



Rise against the machine: Creating global health for vulnerable populations through child nutrition

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Grassroots

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ABSTRACT

There has been much talk about the connection between Global North food systems, health, and climate change. However, very little action has been taken that has made a measurable difference. The authors propose a novel view of the structure of our food system and what we can do to mitigate its impact on the environment, health, and vulnerable populations, with our children being the most vulnerable of all. Finally, a detailed outline of a viable solution is provided.

KEYWORDS

Child, Global Health, Health, Nutrition, Vulnerable Populations

INTRODUCTION

These are dangerously different and unprecedented times. So much so that many humans feel our planet is getting hotter (Grant, 2019). The documented changes in temperatures have seen reduced extent of Arctic Sea ice, which contributes to sea-level rise, and increasing ocean heat content, and ocean heat waves. Furthermore, the melting rate of ocean-terminating glaciers and ice sheets around Greenland and Antarctica is higher than it has been since the National Oceanic and Atmospheric Administration began keeping records in 1979 (NOAA, n.d.).

Additionally, species extinction rates are perhaps 1000 times higher than the natural baseline (Extinction, n.d.; IUCN, n.d.). Successive waves of pandemics threaten to devastate the human population (CDC, 2018). Along with the acute causes of death, chronic illnesses continue to claim lives, and their diagnosis rates are trending upwards all over the world (CDC, 2022; Kauffman, 2020; NAMI, 2022;

Abdalla et al., 2020). In the United States of America (USA), the Millennial generation (those born between 1981 and 1996) is the first to have a shorter life expectancy than the generation before. In 2015, The US Center for Disease Control (CDC) pointed to rising rates of suicide, drug overdoses, and liver disease as the primary factors contributing to decreased lifespan (Devitt, 2018). In 2021, the CDC added the COVID-19 pandemic to the list of causes (Arias et al., 2021).

Interestingly, through a sort of learned helplessness, or cultural disempowerment, with media outlets reporting the decrease in US life expectancy as fact, the average citizen may see this shortening of life expectancy as incontrovertible. Many may also tend to see the decreased life span in isolation from other concurrent, connected issues such as food system inadequacies, health care inequities, correlations with emotional and physical illness, and overall planetary health. This is a myopic



perspective that causes most people to think small. This distorted view makes it almost impossible to devise creative, powerful, and effective, global solutions.

The propensity to view problems in isolation is common in Global North societies which tend to follow "if A then B" thought processes and often stop the logical proof right there. This reductionist style of thinking comes from a lack of a broader perspective. That lack of perspective stops us from seeing the interconnections between the various aspects of the challenges we face. As a result, we focus on narrow solutions to tackle single facets of enormous, multidimensional, global problems. We layer human-made interventions on top of broken systems, often worsening the very problems we are trying to remedy. We look for quick fixes for long-standing problems, and those fixes fall short almost every time. The fix will frequently deliver a profit to some individual or group, and sadly, while one individual or group profits, others will become collateral damage, suffering worse outcomes because of the chosen intervention (Campbell, 2022). For example, consider concentrated animal feeding operations, heavy pesticide and herbicide usage, and GMO farming patterns and current fish harvesting practices (aquaculture) (Baluyut, 1989).

All of these began as ways to streamline business, create efficiencies, increase yield, and maximize profit. However, after years of observing the consequences of these business methods, little attention has been given to the impact these types of business models would have on neither the animals nor the environment, nor the people that do the work.

However, if we view the issues as they are, interrelated, we can see that all circumstances are connected. When seen as interconnected, nothing exists in isolation, and it becomes evident that all actions have a multitude of consequences. As Zen Buddhist teacher, Thich Nhat Hanh taught in "The River of Mind" Dharma Talk, in 2011, the true nature of all being is "inter-being," meaning we are all deeply connected in very subtle and fundamental ways (To Be, 2021). To be is to "inter-be." All things "inter-are" with everything else. Humans, non-humans, plants, sun, water, air, fire, and planet all "inter-are".

Animate and inanimate, none would exist without the other. Therefore, for our interventions to be most effective, we must look for answers that address the root cause(s) of the problem. We must assess the intervention by asking, "Does it render the greatest good?" as opposed to "Is it the quickest, or the simplest, or the one with the most favorable cost-benefit or profit margin?" or "Is it the one that keeps me most comfortable regardless of its uncalculated effects elsewhere?"

