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Commentary

A New Unified Theory of Lifestyle Medicine

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"If you can't explain it simply, you don't understand it well enough."
Albert Einstein

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Over the past 4 decades, my colleagues and I and other investigators have conducted and published a series of randomized controlled trials and other studies documenting that the same comprehensive lifestyle changes—lifestyle medicine—may help prevent and often slow, stop, or even reverse the progression of a surprisingly wide variety of the most common and costly chronic diseases.

These include coronary heart disease[1-3] and early-stage prostate cancer,[4,5] as well as type 2 diabetes,[6] hypertension,[7,8] obesity,[9] depression,[10] hypercholesterolemia,[11] and COVID-19.[12,13]

These lifestyle changes include a whole-foods plant-based diet (low in harmful fats, animal protein, sugar, and refined carbohydrates); moderate exercise (e.g., walking and strength training); stress management techniques (including meditation); and social support (such as support groups and spending more time with friends, family, and loved ones).[14]

Simply explained: eat well, move more, stress less, love more.

In reviewing this scientific evidence and the related research of others, I wondered: Why do these same lifestyle changes beneficially affect the progression of so many seemingly different diseases?

Like most physicians, I was trained to view chronic illnesses as being fundamentally different from each other—different diagnoses, different diseases, different treatments.

But most of these chronic diseases are not as different as they seem because they share many common origins, biological mechanisms, and pathways. These include

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Conflicts
Dr. Ornish writes general interest books on health and lifestyle medicine and consults with Sharecare.

- Chronic inflammation
- Immune function
- Chronic emotional stress, depression, and overstimulation of the sympathetic nervous system and stress hormones
- Gene expression and sirtuins
- Telomeres and telomerase
- The microbiome
- Oxidative stress, cellular metabolism, and apoptosis
- Angiogenesis
- Decreased blood flow/stasis

While chronic inflammation has been observed to be a common mechanism in many chronic diseases,[15] lifestyle changes have been shown to beneficially affect inflammation as well as several other of these biological mechanisms.

For example, lifestyle changes downregulated genes involved in causing chronic inflammation, oxidative stress, angiogenesis, atherosclerosis, and cholesterol metabolism after only 12 weeks. Lifestyle modification effectively reduced expression of pro-inflammatory genes associated with neutrophil activation and molecular pathways important to vascular function, including cytokine production, carbohydrate metabolism, and steroid hormones.[16]

In other studies, telomerase increased by 30% after only 3 months.[17] After 5 years, telomere length increased by 10% but decreased by 5% in the control group.[18] There was a significant correlation between the degree of lifestyle changes and changes in telomere length.

These lifestyle changes also beneficially changed gene expression in 501 genes.[19] For example, RAS family oncogenes (RAN, RAB14, RAB8A) that promote prostate cancer and breast cancer were downregulated.

These observations led me to a new unified theory: many chronic diseases begin as different variations of the same underlying condition manifesting and/or masquerading in seemingly diverse disease states because they affect and share so many common underlying biological mechanisms. And, in turn, each of these mechanisms is directly and dynamically influenced—for better and for worse—by lifestyle choices.

One of the important implications of this new unifying theory is to stop seeing chronic diseases as being fundamentally different from each other and to begin viewing these as diverse manifestations and expressions of the same underlying biological mechanisms.

This also helps to explain why people often have several chronic diseases at the same time (comorbidities) and why they share many risk factors. The same patient may have coronary heart disease, type 2 diabetes, obesity, prostate cancer, and hypertension, because each of these is a disorder of the same underlying biological mechanisms.

Seen from this perspective, it makes sense why the same lifestyle changes have such wide-reaching applications and implications. It also radically simplifies the lifestyle recommendations we make to our patients across many disease states. For example, instead of one diet for treating and preventing coronary heart disease, a different one for type 2 diabetes, and another for prostate cancer, it's the same for each disease.

