



Diet and Nutrition

*Foundations of Functional
Medicine | Episode 2*

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Functional medicine is cutting edge. It quickly incorporates new research findings into clinical practice, sometimes years before the knowledge becomes recommended in clinical practice guidelines. It's "the tip of the spear" in new technologies and how they're being implemented into healthcare. It's all these things, but the basics are still the basics.

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I'd like to take a deep dive into the pillars of functional medicine. These are also referred to as lifestyle medicine, but most commonly referred to simply as modifiable lifestyle factors. These are the foundations upon which everything else is built. We want to start here. Let's rediscover their importance. At the same time, let's learn more deeply how they affect our health.

The pillars of functional medicine are the following: diet and nutrition, stress, sleep and relaxation, exercise and movement, and relationships. I'd like to start with the most basic and yet the most fundamental of all the modifiable lifestyle factors, diet and nutrition. Hippocrates, who is the father of Western medicine is credited with the saying in about the fourth century B.C., "Let food be thy medicine, and medicine be thy food. It seems like this

would be a simple thing to talk about, but there are literally as many different diets as there are people groups on the planet

What people eat in Nicoya, Costa Rica is vastly different than the typical foods in Sardinia, Okinawa or Loma Linda, California. These areas are the major blue zones that have been currently identified in the world. So what are blue zones? Blue zones are areas in the world that have the highest levels of documented individuals living to 100 years of age and, even past. So to meet the criteria of a blue zone, you actually have to find people that say they're a hundred years old, find birth records and verify those. So, it's not just seeing old people, it's verifying that they actually are over 100 years of age. There are also other places in the world that have been recognized to have people that are long lived, but these are the areas that they've actually been able to prove that these people are over a hundred years of age.

Some other areas where people are known to live long include the Maasai in Kenya, or the Swiss and the Lötschental Valley. What is striking to me about these people groups is their vastly different diets. In Nicoya, the traditional diet's based on corn. Corn is known as a high lectin food associated with lots of mold. Yet, here it's the major player in this blue zone diet. One interesting tidbit of information is that in their food preparation, they grind the corn on limestone, which has been shown to maximize the nutrient extraction from the grains. They also grow corn on iodide-rich soils.

Over in the Mediterranean, at the island zone of Sardinia, lentils are a staple. These are another high lectin food associated with inflammation. There, the Sardinians will soak the lentils for two or three days and then slowly cook them for another two or three days. This slow process not only decreases the lectins in the food... again, think inflammation, but it makes it much easier to digest.

The Okinawan diet is a traditional Japanese, Asian-type diet revolving around what you can grow in the backyard or what can be caught out at sea. In Loma Linda, California, there's no emphasis on whole foods but simply eating a plant-based diet. For some, this extends to a vegan type of diet. The Maasai of Kenya, known for their toughness and physical prowess, focus their diet on food products that can be produced from cows and dairy, to the extent that sometimes they're even known to drink cow blood. This is the farthest thing from a vegetarian/vegan diet. Finally, the Swiss in the Lötschental valley for centuries were famously known to be the people group that supplied the Swiss Guard to the Vatican. Their diet revolved around rye bread grown from rye in the surrounding mountainous area as well as dairy products. So the question is this—how can diets in such different people groups, in different climates, and different places in the world have the same relative outcome, longevity and health?

Let's discuss some basic food history. In 1996, in the United States, we were in the peak of the human genome craze. I was in medical school at this point in time, and I was being taught the priority of genes and these "known facts" that 80 to 90 percent of diseases were genetic, pure and simple, no questions asked. At this point in time, in my education, we had less than five hours of nutritional training during medical school, and we were actually told in school that diet and nutrition didn't play a role in chronic diseases such as heart disease and cancer. Since that time, however, we've seen a dramatic shift.

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Now, according to research from the Harvard School of Public Health, 80 percent of heart disease and 70 percent of cancer can be prevented by diet and lifestyle alone. 50 percent of all chronic disease is directly related to eating processed foods. Now we say only 5 to 8 percent of diseases are thought to be primarily genetic in origin. So, what has replaced genetics as the fulcrum on which to leverage our health? It's diet and lifestyle.

