

Nikita Bharati Basha
High School Chandler,
AZ Guatemala,
Malnutrition

Guatemala: Addressing Chronic Malnutrition Through Local and Large Scale Approaches

Guatemala, which is officially known as the Republic of Guatemala, is a developing country located in Central America and is bordered by Mexico, Belize, El Salvador, Honduras, the Caribbean, and the Pacific Ocean. Guatemala is the most populated country in Central America, and as of June 7th, 2020, it has a population of 17,891,586 persons, with 52% of the population being located in urban areas and 48% in rural areas (Sawe). Though Guatemala has strong potential to prosper as a population due to their access to an abundance of natural resources and continued economic stability, they have not yet been able to reach the success levels of other richer countries. Prosperity has been limited due to numerous factors such as high rates of poverty and inequality, food insecurity, and more (“The World Bank In Guatemala Overview”). These issues together have also contributed to Guatemala having the highest level of chronic malnutrition in Latin America and the Caribbean, and the sixth-highest level globally (“Guatemala: Nutrition Profile”).

Food insecurity and its successor, chronic malnutrition, are mainly due to irregular environmental patterns throughout certain parts of the country. For example, in southern Guatemala, a large amount of area known as Central America’s Dry Corridor has experienced significant amounts of irregular rainfall in recent years. These patterns have resulted in a reduction of harvests, which in turn have decreased opportunities for labor and have lowered average household income, making it more challenging for at-risk families to get access to healthy food sources (“Food Assistance Fact Sheet - Guatemala: Food Assistance”). Guatemala’s population has almost half of its inhabitants living in rural areas with access to cropland, making it difficult to believe that there would be difficulty in the agriculture sector; however, Guatemala has such high malnutrition rates that it is ranked as having the sixth-highest level of chronic malnutrition in the world. Certain changes including implementing processes such as increasing access to improved education and health care services, economic motives, and more, can all contribute to addressing the prevailing issue of food insecurity.

On average, the typical family in a Guatemalan household consists of 5.9 people. Social and socioeconomic status play a large role in choosing a significant other, and this impacts the structure of families in both urban and rural areas (“Guatemalan Customs”). While women are able to go work outside, they often are limited to non-professional careers due to the lack of education made available to them from a young age. Many times, in a single household, mothers play the role of taking care of children, while men go out and participate in physical labor. In many Guatemalan neighborhoods, women have extremely minimal access to family planning education and in turn, are often not taught about decision-making involved in controlling the number and spacing of their children (Lambert). Years of educational, political, social, and economic exclusion have all significantly contributed to high levels of chronic malnutrition amongst a plethora of Guatemalan families.

Beyond family and community structure, the diet of Guatemalans plays a large role in the high levels of chronic malnutrition amongst many of the country's citizens, especially young children. In Guatemala, foods such as tortillas and pasta are a staple item of citizens' diets, making diet plans extremely carb-heavy and of low quality (Loewenberg). However, tortillas and pasta are foods that are notably inexpensive to produce, thus making them some of the most easily accessible items to families, especially those living in poverty. Both tortillas and pasta are low in nutrients such as various vitamins, calcium, magnesium, and more, while it is heavy in macromolecules such as carbohydrates. When citizens are subjected to consuming these food items in large quantities for days on end, this leads to the creation of inadequate diets. Malnutrition is caused by consuming a diet with an incorrect balance of nutrients, and the high consumption of items such as tortillas and pasta due to economic insecurity is a factor that helps escalate chronic malnutrition. Experiencing food insecurity and malnutrition often leads to personal health problems, starting with developmental issues in children and health complications in adults (Van Trostenburg). Various health complications and developmental issues include negative impacts on body and brain development, eyesight, immunity, and more, all of which lead to diminished school performance and later a decrease in income. With how adults and children are limited in opportunities to prosper, malnutrition is a cycle that continues to affect the far-reaching generations of all Guatemalan families.

Education is an importunate issue that is heavily affected by soaring rates of chronic malnutrition amongst young children living in Guatemala. Though enrollment rates for primary school are close to 100% and the rate of successful completion has been increasing drastically over the past years, there is still a large population of children who do not pass lower levels of primary school or don't end up moving on to higher education after primary school. Additionally, typically 50% or less of students in each primary school grade level reach the national standards in subjects such as mathematics and reading ("Education in Guatemala"). Despite primary school completion rates being extremely high, many students do not have the capability and access to resources to continue to secondary schooling, and chronic malnutrition and its health effects amongst children are contributing factors to this issue. Furthermore, the lack of gender equality in education is a notable contributor to high chronic malnutrition rates in Guatemala. An indigenous Guatemalan woman spends, on average, about 1.8 years in school (Martinez). Girls often leave school early to get married or take care of their families. However, there are many times, especially in poor, rural areas, where husbands are financially unable to adequately support their families, and women cannot step to provide assistance due to their limited educational background. In this common scenario, malnutrition amongst family members is unfortunately inevitable.

