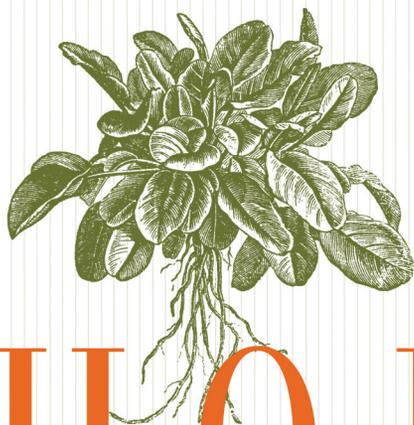


“*Whole* makes a convincing case that modern nutrition’s focus on single nutrients has led to mass confusion with tragic health consequences. Dr. Campbell’s new paradigm will change the way we think about food and, in doing so, could improve the lives of millions of people and save billions of dollars in health care costs.”

—**BRIAN WENDEL**, Creator and Executive Producer of *Forks Over Knives*



WHOLE

Rethinking the Science of Nutrition

Coauthor of international bestseller *The China Study*

T. COLIN CAMPBELL, PhD

with **HOWARD JACOBSON, PhD**

1



The Modern Health-Care Myth

*He who cures a disease may be the skillfullest, but
he that prevents it is the safest physician.*

—THOMAS FULLER

What a great time to be alive! Modern medicine promises salvation from scourges that have plagued humanity since time began. Disease, infirmity, aging—all soon to be eradicated thanks to advances in technology, genetics, pharmacology, and food science. The cure for cancer is just around the corner. DNA splicing will replace our self-sabotaging or damaged genes with perfectly healthy ones. New wonder drugs are discovered practically every week. And genetic modification of food, combined with advanced processing techniques, will soon be able to turn a simple tomato, carrot, or cookie into a complete meal. Heck, maybe someday soon we won't have to eat at all—we can just swallow a pill that contains every nutrient we need.

There's only one problem with that rosy picture—it's totally false. None of those lofty promises is anywhere close to being realized. We “race

for the cure” by pouring billions of dollars into dangerous and ineffective treatments. We seek new genes, as if the ones we’ve evolved over millions of years are insufficient for our needs. We medicate ourselves with toxic concoctions, a small number of which treat the disease, while the rest treat the harmful side effects of the primary drugs.

We talk about the health-care system in America, but that’s a misnomer; what we really have is a disease-care system.

Fortunately, we have a far better, safer, and cheaper way of achieving good health, one with only positive side effects. Furthermore, this approach prevents most of the diseases and conditions that afflict us before they show up, so we don’t need to avail ourselves of the disease-care system in the first place.

THE DISEASE-CARE SYSTEM

The United States spends more money per capita on “health” care than any country on earth, yet when the quality of our health care is compared with other industrialized nations, we rank near the bottom.

As a country, we’re quite sick. Despite our high rate of health expenditures, we’re not any healthier. In fact, rates of many chronic diseases have only increased over time, and based on health biomarkers like obesity, diabetes, and hypertension, they may be headed for further increases. The prevalence of overweight and obese individuals increased from 13 percent of the U.S. population in 1962 to a staggering 34 percent in 2008.¹ The U.S. Centers for Disease Control and Prevention (CDC) report that the age-adjusted Type 2 diabetes rate in the United States has more than doubled from 1980 to 2010, from 2.5 percent to 6.9 percent of the population.² Hypertension (high blood pressure) among American adults increased 30 percent between 1997 and 2009.³

Drugs and surgical advances are keeping the death rates more or less constant despite the increased risk factors (except for diabetes, whose mortality rate has increased an astounding 29 percent in North America from 2007 to 2010).⁴ But the data make it clear that none of our advances in medicine deal with primary prevention, and none are making us fundamentally healthier. They aren’t *decreasing* the death rate. And the price we’re paying for these advances is steep.

For many years, the cost of medically prescribed drugs has been increasing at a rate faster than inflation. Think we're getting our money's worth? Think again.

Side effects of those very same prescription drugs are the third leading cause of death, behind heart disease and cancer. That's right! Prescription drugs kill more people than traffic accidents. According to Dr. Barbara Starfield, writing in the *Journal of the American Medical Association* in 2000, "adverse effects of medications" (from drugs that were correctly prescribed and taken) kill 106,000 people per year.⁵ And that doesn't include accidental overdoses.