These same lifestyle changes may be beneficial even though there are individual differences. For example, even if some patients are genetically predisposed to coronary heart disease because they have fewer low-density lipoprotein (LDL) receptors and thus are less efficient at metabolizing dietary cholesterol and saturated fat, if they don't eat

very much of these, then they don't saturate and downregulate those LDL receptors, so differences in this genetic predisposition are less important.[20]

From an epidemiological perspective, this helps us to understand why an entire country such as China in the 1950s had a relatively low incidence of a wide variety of these chronic diseases because many people living there ate healthfully, exercised, meditated, and had strong social networks. However, the incidence of these diseases began to rise when many Chinese people began to emulate the Western diet and began to eat like us, live like us, and often die like us.[21]

Of course, different diseases often do have different treatments, e.g., stents for unstable angina, chemotherapy for cancer. But seen through the prism of prevention, these diseases often share common origins. Also, these lifestyle changes may help other treatments work more effectively, e.g., diet and exercise may reduce the need for or dosage of medications to treat type 2 diabetes, hypertension, or hypercholesterolemia.

Regular exercise helps prevent and improve a wide variety of conditions; it's not disease specific. Conversely, a sedentary lifestyle significantly increases the risk of many chronic diseases—also not disease specific.

Similarly, stress management techniques improve our health in multiple ways, whereas sustained emotional stress significantly increases the risk of numerous chronic diseases via these same mechanisms.

Social support helps keep us healthy, but people who are lonely and depressed are 3 to 10 times more likely to get sick and die prematurely from virtually all causes.[22]

Likewise, a whole-foods plant-based diet low in saturated fat and refined carbohydrates enhances our health and well-being in a wide variety of measures because this way of eating beneficially affects so many of these biological mechanisms. Conversely, an unhealthful diet greatly increases the risk of a myriad of chronic illnesses via these same mechanisms.

These widespread and nonspecific effects were found in the European Prospective Investigation into Cancer and Nutrition (EPIC) study of almost 25,000 men and women. The same lifestyle choices had a large impact on a variety of conditions. Those with 4 healthy lifestyle factors—moderate exercise of at least 30 minutes per day; not smoking; normal weight; and a high intake of fruits, vegetables, and whole-grains and low meat consumption—had a 78% lower risk of developing *any* chronic disease, including a 93% lower risk of getting type 2 diabetes, an 81% reduced risk of a heart attack, a 50% lower risk of a stroke, and a 36% reduction in all forms of cancer.[23]

Similarly, data from the Harvard Nurses' Health Study ($n = 78{,}865$) and the Health Professionals Follow-up Study ($n = 44{,}354$) showed that those adopting just 5 healthy lifestyle habits—never smoking, normal body mass index (BMI), moderate physical activity, moderate alcohol intake, and a high diet quality score—had an 82% lower risk of dying from cardiovascular disease, a 65% lower chance of dying from cancer, and a 74% lower risk of all-cause mortality. These 5 lifestyle habits had a major impact on all of the mentioned chronic diseases. Those who were not overweight, never smoked, exercised an average of 30 minutes per day, didn't drink to excess, and ate a healthy diet lived an average of 12–14 years longer.[24]

This association may be true for COVID-19 as well, as the type of diet affects immune function for better and for worse. For example, a recent study of almost 3000 frontline healthcare workers in 6 countries with extensive exposure to COVID-19 who were following healthy plant-based diets were 73% less likely to develop moderate to severe illness. However, those following low-carbohydrate, high animal protein diets were nearly 4 times more likely to develop moderate to severe illness.[13]

Similarly, data from 592,571 participants of the Harvard/MGH/Broad Institute and King's College smartphone-based COVID Symptom 58 Study recently reported that a healthful plant-based diet was associated with a 9% decreased risk of COVID-19 and a 41% decreased risk of moderate to severe disease.[14]

In 2010, the Centers for Medicare and Medicaid Services (CMS) created a new benefit category, "intensive cardiac rehabilitation," which provides 72 hours of training in this lifestyle medicine program for reversing the progression of coronary heart disease and other chronic conditions.[25] Recently, due to COVID-19, CMS began covering this program when offered virtually, now making it available to everyone throughout the United States. It has been comparably effective when offered virtually and may help reduce health disparities and inequities, especially in rural areas.

What's good for your heart is also good for your brain, because many of the same biological mechanisms are involved in both. Since less-intensive lifestyle medicine interventions may slow the progression of dementia due to early-stage Alzheimer's disease,[26,27] perhaps more intensive lifestyle medicine interventions may stop or reverse its progression.

Helping patients understand the simple yet powerful and wide-ranging benefits of these lifestyle changes and how quickly they may occur can inspire them to help prevent and sometimes reverse the progression of a wide variety of chronic diseases. And the only side-effects are good ones.

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