We are currently in an existential quandary of global proportions impacting not only human but also beyond-human species, and planetary health. That is, we "inter-are" in this crisis. Furthermore, because our current animal-centric food production system is believed to contribute 27 to 39 percent of anthropogenic greenhouse gas emissions, it has an undeniable, excitatory effect on the situation (FOA, 2021). With food as the catalyst, humans are continually adding to the above-mentioned constellation of problems which we are trying to solve. Because our eating patterns drive demand for and production of certain foods which have a negative impact on the planet, the problem grows in severity every time we eat animal products. We do not often consider it, but sadly, our children are both victims and accomplices in the growth of this crisis (Wang et al., 2021). Yet, children also hold incredible potential energy to help solve the problem.

PURPOSE

Humans in the Global North have inadvertently created a massive problem for the planet. Our relentless pursuit of cheap, convenient, protein-rich foods, combined with an insatiable appetite for financial gain has led us to invent and adhere to agricultural methods that prioritize high yield, animal-based foods over human health, animal welfare, ecosystem preservation, and climate impact. This is the myopic view that has brought us to the point where individual citizens have given up hope of corporate conscience or governmental rescue and instead, feel compelled to do what they can individually to save the planet. To authentically confront with intent to resolve the global problem we humans have helped create, we, the authors of this article, are making a provocative assertion. We assert that if humans want any chance to avert or even slow the impending



existential crisis, first, we must look deeply at the unexamined effects of our eating patterns. Then, we must transform how we feed our children in the Global North. This unique proposition will be further illustrated in the coming paragraphs.

To that end, the purpose of this paper is to connect the dots that tell the story of how we feed our children. We will look at how eating patterns affect a child's physical and emotional health, as well as their growth, development, and academic abilities, including how they drive the health of the family, community, and society. We will also examine what we can do to transform child nutrition such that it becomes a fulcrum to attain a 50% decrease in greenhouse gas emissions by 2040.

This paper will also detail a novel approach to educating children, parents/caregivers, educators, and healthcare professionals, so they can fully grasp the short and long-term implications of children's food choices and can collaborate to transform our foodways. Moving children's eating habits toward more plant-based patterns will affect the whole family's health and, ultimately, that of the entire planet and all its inhabitants, as will be explained in the following paragraphs.

DISCUSSION

Children have neither autonomy nor agency. Because of this, they are our most vulnerable human population. This is true regardless of socioeconomic status, race, ethnicity, parents' education levels, language, and country of origin. They are always at the mercy of the people and environment around them. One of the biggest issues children faces is access to genuinely healthy food. By that, we mean food that supports their growth and development, as well as the health of the planet. The data shows that in the USA, children are very poorly fed (Wang et al., 2021). We assert that this one fact has far-reaching consequences, even in other countries. Human society, animals, plants, and the entire planet suffer as a result.

Even though they are our most vulnerable population, children have more influence than we realize when it comes to food choices. For example, their food preferences shape the grocery shopping list

for their families. Because of this, children in the USA hold undeniable purchasing power. They exercise their strength by pestering their parents into buying what they want.

The Machine

The reader may have heard of "economic engines," a concept fully described in Jim Collins' book, *Good to Great: Why Some Companies Make the Leap and Others Don't* (Collins, 2001). An economic engine can be defined as a metric used to both build and assess a company's success. Simply put, since a company's success is typically related to profit, an economic engine can be defined as what brings in money.

With that, we will draw this analogy. There is an economic engine that creates and accelerates poor health and planetary deterioration. Marketing of our food economy fuels the engine, accelerating sickness in all living things and fomenting the planet's destruction. In fact, 8 out of the top 20 contributors to greenhouse gas emissions come from the agricultural sector, according to Project Drawdown research (Project Drawdown, 2019).

The economic engine has gears. Each gear has inputs, outputs, and by-products. Consider this:

Engine Gear 1

Marketers all over the world know that children's food preferences define their food choices. Children's food choices and preferences strongly influence the family's eating patterns (Suwandinata, 2011). The family's eating patterns define their grocery purchases. The grocery purchases determine food demand and production. Food demand and production inform food marketing. In the USA, food marketing has a tremendous influence on children's food preferences and marketers and manufacturers take full advantage of that when advertising to children and adolescents. And round and round in an endless cycle.