In order to have some of the basic tools to understand the current and ongoing food fads, we need to understand the historical progression of diet

and nutrition in the United States. This will help to interpret new food trends and crazes as they emerge, and you can be guaranteed that whatever the food craze is today, tomorrow it'll be different. And having the right tools to interpret the ever-changing trends is important. It's even more important than knowing every detail of each one of these trends.

Historically, prior to the industrial revolution, starvation, nutritional diseases from privation, plagues, famines, wars, natural disasters, poverty in major cities... these were the major causes for death. At this time in America, most individuals weren't huddled in cities, but were living in surrounding areas in a rural type environment. It takes an area of population density like a city to create an optimal condition to start and spread acute infectious disease outbreaks. This, in combination with malnutrition due to lack of access to food, produced such disease outbreaks. So, during this point in time, the biggest issue was lack of access to food, and nutritional deficiencies. When the Industrial Revolution started, it not only resulted in mass production of weapons and later cars, it bled into mass production of food. This first phase of food modification was simply an increase in production combined with the separation of food into its separate parts for the purpose of improving food availability, bottom line. The most important thing was access to food, pure and simple.

The main thing happening in the food industry during this time was improving farming techniques and then processing the food into its separable parts. Your wheat was turned into wheat germ, flour, the husk. Milk was skimmed, turned to cream and whey, cottage cheese, or other milk type products. The nutritional results of this, however, were nutritional deficiencies because of the processes that were going on in this food processing production. So, for example, by 1940, the U.S. Government mandated the fortification of bread with thiamine, niacin, iron, and riboflavin. The reason they did this was nerve damage that was resulting from these deficiencies. So, it had gotten so bad, by 1940 the government had to mandate supplementation or “fortification” to prevent diseases caused by the deficiencies. Corn was also being produced en masse, separated from its traditional food preparation techniques and grown in iodide deficient soils. One result of this was, in 1900, corn was banned from France temporarily due to this thing called congenital cretinism. What this is, is a major birth defect resulting from iodide deficiency in the child at birth from eating iodide deficient foods mainly, in this case, corn.

So the question is, how did the Aztecs and Mayan cultures use this as a major food source for almost a millennia and yet not have these kind of health issues? Well, it relates to how corn was being processed. And the unfortunate reality is the way these foods are processed affects our health

in powerful ways, mainly due to how pervasive it is in our system. Corn is a great example of this pervasiveness. Corn is stuck into everything. Corn solids, corn sugars, high fructose corn syrup, citric acid, vitamin C.

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The unfortunate reality is the way corn is processed affects our health and powerful ways, mainly due to how pervasive corn is in the American food system. Corn and its products are put into corn solids, corn syrups, corn fed to animals, it's fed to cows, chickens, they even [use] citric acid for vitamin C or other magnesium type supplements, the citrate actually is a corn product. One interesting fact is that 69 percent of the carbon in the hair of Americans comes from corn as compared to only 5 percent of the hair in Italians. So just think about that for a second, 69 percent of all the carbon your hair is from corn compared to 5 percent of an Italian. That's a lot of corn. And it's mainly because corn infiltrates almost every aspect of our food system.

Soy has a very similar story and combine this with the fact that even if you don't eat these grains, the chickens, the cows, pigs or other commercial livestock are fed diets, mostly consisting of these nutrient deficient staples. So, it becomes this ever-progressive cycle that penetrates almost every aspect of our food system. Some of you may be familiar with Upton Sinclair's, "The Jungle". This book, written in 1906, depicted the privation associated with the then current milk production practices, and its publication resulted in the Clean Food and Drug Act, which later resulted in the formation of the Food and Drug Administration in 1930.

At this point in time, milk was mandated to be fortified to prevent nutritional deficiencies and the diseases related to milk's processing and the deficiencies and the problems related to this processing. Even though in the past, diseases caused by nutritional deficiencies were commonplace, the link to mass manufacturing wasn't clearly seen. Our country was still in a phase of addressing hunger, starvation, and lack of food access. We were soon to enter the Great Depression and have the time of the Dust Bowl, so simply getting food on the plate was a primary focus. How that happened was a totally secondary issue. In the 1940s, one of the first pioneers in chronic diseases, and how they related to nutritional deficiencies was a Cleveland dentist named Weston A. Price. He later used his research to write his book,

“Nutrition and Physical Degeneration”. And I’d like to briefly summarize his story a little bit here. The way Weston A. Price got into this whole idea of nutrition and physical degeneration and diseases was that his own son got a dental abscess and died from it. Now in Cleveland, Price thought, “This is impossible. We’re in the West. This is a modern world. My son got a dental abscess and died?”, and so [he] and his wife decided to go to places where people had health and longevity and just research the foods they ate, how they lived, and somehow glean some information that he could then bring back here to the United States.