Add to that the 7,000 annual deaths from medication errors in hospitals, 20,000 deaths from errors in hospitals not related to medications (like botched surgeries and incorrectly programmed and monitored machines), 80,000 deaths from hospital-caused infections, and 2,000 deaths per year from unnecessary surgery, and the tire-screeching ambulance ride starts to look like the safest part of the whole hospital experience.⁶

Yet when you ask the U.S. government about this, you're met with deafening denial. Look at the CDC web page on the leading causes of death shown in Figure 1-1.

CDC Home
Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People. Saving Money through Prevention.

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

FastStats
FastStats Homepage
State and Territorial Data

NCHS Home > FastStats Home

Leading Causes of Death
(Data are for the U.S. and are final 2009 data; For the most recent preliminary data see Deaths: Preliminary Data for 2010 [PDF - 724 KB])

Number of deaths for leading causes of death

- Heart disease: 599,413
- Cancer: 567,628
- Chronic lower respiratory diseases: 137,353
- Stroke (cerebrovascular diseases): 128,842
- Accidents (unintentional injuries): 118,021
- Alzheimer's disease: 79,003
- Diabetes: 68,705
- Influenza and Pneumonia: 53,692
- Nephritis, nephrotic syndrome, and nephrosis: 48,935
- Intentional self-harm (suicide): 36,909

Source: Deaths: Final Data for 2009, table 10 [PDF - 1.4 MB]

National Center for Health Statistics
Text size: S M L XL
Email page
Print page
Bookmark and share
Contact Us:
National Center for Health Statistics
3311 Toledo Rd
Hyattsville, MD 20782
1 (800) 232-4636
cdcinfo@cdc.gov

FIGURE 1-1. Screenshot from the Centers for Disease Control and Prevention website⁷

Notice anything strange? Not a peep about the medical system being the third leading cause of death in the United States. Admitting that would be bad for business, and if the U.S. government cares about one thing here, it's the economic interests of the medical establishment.

But what about when medical care doesn't kill? Surely the benefits to millions outweigh a few hundred thousand deaths each year?

Visit a nursing home or geriatric center to see for yourself how well the system serves those who need it most. You'll feel the physical and emotional pain of once-vibrant people suffering needlessly with ailments and illnesses caused in large part by the pharmaceutical cocktails they take. Who can blame them? Doctors know best, right? And how many daytime TV commercials promoting drugs to decrease their blood cholesterol, drive down their blood sugar, and increase their sex drive have they watched?

I could go on and on. But I think you get the picture: the more we spend on disease care, the sicker and more miserable we seem to become.

THE GOOD NEWS

All our trillions of dollars are not improving our health outcomes. The promised breakthroughs are always a decade away and recede just as fast as we chase them. Genetic research has led to nightmarish anti-privacy scenarios, as well as tragic misunderstandings in which mothers are having their young daughters' breasts chopped off just because some geneticist pricked their daughters' fingers, tested their DNA, and scared them half to death with predictions of possible future breast cancer.

That's all pretty depressing, I admit.

The good news is that we don't need medical breakthroughs or genetic manipulation to achieve, maintain, and restore vibrant health. A half century of research—both mine and that of many others—has convinced me of the following:

- What you eat every day is a far more powerful determinant of your health than your DNA or most of the nasty chemicals lurking in your environment.
- The foods you consume can heal you faster and more profoundly than the most expensive prescription drugs, and more dramatically

than the most extreme surgical interventions, with only positive side effects.

- Those food choices can prevent cancer, heart disease, Type 2 diabetes, stroke, macular degeneration, migraines, erectile dysfunction, and arthritis—and that’s only the short list.
- It’s never too late to start eating well. A good diet can *reverse* many of those conditions as well.

In short: change the way you eat and you can transform your health for the better.

THE IDEAL HUMAN DIET

For some reason, “health food” has a reputation for being tasteless and joyless. You might be thinking at this point that the miracle diet for human health must be the most grim fare imaginable. Fortunately, that’s not the case. Evolution thankfully has programmed us to seek out and enjoy foods that promote our health. All we have to do is get back to our dietary roots—nothing radical or miserable required.