Health care, and its lack thereof, is another factor that has significantly contributed to rising rates of chronic malnutrition in Guatemala. In comparison to more developed countries, Guatemala has a much lower physician density in the population, specifically with 0.93 physicians per 1,000 population ("Healthcare Access and Conditions in Guatemala, Honduras, and El Salvador."). Due to this, many Guatemalan families are unable to receive sufficient coverage for their basic healthcare needs. Additionally, socioeconomic status plays a large role in determining which parts of the population are able to access health care, as well as its quality. While the quality of Guatemala's health care has been slowly increasing in recent years, many rural populations still find it difficult to access primary health

services. Often, it is only wealthy parts of the population that are able to access high-end hospitals with adequate care, and don't have to attend overcrowded government hospitals or highly inaccessible hospitals in rural Guatemala ("The Healthcare System in Guatemala, Health Care in Guatemala"). Due to this, many children in both rural and urban Guatemala are unable to treat health issues rooting from chronic malnutrition, and these health problems continue into adulthood while affecting their abilities to get an education, work, and more. Furthermore, women are often disregarded in terms of healthcare and are not given proper treatment or education in areas such as reproductive health. This leads to a lack of family planning and sufficient food cannot be acquired for the entire family, thus leading to higher rates of chronic malnutrition, especially amongst young children.

In Guatemala, agriculture is the dominant source of jobs for many citizens, however, agricultural techniques are quite outdated compared to modern farming techniques and technology being used in other parts of the world. At over one-third of the labor force, Guatemalan farmers often struggle to maintain stable crop growth due to the significant variability in geography and climate. Beyond this, small-holder farmers often find themselves fighting with agricultural corporations over the limited amount of viable cropland (Niezen). Farmers in Guatemala are given only a few acres of fertile land to begin with, and then corporations often strip them of that land in hopes of utilizing it for the production of crops for export. Unfortunately, the government doesn't act in favor of small-holder farms a majority of the time, and large agricultural companies are able to use economic power and force to gain access to these fertile lands, leaving farmers without land to grow crops to sell locally or feed their family. Additionally, the ongoing climate crisis is severely affecting crop quality amongst many regions of Guatemala and in turn, escalating rates of chronic malnutrition. One example of many is in the communities of Chiquimula and Baja Verapaz in 2019 when an irregular rain season damaged more than 80% of their crops, specifically maize (corn) (José García Escobar and Melisa Rabanales). Families were left with little to no food sources, and any food that was left included discolored corncobs with only a few kernels. This is, unfortunately, a common issue for many families across Guatemala, and the lack of crops is a direct cause of the soaring rates of chronic malnutrition in the country.

Numerous federal agencies and organizations within and beyond the United States have taken action to combat malnutrition in Guatemala, one humanitarian aid organization being The United Nations International Children's Fund (UNICEF). Since 2009, UNICEF has implemented an economically feasible intervention to Guatemala's malnutrition crisis with a product known as Sprinkles. In many developing countries, many diseases and health issues can be treated with access to basic and low-cost resources that are easily accessible in more developed countries. Sprinkles is a cost-effective innovation that allows young children to receive their optimal daily amount of micronutrients regardless of the limited food sources they have access to. Sprinkles are packets of a powdered micronutrient blend that can be put on top of any food without changing its texture, color, taste, and more. The packets are small and lightweight for easy storage and transport, and they do not require special measuring utensils or any type of handling, making them easy to use. Additionally, they do not require any extra preparation efforts in that they can be mixed in any type of food. With just \$25, this amount can feed seven Guatemalan children with the proper minerals and nutrients for an entire year. Annually, UNICEF has been able to distribute over 2 million Sprinkles sachets impacting over 50,000 children ("Micronutrients and

Nutrition”). Addressing the issue at an individual level has allowed chronic malnutrition and its negative health effects to be diminished in children around Guatemala, decreasing rates of stunting, disease, and more. Though Sprinkles is an initiative helping mitigate malnutrition at a small-scale level, Guatemala is still in dire need of large scale and sustainable change to mitigate chronic malnutrition to the fullest extent.