Unfortunately, for the consumer, food manufacturers are not only marketing heavily to children, but they are also looking for maximum profit on their investments (Leibowitz et al., 2012). One of the surest ways to increase financial gain is to



decrease costs by using less expensive, poorer quality, and addictive ingredients (Moss, 2013). Furthermore, using formulations with addictive ingredients cements the relationship, ensuring loyal buyers. This unending search for higher returns on investment has resulted in a downward spiral in food quality and an upward spiral in addictive ingredients and laboratory determined ingredient combinations, including salt, sugars, and fats, especially in the foods marketed to children (Moss, 2013). This appears to be true regardless of its adverse effects on the population while they are still young and as they age.

In 2017, the University of Connecticut Rudd Center for Food Policy and Health analyzed Nielsen data and determined that food companies spend about \$14 billion annually on food marketing (Harris et al., 2019). A Federal Trade Commission report from 2012 indicated that food companies can spend as much as \$1.8 billion annually on marketing explicitly targeting children and adolescents (Leibowitz et al., 2012). Furthermore, a US study conducted in 2013 found that about 84% of all promotional materials seen by children encouraged them to eat nutrient-poor, highly processed, sweetened drinks, candy, unhealthy snacks, and fast food containing high levels of saturated fat, sugars, or sodium and little else (Food Marketing, n.d.).

Another study conducted in Canada in 2020 found that adolescents are prime targets for food advertisements because of their purchasing power (Pinto et al., 2020). In the USA, advertising for these foods is ubiquitous. It is prominent on all electronic and print media platforms, in schools, at sporting events, and in music. Our children are awash in this torrent of advertising. When the ads are combined with youthful impressionability and impulsivity, children beg their parents for these products, and parents generally comply. The purchase and consumption of these low-quality refined food products have led to soaring rates of lifestyle diseases such as obesity, diabetes, and hypertension in the whole family (CDC, 2022).

This turning wheel of causes and effects adds power to

Engine Gear 2

Marketing increases the demand for and promotes the normalization of eating poor-quality, highly processed junk foods and animal products, also called the Standard American Diet (SAD). The SAD has been shown by extensive scientific data to reliably lead to chronic illness (Standard American, n.d.; The Scientific, 2021). Chronic illness causes a consistent and common decline in human health. This consistent and common decline leads the general population to normalize, accept and expect illness over the lifespan. Our expectations restrict what we are willing to consider as possible solutions. The possible solutions that we consider are influenced and even limited by marketing. Marketing persuades us to believe that the SAD is fixed (meaning it is not changing), beneficial (meaning it is cheap to produce and purchase, quick to eat, easy to obtain, and good tasting), normal (meaning it is standard, typical, and harmless to eat) and health-promoting (meaning it is high in protein and has added vitamins and minerals).

Both Gear 1 and 2 increase torque for

Engine Gear 3

Food choices in the USA affect eating patterns worldwide. Eating patterns worldwide are swayed through marketing and exportation of alluring, lab-engineered, low-cost, hyper-palatable, genetically modified organisms (GMOs), animal-based, and refined food-like substances, increasing the demand for them. The increased demand for refined food like-substances feeds the growth of that market. The growing market for refined food-like substances leads farmers to produce the raw materials for those food-like substances to cash in on the increasing demand. To cash in on the increasing demand, farmers try to produce as much as possible to maximize their return and profit. One of the ways to assure the highest possible crop yield is to grow genetically engineered cash crops that are designed to withstand high volumes of herbicides.

Since the GMO cash crops can withstand herbicides while the weeds and other undesirable plants cannot, farmers tend to use the ever-increasing amounts of fertilizers (to stimulate growth) and herbicides like glyphosate (to kill weeds) (UNEP, 2021). The use of herbicides creates an evolutionary pressure for the weeds to develop a resistance to the



poisons, leading to more use of GMOs and herbicides (Perry et al., 2016). A similar pathway occurs in animal agriculture where farmers look for the most cost-effective method to grow animals for food. The most economical way includes the use of GMO feeds, antibiotics, and growth hormones to stimulate livestock growth (GMOs, 2019) (Hughes & Heritage, n.d.) (Stewart, 2017). This leads to the increased production and consumption of GMOs (for farm animals) and animal-based foods (for humans). Excessive fertilizer and chemical use combined with the increasing production of GMOs and high concentration animal-based farming are all identified causes of ecosystem degradation, loss of biodiversity, and planetary destruction (Swinburn et al., 2019).