The ideal human diet looks like this: Consume plant-based foods in forms as close to their natural state as possible (“whole” foods). Eat a variety of vegetables, fruits, raw nuts and seeds, beans and legumes, and whole grains. Avoid heavily processed foods and animal products. Stay away from added salt, oil, and sugar. Aim to get 80 percent of your calories from carbohydrates, 10 percent from fat, and 10 percent from protein.

That’s it, in 66 words. In this book I call it the whole food, plant-based (WFPB) diet, and sometimes the WFPB lifestyle (I’m not crazy about the word *diet*, which implies a heroic and temporary effort rather than a sustainable and joyful way of eating).

IF THE WFPB WERE A PILL

Just how healthy is the WFPB diet? Let’s pretend that all its effects could be achieved through a drug. Imagine a big pharmaceutical company holding a press conference to unveil a new pill called Eunutria. They

unveil a list of scientifically proven effects of Eunutria that includes the following:

- Prevents 95 percent of all cancers, including those “caused” by environmental toxins
- Prevents nearly all heart attacks and strokes
- Reverses even severe heart disease
- Prevents and reverses Type 2 diabetes so quickly and profoundly that, after three days on this drug, it’s dangerous for users to continue to use insulin

What about side effects, you ask? Of course there are side effects. They include:

- Gets you to your ideal weight in a healthy and sustainable fashion
- Eliminates most migraines, acne, colds and flu, chronic pain, and intestinal distress
- Improves energy
- Cures erectile dysfunction (that makes the pill a blockbuster success all by itself!)

Those are just the side effects for individuals taking the pill. There are also environmental effects:

- Slows and possibly reverses global warming
- Reduces groundwater contamination
- Ends the need for deforestation
- Shuts down factory farms
- Reduces malnutrition and dislocation among the world’s poorest citizens

How healthy is the WFPB diet? It’s hard to imagine anything healthier—or anything more effective at addressing our biggest health issues. Not only is WFPB the healthiest way of eating that has ever been studied, but it’s far more effective in promoting health and preventing disease than prescription drugs, surgery, vitamin and herbal supplementation, and genetic manipulation.

If the WFPB diet were a pill, its inventor would be the wealthiest person on earth. Since it isn’t a pill, no market forces conspire to advocate for it. No mass media campaign promotes it. No insurance coverage pays

for it. Since it isn't a pill, and nobody has figured out how to get hugely wealthy by showing people how to eat it, the truth has been buried by half-truths, unverified claims, and downright lies. The concerted effort of many powerful interests to ignore, discredit, and hide the truth has worked so far.

WHY THE WFPB DIET MAKES SENSE

I have spent the last few decades studying the effects of the WFPB diet; for me, the diet's results are convincing based solely on the data. But it's still helpful to explore the question of why. Why is the WFPB diet the healthiest way for humans to eat? Based on my training in biochemistry, I have a few conjectures that can be boiled down to one concept: oxidation gone awry.

Oxidation is the process by which atoms and molecules lose electrons as they come into contact with other atoms and molecules; it's one of the most basic chemical reactions in the universe. When you cut an apple and it turns brown in contact with air or when your car fender rusts, you're witnessing oxidation at work. Oxidation happens within our bodies as well. Some of it is natural and good; oxidation facilitates the transfer of energy within the body. Oxidation also gets rid of potentially harmful foreign substances in the body by making them water soluble (and therefore able to be excreted in urine). Excessive uncontrolled oxidation, however, is the enemy of health and longevity in humans, just as excessive oxidation turns your new car into a junker and your apple slice into compost. Oxidation produces something called free radicals, which we know are responsible for encouraging aging, promoting cancer, and rupturing plaques that lead to strokes and heart attacks, among other adverse effects impacting a host of autoimmune and neurologic diseases.

So how might a plant-based diet protect us from the disease-causing effects of free radicals? For one thing, there is some evidence that high-protein diets enhance free radical production, thus encouraging unwanted tissue damage. But it's virtually impossible to eat a high-protein diet if you're consuming mostly whole, plant-based foods. Even if you munched on legumes, beans, and nuts all day, you'd be hard pressed to get more than 12–15 percent or so of your calories from protein.