In order to mitigate the malnutrition crisis affecting millions of people, especially children, in Guatemala, a multifaceted solution consisting of large scale changes regarding the economy, infrastructure, and citizen efforts in increasing food security will be required to be implemented. This would begin with enacting more externally funded community efforts to get Guatemalan citizens involved in projects such as sustainable community gardens, environmental education initiatives, and more, in order to increase food sources available to Guatemalan families. This will also benefit foreign countries who provide aid and funding in this project, because more families will be able to work in other jobs, specially work related to producing materials for export, and can help increase production and profit in those sectors. Beyond increasing food sources, this aspect of the multifaceted solution will also increase citizens’ knowledge of sustainable food growing practices, which they can apply to larger-scale agriculture. In this approach, this would involve installing economically feasible gardens known as Tower Gardens. Tower Gardens, also known as Vertical Gardens, utilize low-cost aeroponic technology to grow plants with only water and nutrients, and no dirt. Vertical Gardens utilize a pump that is submerged into the reservoir at the base and pumps a solution mixed with nutrients and water through a central pipe to the top of the garden. The solution in the pipe then drips down the Tower Garden and is supplied to exposed plant roots. Research has shown that these gardens are able to grow plants three times as fast, and on average, have a 30% greater yield rate (“Grow Vegetables, Fruits & More in a vertical Garden”). Additionally, the Tower Garden technology requires little effort and work to maintain. If implemented in more Guatemalan communities, this would allow families to grow healthy produce quickly and directly in their homes. Also, because the garden requires less labor and maintenance, it would allow families to focus on other tasks and for children to invest more time in their education instead of having to participate in labor on their family’s farm. Additionally, it takes only a couple of weeks for a Vertical Garden to grow enough plants for a sufficient harvest. This harvest creates enough plants to last weeks, meaning that the Tower Gardens can be shared between multiple families in one community. This is also quite feasible since Tower Gardens come on wheels and can be easily transported between different places. Outside of feeding families, an educational outreach program can also be implemented with the establishment of community Tower Gardens, for there is a significant amount of valuable information to take away from this initiative. Concepts covered would include how to take care of plants, how the gardening techniques can be applied to making large scale agriculture more sustainable, and more. Tower Gardens can also be shared between different communities, for the garden is on wheels and can be transported easily. Overall, a community garden program that utilizes Tower Garden technology would bring great benefits to addressing chronic malnutrition in Guatemala.

In addition to citizen efforts, the government of Guatemala has significant changes to make that will work hand in hand with increased efforts from Guatemalan individuals. This includes improving infrastructure in rural areas and increasing resource access and work opportunities for marginalized communities

including women and low-income families. In order to be able to carry out these changes, Guatemala will need to improve the quality and output of its economy on a large scale. The implementation of the community gardens will allow a large number of communities to first receive access to enough healthy produce to sufficiently feed their families. When this new and innovative solution is implemented, population factors such as malnutrition rates, birth/death rates, and more, will be monitored and should ideally improve. If the Tower Garden project is successful, this will allow for more children to attend school and not have to worry about the burden of health problems due to chronic malnutrition, and in turn, it will allow adults to focus on their careers and gain access to a larger and livable source of income. Additionally, Guatemala will be able to decrease the amount of produce and processed goods they import annually with the implementation of community Tower Gardens (“Guatemala Country Profile”). This project will be especially vital during times when the inevitable climate crisis damages numerous crops and citizens have to look towards alternative ways to feed themselves and their families. With the culmination of these benefits from the community gardens, Guatemala will be able to improve its overall economy and then be able to properly make the large scale changes involving improving infrastructure and providing more resources to marginalized groups.

Currently, in Latin America, Guatemala is known for having one of the lowest investments in public infrastructure. Many students go to school in buildings that are falling apart, and patients have to spend over seven hours in a day to pick up medication due to a lack of hospitals around the country, especially in rural areas (Lohman). With an improved economy, Guatemala would be able to allocate more money towards rebuilding and creating new infrastructure for community members. This would help bridge the gap in access to education, allowing more students to receive an educational experience in their childhood. With increased access to equitable education, children will be able to attend school and will in turn be able to get higher-paying jobs in the future. This contributes to the cycle of how increased education and job opportunities play a significant role in decreasing rates of chronic malnutrition. In terms of the workforce, Guatemalan women are often restricted from receiving an education and developing a career of their own due to constricting stereotypes and gender roles that still prevail in the country of Guatemala today. Beyond this, women are not given proper access to sex education, thus not allowing them to make informed decisions about family structure and family planning. A solution to this would include creating more government-funded and externally funded practices that work to empower women in education, business, and more fields where they are underrepresented. One example of this is a business called Wakami Global, which gives Guatemalan women and girls access to artisanship through bracelet making, as well as access to financial and educational opportunities. Through Wakami, 44% of Wakami families have improved their living situation, 60% of Wakami children increased their nutritional intake, and 9/10 Wakami children are able to go to school (“Wakami’s Social Impact”). If the government implements better practices in existing businesses and also establishes community efforts on the basis of women empowerment, they can turn poverty into prosperity, which in turn will help mitigate high chronic malnutrition rates amongst Guatemalans today.

Though Guatemala is one of the poorest and malnourished countries in the world, with a multifaceted approach utilizing local and large scale approaches based on community efforts and governmental changes, it is entirely possible to mitigate chronic malnutrition that has negatively affected the entire

country.

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