He traveled around the world to multiple different areas, sampled the food, sampled the water, looked at peoples’ hair, took samples of that, sampled their diets, and just took a compilation of all this data, and then processed it and wrote his book. His findings were quite interesting. He noted rate of cavities and tuberculosis, craniofacial malformations. All these were related to exposure to Western type foods. This was his term he used for processed food unavailable to these “less developed” cultures around the world. One of the key findings he discovered was that traditional foods eaten in traditional ways, maximize traditional peoples’ health. One example of the many that he discovered through his travels, were the people living in the Löschental Valley in Switzerland.

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Now, many might not think about this being a primitive area, but this area was not accessible by roads. You had to literally walk for almost a day to get there, so it was not penetrated by road, phones, electricity, and Western foods. And that was the main thing Weston A. Price looked for, “Are western foods or processed foods penetrating these people groups?” And in this people group in Switzerland, he only saw one cavity in every 10,000 teeth. He saw very little dental crowding and normal development of the wisdom teeth. That means they did not have to have the wisdom teeth pulled. Another thing he noted as he went throughout Switzerland, was that there were sanitariums that had lots of people being treated for tuberculosis.

So, he started to question, are there any people here from this area, from this Löschtal valley? And one of these sanitariums was the closest one to this valley area. It was kind of interesting that in over the 2000 people that had been to that sanitarium, not a single one had come from that area. And this story can be repeated, whether it's the Maori in New Zealand or the Maasai in Africa or the Scottish people on the Outer Hebrides. He noticed

over and over again great teeth, no crowding, robust health, no cavities, no tuberculosis. He also noted a change in height. That was one of the things he noticed more in Asian and Indian cultures was that, as people were exposed to more Western foods, their height actually diminished over time. This is something historians have actually known for ages, and the Egyptian peoples as they developed their agricultural system, there's a stark decline in their height as they eat more wheat and grains and became a more 'advanced' culture. We see the same thing in the British Empire from the 16 to 1700's through the 1900's as it became more westernised, which is kind of silly word to say, I guess I should say, as they ate more processed Western-type foods was about a six inch decrement in the height of the average male entering service for the British Empire. So, this concept is not a new one. It's just now we're understanding nutrition is a primary factor in this, not race, nationality, or even time; the epoch in which these people are living.

Around the same time, Sir Albert Howard, who became the author of "Soil and Health", was charged in the British Empire with improving the efficiency of crop production within the British Empire found in the country of India and the far reaches of the British Empire. He studied soil composition, traditional farming habits, production of compost, and the resulting health of plants as well as the livestock that ate them, and ultimately the people who ate both. His main goal was crop production improvement. But what he didn't expect to discover was the association with soil quality on the

health of the crops and then how this extended to the local population who ate them. And his findings are quite fascinating. For one thing, he discovered there's a need for many different kinds of bacteria and fungi in the soil to extract out the minerals and then make these liquified or solubilized so that the minerals can be used by the plants that are growing in these soils. This requires lots of organic materials in the form of compost. The second thing you realize [is] that there's a need for oxygen in the soil for this process to happen. In moderate water tables, overwatering, poor irrigation, and poor drainage would all prevent this from happening. Small canals or tracts are formed in the soil from earthworms or left after old plants die and decompose. This also helps to facilitate the drainage, or improve the movement of water, within the soils.

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Finally, he discovered chemical fertilizers have an immediate effect on boosting farm production, but over time they acidify the soils, and this acidification destroys the living microbes in the soil, thus sterilizing the soil. This greatly impedes the extraction of minerals from the soil, and over the long term it decreases the productivity of soil, and later on the health of the animals that eat the plants grown in the soil. So, what do we learn from

these two pioneers? It's this simple concept: that nutrient-dense, traditional foods, grown in living compost-rich soil, are the basis for individuals' health.