But there's much more to whole, plant-based foods than the high-protein animal foods they replace. It turns out that plants also produce harmful free radicals—in their case, during photosynthesis. To counteract that free radical production, plants have evolved a defense mechanism: a whole battery of compounds capable of preventing damage by binding to and neutralizing the free radicals. These compounds are known, not particularly poetically, as antioxidants.

When we and other mammals consume plants, we also consume the antioxidants in those plants. And they serve us just as faithfully and effectively as they serve the plants, protecting us from free radicals and slowing down the aging process in our cells. Remarkably, they have no effect on the useful oxidative processes I talked about earlier. They only neutralize the harmful products of excessive oxidation.

It seems reasonable to assume that our bodies never went to the trouble of making antioxidants because they were so readily available in what, for most of our history, was our primary food source: plants. It's only when we shifted to a diet rich in animal-based food and processed food fragments that we tilted the game in favor of oxidation. The excess protein in our diet has promoted excess oxidation, and we no longer consume enough plant-produced antioxidants to contain and neutralize the damage.

It's important to remember, however, that this is just a theory. The most important thing is not *why* the WFPB diet works so much as the fact that it *does* work. The evidence is clear about the WFPB diet's effectiveness—whatever specific reasons there may be.

FREQUENTLY ASKED QUESTIONS

When I lecture publicly, I'm often asked about the numbers. Many people want precise formulas and rules. How many ounces of leafy greens should I eat daily? What proportion of my diet should be fat, protein, or carbohydrate? How much vitamin C and magnesium do I need? Should certain foods be matched with other foods and, if so, in what proportion? And the number one question I'm asked is, "Do I need to eat 100 percent plant-based to obtain the health benefits you talk about?"

If you're asking those questions right now, here's my answer: relax. When it comes to numbers, I am reluctant to be too precise, mostly because (1) we don't yet have scientific evidence that fully answers these questions; (2) virtually nothing in biology is as precise as we try to make it seem; and (3) as far as the evidence suggests at this point, eating the WFPB way eliminates the need to worry about the details. Just eat lots of different plant foods; your body will do all the math for you!

As far as whether one should strive to eat 100 percent plant-based instead of something less—say, 95–98 percent—my answer is that I am not aware of reliable scientific evidence showing that such purity is absolutely necessary, at least in most situations. (Exceptions would include patients with cancer, heart disease, and other potentially fatal ailments, for whom any deviation can lead to worsening or relapse.) I do believe, however, that the closer we get to a WFPB diet, the healthier we will be. I say this not because we have foolproof scientific evidence of this, but because of the effect on our taste buds. When we go the whole way, our taste buds change and remain changed, as we begin to acquire new tastes that are much more compatible with our health. You wouldn't advise a heavy smoker who wants to quit to continue smoking one cigarette per day. It's much easier to go 100 percent than 99 percent, and you're much more likely to succeed in the long run.

I'm also often asked whether I consider the WFPB diet to be vegetarian or vegan. When describing the WFPB diet, I prefer not to use the "V" words. Most vegetarians still consume dairy, eggs, too much added oil, refined carbohydrates, and processed foods. Although vegans eliminate all animal-based foods, they also often continue to consume added fat (including all cooking oils), refined carbohydrates (sugar and refined flour), salt, and processed foods. The phrase *whole food, plant-based* is one I introduced to my colleagues as a member of a National Institutes of Health (NIH) cancer-research grant review panel from 1978 to 1980. Like me, they were reluctant to use the words *vegetarian* and *vegan*, or assign a particular value to the ideology that lies behind much vegetarian and vegan practice. I was interested in describing the remarkable health effects of this diet in reference to the scientific evidence, rather than in reference to personal and philosophical ideologies—however noble they may be.

WHY SHOULD YOU LISTEN TO ME?

Later in this book, I'll share a more personal life and career trajectory, but I do want to recap my research career briefly so you can decide right away whether I have credibility on the subjects I cover here.

For more than fifty years, I have lectured and done experimental research on the complex effects of food and nutrition on health. For approximately forty of those years, I did laboratory experiments with my many students and colleagues. For twenty of those same years, I was a member of expert committees that evaluated and formulated national and international policies on food and health and determined which research ideas should be funded. (Often, my views were in the minority and did not end up having the impact on policy I would have liked—one reason, in fact, that I left academia and started writing “popular” books.) I have published more than 350 research papers, most of which were peer-reviewed, in the very best scientific journals. I have served on the editorial review boards of several top-flight scientific journals. In short, for the last half century I have been deeply immersed in the development of scientific evidence all the way from its experimental origin to the presentation of results in the classroom, food and health policy boardrooms, and the public arena.