In other words, looking at the output of Engine Gears 1, 2, and 3:

Our children's eating patterns directly affect their health and the health of the planet. Therefore, it follows that we can alter the course of both by educating about and changing what our children eat. Not only that, but we could transform the health of the entire human population, increase life expectancy, decrease animal suffering, and significantly reduce greenhouse gas production by transforming what we feed children in the USA (Philipsborn, 2022).

Just as children are taught basic manners, hygiene, and how to read and write from a very young age, and these habits/skills carry over into adulthood, the authors are assuming that children who are taught to eat healthy foods before the age of 13 will likely adhere to that way of eating long-term (Movassagh, 2017).

There is a fourth gear in this machine. Its outputs are simultaneously difficult and easy to see. These outputs quietly undermine human potential in the USA as effectively as they destroy human health. Moreover, this gear is uniquely detrimental because it simultaneously feeds into and sucks the life out of specific races and ethnicities, even as it contributes to their ever-growing vulnerable status.

Engine Gear 4

Black, brown, and low-income people often live concentrated in low-income areas. Low-income neighborhoods are often also food deserts or food swamps. Food deserts have no grocery stores within 1-mile walking distance, and food swamps frequently have higher than the typical number of poor quality, processed, or fast-food establishments (Cooksey et al., 2020; Dutko et al., 2012).

People in food deserts frequently eat what is available nearby in their neighborhoods, i.e. processed and fast foods. Predictably, when an entire community has an eating pattern high in processed and fast foods, it leads to higher rates of chronic physical and mental health issues within that community. Higher rates of physical and mental health issues are detrimental to the community as a whole and impede individual community members' abilities to earn a living wage (CDC, 2019). The inability to earn a living wage leads to an increased need for and use of government food assistance programs for single adults, families, and children in schools. School food programs are a form of governmental food assistance programs. Schools provide poor-quality food such as dairy products, processed meats, and other processed foods high in salt, sugar, and fat. (Eber, 2019). Poor food quality is associated with below-average academic performance and poor health (Oberst, 2022).

Poor food quality, poor health, and below-average academic performance are all associated with decreased self-esteem, increased behavior problems, depression, anxiety, and anger. Over time, decreased self-esteem, increased behavior problems, depression, anxiety, and anger in school children can eventually lead school administrators to take disciplinary actions, which may include suspension, expulsion, and even arrest. Arrests and disciplinary actions increase the child's likelihood of dropping out and potentially engaging with more police involvement (Gleit, 2022).

Police involvement leads to decreased ability to get a stable job and earn a living wage. Without a stable job and living wage, it is almost impossible to contribute to family and society using legal pathways. Limited access to legal means to support oneself leads to desperation with increased anti-social/criminal behavior. Anti-social/criminal behavior leads to



increased societal mistrust and stereotyping of the low-income population. Because the population is easily associated with or identified by physical characteristics like skin color, their behaviors reinforce racist beliefs and solidify systemic racism against all members of the racial or ethnic group. Systemic racism against all members of the racial or ethnic group, along with other issues, including low educational levels and low earning ability, support the growth of impoverished black and brown neighborhoods.

In addition to all this, the vulnerable populations noted above are the political minorities that suffer the most deprivation in terms of access to healthy food and adequate healthcare in the USA (CDC, 2021). They are also the groups most frequently targeted by fast-food advertising (Harris et al., 2021). For many, the tightly woven fabric consisting of disparities in the quality of their living environment, minimal access to safe outdoor spaces, lack of nutritious food, and inadequate education supporting the adoption of healthy lifestyle habits delivers the worst health outcomes and leads directly to an early grave. This is particularly true for low socioeconomic status African Americans and Native Americans (CDC, 2021).

As stated above, political minorities and those with low socioeconomic status are at the highest risk for poor health outcomes. In these communities, the inequities start before birth and persist until death, generation after generation. Curiously, these are typically the same communities located in food deserts and hardest hit by marketing that promotes poor eating patterns. These are also the same zip codes where many of the children bear the brunt of societal insults. They suffer food insecurity more often and are more likely to receive food assistance funds (Wight, 2014). With the known relationship between nutrition and academic performance, they often have lower scores on standardized tests and more difficulty meeting academic goals and standards (Burrows et al., 2017).

Furthermore, these children are also frequently perceived to have behavioral issues (The Lasting, n.d.). The behavioral issues frequently result in suspension or expulsion from school, making them more likely to drop out before completing high school

and increasing the odds of spending time in the penal system (Bettina, 2016).

IMPLICATIONS FOR INTERNATIONAL HEALTH, POLICY AND/OR PRACTICE

The food industry in the USA leads much of what happens around the world, especially when it comes to cheap, hyper-palatable food products (Dehghan, 2022). Therefore, the impact of USA food quality and eating patterns is a massive problem for the whole country and a growing problem for the entire world. It affects people, plants, animals, and the planet.

The deleterious effects of poor food quality reach more deeply into some populations than others. In the macrocosm, it is a problem for the planet. In the microcosm, it is also most detrimental for specific low-income populations inside and outside the country. These sub-populations inside the USA, mainly African-Americans, Latinos, and Native Americans, are the people who can least tolerate the impact of poor nutrition because of a tightly woven tapestry of factors working against them, including but not limited to:

- depleted, deteriorated, and unsafe living environments,
- decreased access to safe and inviting outdoor spaces,
- severely limited access to healthy foods,
- inadequate knowledge of the connection between health and nutrition,
- genetic predisposition leading to higher rates of chronic illnesses,
- minimal to no political power,
- low socioeconomic status,
- unrelenting systemic racism

The machine referred to above is enormous and the four gears described here are a fraction of the total number. The gears are designed to deliver high returns on investment derived from increased sales of cheap, nutrient-poor food-like substances, and loyal customers for these same unhealthful and highly addictive products. Furthermore, the gears generate steady, reliable income for the medical and pharmaceutical industries resulting from illness caused by eating these substances and the necessary treatments that follow.



The machine runs continuously, fueled by over-consumption in the USA and Global North affecting people in the worldwide Global Majority (Pörtner et al., 2022). The dichotomy between the two is characterized by the former bettering itself at the expense of the latter. The unidirectional flow of natural resources, low-cost labor, goods, services, and minerals, enriches the Global North while it impoverishes the Global Majority by approximately \$10 trillion per year (Hickel, 2022).

This type of gross imbalance between the haves and the decided “will not haves” is especially harmful to children all over the world. For those in the Global Majority, it negatively affects ecosystems, poisons soil, air, and water supplies, and robs human life and potential. For those in the Global North, it props up the belief that even with all the inequities, illness, and damage to society and the planet, this is normal. As a result, the children in the Global North grow up to be adults who blindly perpetuate the current situation, as they have generation after generation.

The machine works for some while it works against others. Even as it consumes resources and causes destruction, it produces enough benefit for some to allow them to focus on the short-term positive returns and purposely invest in its long-term success.

Nevertheless, whether we know it, everyone supports the machine regardless of how we feel about it. With conviction and reluctance, intentionally and unintentionally, we commit to its continuation through our tax dollars, food and product purchases, employment, and land and water misuse, that we model for our children. Our government's weak attempts to find solutions to the glaring and interrelated issues that are the machine's by-products fuel the machine's growth.

Our refusal to do what we can as individuals only lubricates the seemingly inexorable turning of the machine's well lubricated gears. For example, we could each decrease our consumption of animal products, and increase our intake of whole, healthy, unprocessed, and minimally processed plant foods. Those two actions alone could make tremendous difference in human, animal, and global health.

Part of what allows the machine to run unchecked is that many of the outputs are delivered without conscious public awareness. The general population does not see the connection between our food choices and their impact on the world's climate. There is virtually no public understanding that there is a way out of sickness that is also a way to support planetary regeneration. Specifically, Project Drawdown research suggests that if 50-75% of people adopt a plant-rich diet by 2050, it would lead to tremendous mitigation of greenhouse gas emissions (Frischmann et al., n.d.). However, these facts are not advertised, and therefore, are virtually unknown to the public.

Furthermore, even when people know the facts, much of what this engine creates is out of their control. For example, marketing is protected unless it contains lies, and someone sues the company responsible for the messages. The creation of low-quality, addictive foods is perfectly legal. Targeting vulnerable populations, including children, is commonplace, even for governmental agencies. Systemic racism, by its very nature, is encoded into law and, therefore, is accepted practice. Adults are free to eat whatever is available, regardless of probable adverse health outcomes or environmental impact. This situation is further perpetuated by systemic corruption, in that we tend to subsidize unhealthy and environmentally destructive foods over healthier foods, all in the name of profits over health (Agrabusiness, n.d.).

Monkey Wrench in the Machine

Given all the above enumerated conditions, the logical place to interrupt the machine's output is at Engine Gear 1. The most vulnerable points are the gear teeth where a) children pester their parents for low-quality junk foods and animal products, and b) their parents succumb to the pressure. Interestingly, those are also the only places where the most significant number of ordinary people can take control.

Keeping Gear 1 in mind, we know that even though children have no autonomy nor agency, they have power. We know and the food industry banks on the fact that children drive family food purchases. Those purchases fuel large parts of the food economy.



Let's look at the numbers:

There are approximately 73 million children in the USA, almost 50% of whom are children of color (The State, 2021). There are 3.5 million teachers in the USA. About 55 million students are enrolled in public and private schools from prekindergarten to grade 12. Another approximately 1.5 million children are homeschooled (NCES, n.d.)

In 2020, there were 63.1 million parents with children in their homes (Bureau, 2021). We had almost 20.5M healthcare workers working in 2018 (Dowell, 2021). According to the Bureau of Labor Statistics, 33,620 of them were pediatricians (U.S. Bureau, 2022), and 118,198 were family practice physicians (Active physicians, 2019).

The numbers indicate there is an opportunity to throw a massive professional monkey wrench into Engine Gear 1. This is precisely the project we are launching. We call the project 6 Million SEEDS. The monkey wrench is purely a grassroots effort, using children's purchasing power as the fulcrum to stop the creation of negative outputs from Engine Gear 1. A monkey wrench at that fulcrum in Engine Gear 1 would also impact the outputs from gears 2, 3, and 4.

For the monkey wrench to have full effect, it would require educating parents/caregivers, educators, and medical professionals to understand the long and short-term impacts of children's eating patterns on their health and adult health, and to start advocating, teaching, and modeling healthy eating patterns.

If parents/caregivers, educators, and healthcare professionals work together to decrease processed food such as junk and animal products for half of the 73 million children, can impact on food purchasing and eating patterns of the general population.

We have designed the project as a monkey wrench for Engine Gear 1 of the machine. 6 Million SEEDS is a 3-part project designed to transform how we feed our children, with the long-term and short-term consequences being improved health outcomes for children, adults, animals, and the planet. The project results can be felt almost immediately and ongoingly into the future.

The premise is simple: Children are our most precious resource. They are vulnerable and need protection. Adults (parents/caregivers, educators, and healthcare professionals) are charged with protecting the children for whom they are responsible. Food quality and eating patterns are known social determinants of health, so it follows that it is incumbent upon adults to provide, teach and model healthy food choices and eating behaviors.

The Name

The project name is 6 Million SEEDS. The 6 stands for the six plant food groups: Fruits, Vegetables, Nuts/Seeds, Beans/Legumes, Whole Grains, and Mushrooms. SEEDS is an acronym: Students Educated in Environment, Diet, and Sustainability. Million is the minimum number range of children we need to change their eating habits to have an impact. With 73 million children in the USA, we need many millions of SEEDS to reach critical mass.

The Project

Part 1

Teach children by providing plant-based didactic and food experiences.

Chief Aim: Actively and consistently encourage children to grow food gardens, know where their food comes from, and understand the impact of their eating patterns on the environment such that they begin asking for more fruits and vegetables at home. As discussed previously, food marketers rely on the fact that children's food requests frequently shape the family's grocery purchases and therefore can lead to a change in the families' eating patterns. If this change were to occur in each community, we postulate that, over time, it would result in a major shift in eating patterns within that community.

Educational Settings. 6 Million SEEDS meet children in educational settings, which can include schools, afterschool programs, youth clubs, scouting groups, and faith-based groups, etc. In those settings, 6 Million SEEDS provide education for the youth participants, as well as the adult staff that accompany the children to each 6 Million SEEDS session. All participants, youth, and adult are encouraged to



prepare and sample a wide variety of healthy plant foods and dishes during the sessions. Adults are asked to model courage and curiosity as they try new flavors and textures. Safety standards and attention to cleanliness and potential allergens is always foremost, especially while working with food.

In The Classroom. 6 Million SEEDS uses curricula that meet Common Core Standards (CCS) so that the lessons align with public school educational requirements. CCS adherence also allows for access to Title 1 funding for afterschool programs in low-income areas, giving it financial footing (Polikoff & Porter, 2022). While the curricula used are the same from setting to setting, the foods sampled can be tailored to the student population so that the flavor profiles are culturally relevant to the class participants. So, for example, if the students are African American, Indian, or Latino, food samples would have flavor profiles commonly found in those local cuisines. In situations where the students are from multiple ethnicities and races, food samples would have an appropriate mix of flavor profiles that are common to those local cultures. Children also can request favorite dishes be re-created with whole food, nutrient-dense, plant-rich ingredients.

Another benefit of the education is the emphasis on altruism. Lesson by lesson, as the students become acquainted with the curriculum, they learn to practice altruism. Altruism, or the concern for the well-being of others, including animals and the planet, has been shown through ego psychology research to be the most powerful psychological defense mechanism against anxiety and depression. (Thomas, 2018; Irani, 2018).

By caring for the garden and learning the connection between the Earth, our food and our health, 6 Million SEEDS support the participants as individuals and as a community. In this way, the students and the staff members can maximize physical, social, and mental wellbeing through education, nutrition, and action.

On-Site Garden. Part 1 includes the creation or expansion of an on-site 6 Million SEEDS garden. In the garden, children learn first-hand about the connections between human activity, soil, seeds and produce. First, children learn about the difference

between healthy and depleted soil. They learn the importance of caring for the earth through composting and recycling. Then, they move on to planting and growing fruits and vegetables. Later, when the produce is ready, the children harvest it and are encouraged to eat it. If the gardens are large and productive, the fruit and vegetables can be shared with students to take home, used in the school lunch programs, or sold to residents to increase school funding for the program. Through these activities, the children and adult participants gain a better understanding of the essential nature of caring for the Earth and growing their own food including aspects of food quality, and healthy food access.

Relationship Building with Local Farmers. Another one of the goals of this part of the 6 Million SEEDS project is to assist the educational settings in developing relationships with local farmers, gardeners, and growers. These relationships could teach the children and adults involved about where our food comes from, the importance of caring for the land, a career in agriculture, the value and benefit of eating seasonally, and possibly even create linkages so that the educational setting could source fresh, local produce directly from the local growers. Relationships forged in this part of the project could lead the children to a deeper understanding of our food system, especially how it is closely tied to high levels of greenhouse gases produced by our current farming methods.

Part 2

6 Million SEEDS Podcast and social media. Even though children have no autonomy, they have power within their families. They are marketed to and, after a certain amount of exposure to advertising, they will reliably make demands of their parents. As such, children are often a conduit to their adults. This is a fact of life: children have adults attached. Therefore, to add speed of uptake to the project, we must talk to adults (parents/caregivers, educators, and healthcare professionals) about the same subjects that we cover in the children's programs.

To add that desired velocity, the 6 Million SEEDS podcast is published every two weeks and always delivers some content on child nutrition. To that end, the podcast is continually evolving to deliver



interviews with researchers, educators, medical professionals, climate change activists, farmers, organic gardeners, chefs, and animal rights advocates. We provide information the adults can use to support the students in the project. The subjects are also relevant to other adults who do not have children in the programs. The interviews are designed to be engaging, informative, and relevant for anyone interested in raising healthy children who support a vibrant, healthy world.

Chief Aim: Interview guests who provide glimpses into their personal lives, professional and evidence-based information, and frank discussion of issues concerning food, health, and climate change. All guests are asked to give one suggestion to someone who wants to change their diet or one suggestion for what the audience can do to make a positive change right now. Suggestions for action have ranged from eating two additional servings of fruits and vegetables per day to planting three seeds in a bucket of dirt, caring for them, and using that to start a revolution.

We also post on social media at least daily. Although our posts are primarily about food, they also include information on other aspects of a child-appropriate healthy lifestyle.

Part 3

The 6 Million SEEDS Decade of Excellence in Child Nutrition. Clearly, Parts 1 and 2 of the projects would take a long time to show results if implemented alone. Therefore, Part 3 is designed to scale the project and increase program reach.

It is a little-known fact that in the US, many non-profit groups are already working on nutrition, food systems and climate change. One of the challenges, however, is that each entity appears to be working in a silo, carefully guarding its ideas for fear of competition. Therefore, we are missing opportunities to increase success and scale by collaborating with others as a community. Moreover, we also see that minority voices are poorly represented in the conversations for transformative action, an issue that must be addressed if we really want to have viable, inclusive, far-reaching solutions.

Part 3 entails making connections with other like-minded and like-missioned organizations, including those representing diverse populations, to collaborate on projects nationally and internationally. We must actively seek out organizations composed of and lead by BIPOC, non-binary, and political minority individuals if we expect lasting transformation.

Chief Aim: Build collaborative networks nationwide to create unconventional and innovative methods that will effectively transform childhood nutrition in the USA and elsewhere. The network will include a wide range of diverse voices which provide culturally connected solutions. Collaborations add velocity to goal attainment by discovering synergies between organizations and leveraging each organization's strengths.

The power of the coalition comes from relationships based on what is possible where the whole is truly more than the sum of its parts. Projects created build on what touches, moves or inspires each coalition member and always strategically supports the member organization's missions while moving the message of child nutrition for planetary health forward. One outstanding example of this nimble approach is a presentation 6 Million SEEDS delivered to a nurse-environmentalist group. The group wanted a continuing education session created and delivered by nurses, for nurses on the relationship between child nutrition and planetary health. 6 Million SEEDS was and is perfectly positioned to fill this request. This is but one of many collaborations that would not have happened outside the context of the 6 Million SEEDS project.

CONCLUSION

Time is short. On the one hand, there is life as we have come to know it with all the products of human beliefs and behaviors. On the other hand, there is life as it could be. In both cases, for better and worse, human activity exacts a price from the planet and its inhabitants. Knowing what we know, we must do everything we can to avert the worst effects of planetary illness while doing the greatest good for all.

People feel the urgency. It is palpable. The gears of the machine where on destroying health, undermining potential, and eclipsing the planet's



ability to recover. In children, it shows up as obesity, anxiety, depression, and behavioral challenges. As they age, the indicators deepen to include diabetes, hypertension, coronary artery disease, and cancers. In communities, it looks like systemic racism, crime, increased vulnerability, and growing needs for assistance.

For the planet, it looks like ecosystem and habitat destruction, species extinctions, and climate chaos. These are but a few of the worsening symptoms.

These individual and planetary illnesses have a common cause. They primarily result from high fat, processed, nutrient-poor, and animal-centric eating patterns and the food systems humans have built to sustain them.

However, there is a way out. Since research shows that our refined, processed and animal-centric dietary patterns fuel the engine, we know that changes to the SAD would make a strategic difference globally. Simple changes in eating habits, consistently promoted nationwide through a committed network of supporters, would impress upon the American people the importance of transforming what we feed our children. Coordination of efforts to change food quality and product demand at the grassroots level could allow the planet to rest, recover, and cool allowing ecosystems to rebound. Education during and after school, in youth clubs, and in faith-based groups for children and adults would show that the immediate and long-term value of eating real food far exceeds what the machine's outputs have trained us to believe.

By implementing child-centered, grassroots interventions to dismantle food injustice, help restore food security and access, and eliminate food deserts, perhaps large sections of the low-income BIPOC population could complete their education at a higher rate with less police involvement and thereby attain a higher degree of their human potential. As a result, these groups could begin to regain their dignity. Children raised with this mindset would have a very different experience of life, themselves, nourishment, and education. Furthermore, if our children weren't forced to live without access to healthy food, a known determinant of health, they might never have to experience the chronic diseases the previous

generations have battled. Access to and the understanding of the short- and long-term life-giving importance of healthy, real, human food could stop the rising numbers of pediatric type 2 diabetes, heart disease, high blood pressure, and some cancers.

Therefore, even though food is the catalyst in this crisis, it can and must also be the solution. Each of us has the power to make a tremendous difference in our collective and individual trajectories. What we feed our children is the path. We can throw the monkey wrench in the machine and start healing right now.

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