wayside in the wake of the Ebola crisis and have yet to regain momentum. After the Ebola outbreak, rebuilding the healthcare system in Liberia became a greater immediate need than ending malnutrition. The demand for nutrition is still a relevant problem, though it remains unseen as it acts as a hidden hunger.

A successful example of how women empowerment through entrepreneurship and hands on activities has worked in Liberia can be found in the Women's Empowerment Project organized by William V.S. Tubman University. In this project, “widows, single parents, and teenage mothers” were given the opportunity to take workshops in which they would learn trades such as “natural tie dyeing, soap-making, raffia weaving, and jewelry making, as well as coconut shell carving” (Women Empowerment Through Entrepreneurship In Grand Cavalla Village). The women were also trained in customer service, how to take money, write receipts, count change, and keep track of orders (Women Empowerment Through Entrepreneurship In Grand Cavalla Village). With a little bit of aid, the women of Grand Cavasa were given the opportunity to learn desperately needed skills to support themselves and their families. These women took those skills and thrived with them, and were able to be successful on their own.

Through the examples of LEAP and the Women Empowerment Through Entrepreneurship In Grand Cavalla Village, it is clear that the Liberian people have an appetite for hands on learning, which is why it is so clear that the absence of an educational outreach program is something that needs to be filled. The women of Liberia and their children would benefit greatly if they were exposed to education on nutrition information, and the mothers would be more than capable of learning the information. Mothers are especially eager to learn when it comes to the health of their children, so my proposed solution is “Providing Liberians Advantageous Nutrition Solutions” (PLANS), an educational outreach program that would make regular weekly contact with mothers to provide them with nutrition information and recipes that can significantly reduce malnutrition. PLANS would consist of a weekly class for villagers in a community center, with one teacher attending to five villages each. Classes would focus on how different foods impact health, and ways to cook food so it is more nutritious. After trust has been gained with communities, the topic of FGM and its impacts would be brought up tentatively.

With staple foods such as rice and cassava taking up much of the room on a typical Liberian plate, it is important that these staples be cooked in a way that makes them as nutritious as possible. Rice in itself has no nutritional value, but with the addition of a Lucky Iron Fish®, the number of children and expectant mothers with anemia could be reduced (“Research”). When rice is prepared, it should be done with the inclusion of a Lucky Iron fish into the water before the pot is added to the heat. As the water begins to heat, the Lucky Fish will release iron nutrients into the water and when the rice is cooked in this water, it becomes iron-fortified. This could help resolve the problem of anemia in Liberia because approximately half of all anemia cases are caused by a lack of iron in the diet (Petry, Nicolai, et al.). Cassava faces a similar problem as a staple food; it lacks many nutrients but it does contain 70% of the recommended amount of vitamin C a person should consume in a day. Unfortunately, the way cassava in Liberia is prepared limits nutritional value by breaking down the beta-carotene, which is the substance that becomes vitamin C. In the traditional Liberian diet, cassava is prepared two ways: either as boiled fufu or as cooked gari (Thakkar, Sagar K, et al). Boiled fufu is the most nutritious way to cook cassava

because more vitamin C is retained in the gentler cooking process compared to gari, which loses 35% of its nutritional value when cooked with high heat (Thakkar, Sagar K, et al). As seen with the FoodSmart program in Kenya, one of the most effective ways to convey this information to women is through example. Each week, a different dish would be prepared in classes taught by Providing Liberians Advantageous Nutrition Solutions with the aid of the women attending the class. Everything that is different from the traditional recipe in the cooking process would be explained to them, such as how adding the iron fish to the rice bowl can stop anemia and how boiling cassava can make families stronger and healthier.

After approximately three months of progress, acceptance, and trust have been established in a village, the PLANS team and the teacher for the village would discuss whether it is beneficial to talk about how female genital mutilation degrades the quality and safety of a woman's life and her pregnancies. It would be detrimental to the program if FGM was discussed too soon, scaring off all of the participants in the program. In consideration for deciding to speak to women about FGM, the communities acceptance of this dialogue, and the importance of nutrition versus the importance of discussing FGM would be analyzed. If it has been decided that a dialogue on FGM is to be initiated, the first step would be to share how the practice endangers a woman's life and her future pregnancies. According to The United Nations Population Fund, some of the immediate complications are extreme pain, fever, hemorrhaging, infection, tetanus, infection of the wound and urinary-infection (“Female Genital Mutilation (FGM) Frequently Asked Questions”). Long-term consequences include anemia, complicated childbirth, and a higher risk for HIV transmission (“Female Genital Mutilation (FGM) Frequently Asked Questions”). As for children born to mother who have gone through FGM, “The death rate among babies during and immediately after birth is also much higher for those born to mothers with FGM: 15% higher in those with FGM I, 32% higher in those with FGM II, and 55% higher in those with FGM III.” (“New Study Shows Female Genital Mutilation Exposes Women and Babies to Significant Risk at Childbirth.”). The next step would be to explain how FGM limits women's potential. When women go through FGM, they experience mental side effects such as anxiety and depression, which are known to be detrimental to the quality of life. Anxiety and depression, along with anemia complicate the learning process. When women are not able to learn, the entire community feels the effect through reduced economic gains. According to READ Educational Trust, “Improved literacy can contribute to economic growth”, and with 3.9 million people below the poverty line in Liberia, economic growth is instrumental to ending hunger (“Benefits of Literacy”, World Food Programme).

Overall, food insecurity in Liberia can be reduced by creating an educational outreach program, Providing Liberians Advantageous Nutrition Solutions, which would teach mothers about the importance of nutrition in the first 1000 days, how to make the food they eat more nutritious, how to prevent anemia, stunting and wasting and why female genital mutilation is detrimental both in the short and long term to women's lives. In teaching women about nutrition, “hidden hunger” can be filled and the crippling burdens of stunting, wasting, and anemia can be lifted from the people of Liberia. In teaching women about the negative repercussions FGM brings, a violent cycle of women's rights violations can be ended. Food may not be something everyone has access to now; it will be something everyone has access to in the future because as Norman Borlaug once said, “Food is the moral right of all who are born into this world”.

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