WFPB: AN IDEA WHOSE TIME HAS (ALMOST) COME

In my previous book, *The China Study*, which I coauthored with my son Tom, I shared the research (my own and that of others) that led me to champion the WFPB diet as the optimal human diet. I must admit to some naïveté when that book hit the shelves in early 2005. I was hopeful that the incontrovertible evidence reported in that volume would shake up the American way of eating. I innocently thought that the truth, by itself, could inform government policy, shape business decisions, and change the public debate on food.

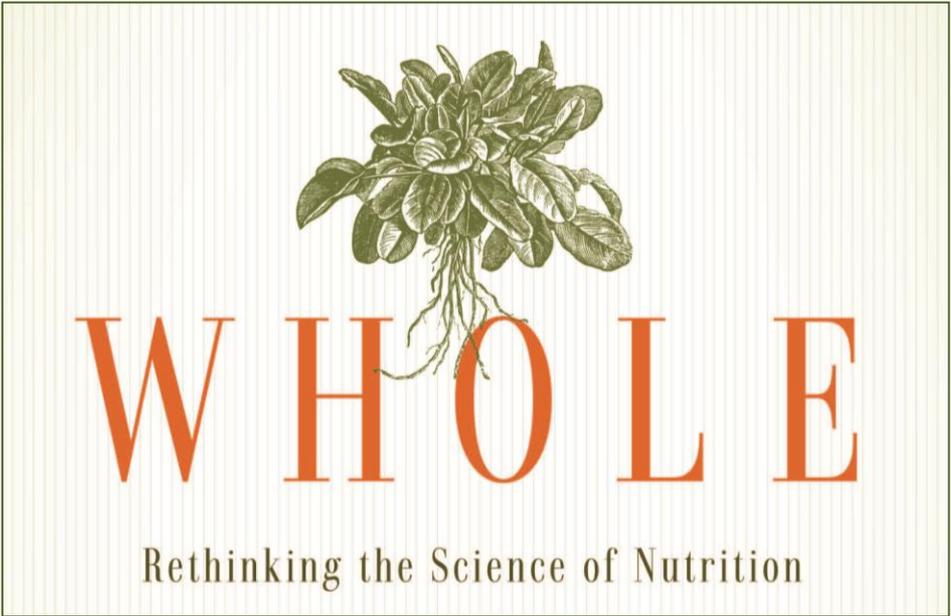
To a limited extent, all those things have happened. Some very powerful ex-government officials (including former President Bill Clinton) have touted *The China Study* and plant-based nutrition in general. Progressive and influential companies like Google and Facebook offer many WFPB

dishes in their cafeterias. It's much easier to buy WFPB ingredients, meals, and snacks at grocery stores, restaurants, and online outlets than ever before. And the recent "gluten-free" craze (about which the scientific debate is still raging) has pushed many people away from highly processed breads, cookies, and pastas and toward less refined and more natural alternatives.

But the mainstream culture has not embraced plant-based eating. The government still teaches and subsidizes the wrong things. Businesses still cater to the Standard American Diet (aptly abbreviated the "SAD" diet), composed largely of white flour, white sugar, hormone-injected and antibiotic-doused meat and dairy, and artificial colors, flavors, and preservatives. And "low-carb" supporters typically advocate a diet consisting of an unconscionable amount of animal protein and fat. This book is partly my attempt to answer a very troubling question: *Why?* If the evidence for a WFPB diet is so convincing, why has so little been done? Why do so few people know about it?

Before I share what I believe, based on my decades of work in the nutrition field, are the answers—answers that have implications not only for our food choices and health-care system, but for the vibrancy of our democracy and our future as a species—I want to make sure you are aware of the evidence for the WFPB lifestyle. In the next chapter I'll share that evidence and explain how to evaluate the efficacy of proposed health interventions.

Thanks for checking out the first chapter of



Order your copy today!

Available where books are sold.



BARNES & NOBLE

BAM!
BOOKS-A-MILLION

INDIE
BOUND™



Indigo
Books · Gifts · Kids

Also available now:

