An Interview with Dean Sherzai, MD, PhD

by Mark Huberman

Dr. Dean Sherzai, MD, PhD, is a board-certified neurologist in Loma Linda, California. He and his wife, Ayesha, are the codirectors of the Brain Health & Alzheimer's Prevention Program at Loma Linda University, which focuses on early detection and prevention of cognitive decline and dementia. Dean attended George Mason University and Eastern Virginia Medical School, after which he continued his extensive studies, pursuing fellowships at the NIH in geriatric medicine and at UCSD in behavioral neurology, obtaining two master's degrees from Loma Linda University in clinical research and epidemiology, and earning a PhD in health-care leadership at Andrews University. Dean has published over 15 research studies, and, together with Ayesha, coauthored *The Alzheimer's Solution: A Breakthrough Program to Prevent and Reverse the Symptoms of Cognitive Decline at Every Age,* which details their comprehensive, proven program to prevent Alzheimer's disease and reverse the symptoms of cognitive decline.

When I heard of your book, The Alzheimer's Solution, and the name Sherzai, the first person that came to mind was Ahmed Karzai, the former president of Afghanistan. Are you or your wife Afghan?

As it happens, we are both Americans of Afghan descent; we both grew up here. In 2002, I was at the National Institutes of Health (NIH) researching some esoteric work on neurodegenerative diseases, and I was also involved in public health, so when the Taliban were ousted, I was asked by HHS so the World Bank to go to Afghanistan to help them out.

I was leaving NIH and a full scholarship from Duke University to go to Afghanistan, but I said, "Okay; for three months I'll go and see how much I can help." What I didn't know was that during the assignment I would meet my life partner and fellow warrior for science, my wife Ayesha, who had gone back there to help out with Doctors Without Borders. We met at a party, and as things would have it, the first conversation we had was about our grandparents, who had died from Alzheimer's, and what we could do to spare others from the same fate. At that point, we completely changed our direction. We came back to the United States and started on an academic path to investigate the world of Alzheimer's disease.

"The first conversation Ayesha and I had was about our grandparents, who had died from Alzheimer's, and what we could do to spare others from the same fate."

Let's stay with Afghanistan for a moment. Even with the Taliban ousted, it couldn't have been a very safe place for either you or your wife.

It was a very unsafe place then, and it's a very unsafe place now. But you know, in life you take chances, and you take risks to make a difference in the world. We were both always about making a difference. In fact, around 2004, I was asked by Afghan President Karzai to be the Deputy Minister of Health, because they wanted somebody to rebuild the health-care system. I accepted and became the youngest cabinet member in the country by 30 years—and we did help rebuild the system. I did what I call "mental jujitsu," and without the Taliban knowing it, I created the most successful women's empowerment program in the world using health care.

That's incredible!

Our model is published in PubMed under the title "The women's health care empowerment model as a catalyst for change in developing countries," where you can see what we created. It is a model that is being used in other countries as well. But to go back to the instability of Afghanistan, it really was a very dangerous and unusual time, and you had to be on your toes just to survive.

I can only imagine that in your role as the Deputy Minister of Health

you had to deal with things you don't deal with in America, to say nothing of IEDs and drones.

Imagine this contrast. Six months earlier I'm at the NIH Bethesda, which is pretty much the most educated city in the world. My office was in Building 10, where I'm regularly sitting across the table from two Nobel Prize winners, working on the launching of a neuroscience research project. Six months later, I'm sitting in Kabul and its outskirts, sitting across the table from some former Taliban leaders, trying to bring women's empowerment into their region. It was as divergent as you can get, and you had to be more than a little fearless.

The Sherzais' passion is improving brain health, particularly dementia and related cognitive diseases.

Was it love at first sight when you met Ayesha?

Oh, absolutely! It was not just love at first sight, but also love at first conversation. When you hear the person across from you saying that their whole purpose in life is to make a difference, to bring about justice for women, to bring health care for people throughout the world, to make a difference in the world of neuroscience—it was almost magical! To think that we both traveled thousands of miles to a war-torn country and had the amazing good fortune to find each other on identical missions to make a difference in the world. That was just bewildering!

Did the two of you get married in Afghanistan?

Yes, we did, a year after we met. And while we were dating, I had to have a bodyguard.

Drs. Dean and Ayesha Sherzai

Well, you know how to show a woman a good time!

Here's the worst part. Because I was making all kinds of waves in the Afghan society, the Minister of the Interior, a friend of ours who also trained in the U.S., assigned us the bodyguard. Unfortunately, the bodyguard was 4-foot-something and 90 pounds dripping wet. He was always high on hashish and usually had a Kalashnikov that was dragged behind him. When Ayesha and I would go on a date, he would usually be sleeping in the back of our car. That was our romantic dating life.

What made the two of you leave such dream assignments?

After getting married, Ayesha and I asked each other, "How can we make the greatest difference for the world?" and we decided that would be by refocusing our professional lives and restarting our careers in the world of neuroscience. We did some research and found that the number one place in the world for this was the University of California at San Diego. We moved to San Diego, where we were part of the same research team and each earned master's degrees in research and research methodology. In the course of our work, it dawned on us both that the paths our neurologist colleagues were taking was pharmaceutical in nature, and while we were not against medications per se, we concluded that the pharmaceutical approach was not working effectively for dementia and related cognitive diseases. We wondered whether there were any models out there that worked for other diseases that we could apply to the brain.

"While there certainly were some other elements that accounted for the Adventists' longevity, the plant-based element was, and is, the unavoidable key. How our colleagues don't see that bewilders us."

Well, we looked around, and lo and behold, we discovered Loma Linda, California, which happens to be the only Blue Zone and the healthiest place in America. Of course, as we soon learned, it's not the city of Loma Linda itself, but the Seventh-day Adventists who live there and the lifestyle they follow. We decided that our next mission would be to move to Loma Linda, create our own brain institute, and study the effect of lifestyle on cognition.

Of course, when we informed my mentor, Dr. Leon Thal, of our plan, he said, "Are you joking? After all your work and investment of time and research, this is career suicide!" I said, "I don't think you read our resumes. Ayesha and I take leaps; we take chances, and we take them for a good reason with the right cause." Having made our decision, I picked up the phone and cold-called the president of Loma Linda University and said, "This is our background. We think we can help add to your team, and we would love to come there and start

a Brain Health Institute and Brain Health Center." Fortunately, he said yes and connected us to the Neuro Department, which we immediately joined. Once there, we started the Brain Health and Alzheimer's Prevention Program, the first of its kind in the country.

When you first learned of Loma Linda, did you quickly make the connection to the fact that the Adventist population are predominantly vegetarian or plant-based?

Yes, we did. As soon as we looked into the data, it was clear that the plant-based component was central. While there certainly were some other elements that accounted for the longevity, the plant-based element was, and is, the unavoidable key. How our colleagues don't see that mystifies us. They are blatantly and forcibly ignoring a massive piece of data that clearly demonstrates that the dominant feature of survival, longevity, lower diabetes, lower cancer, and lower disease burden in general is the plant-based component.

Following a healthy plant-based diet is key for brain health and longevity.

You know, even when you account for all the other components, like less smoking, less alcohol, more social involvement, and the like, the plant-based component still stands out by far as the most influential. It's just bewildering that our colleagues can continue to ignore this powerful data.

"The inescapable conclusion was that those who followed plant-based diets were protected against brain diseases such as Alzheimer's and other types of dementia."

When you arrived in Loma Linda, did you link up with the legendary Dr. Hans Diehl?

Yes, we did, on both a professional and personal level, and he is an amazing person. When our son, Alex, was very young, we started him on piano lessons, and his teacher turned out to be Dr. Diehl's wife, Lily!

When I interviewed Dr. Diehl for a recent issue of this publication, I remember his saying that people mistakenly think there's something in the water in Loma Linda and if they just move to the area, they'll suddenly find the fountain of youth.

He was absolutely right. It has nothing to do with the water or the Blue Zone land mass in which it is located. In fact, when we looked at the data, what was funny—well, not so funny—was that within five miles of Loma Linda proper and even within its boundaries, the people who were not Seventh-day Adventists and who did not live a plant-based life had significantly *higher* risks of all those diseases than even the general population. So, the dominant difference wasn't the environment, it wasn't pollution. It was lifestyle, and especially food.

Tell me about your and Ayesha's journey to plant-based living. Did either or both of you grow up as vegetarians or vegans, and if so, did that play a role in your plant-based evolution?

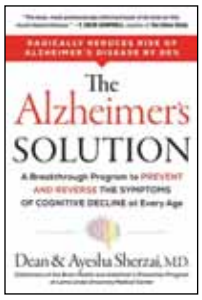
Not at all. Being of Afghan descent, meat was central to our diets, so there was always meat for breakfast, lunch, dinner, and you name it. And by the way, when I was given the title of Deputy Minister of Health, one of the things they did was a celebration where they make you sacrifice a lamb, and I actually saw the animal die. At the time, it somehow reminded me that when I grew up in Pittsburgh, that wasn't how we got our meat. Instead, we went to Giant Eagle or some other grocery store, where it was all so nicely packaged and completely separated from the painful slaughtering process. It was the beginning of a greater understanding for both my wife and me. We did some reading and soon became ethical vegans. However, we also tried to make sure that science supported a vegan diet as well. What we found was that just following a vegan diet is not enough; it has to be a healthy vegan diet. Unfortunately, there's often a clannish component to a lot of vegan groups, and we hate that. We want to make sure that the data that drives the ethics stands on its own. Ayesha and I will never eat meat because of our ethical conviction, but the science must be true, because if it's not, it will never do justice for the other causes.

So, growing up with the standard American/Afghan, meat-centered diet, did that cause any health problems for you or Ayesha?

Not for us, but for our parents. My father had significant heart disease, as did Ayesha's father, who died in her arms from a heart attack.

Tell me about the impact of your research at Loma Linda on your professional outlooks. I gather it's been profound.

Completely. It is important to note that the clinic we established in Loma Linda was the only one in the nation specifically focused on dementia. We saw 3,000 patients over five years, and we collected extensive data on nutrition, exercise, and a lot of other factors. The inescapable conclusion was that those who followed plant-based diets were protected against brain diseases such as Alzheimer's and other types of dementia.

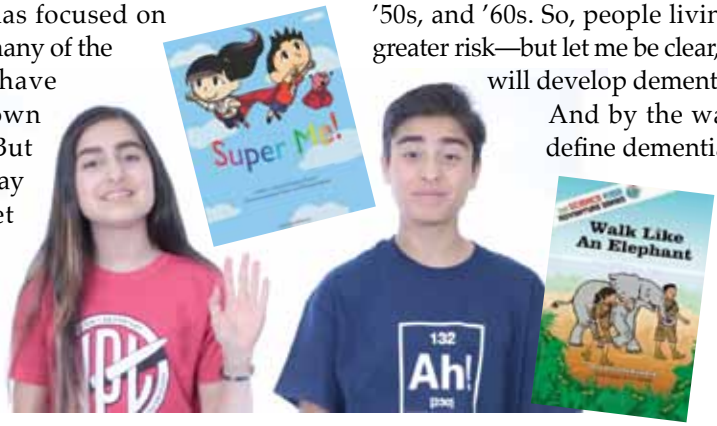


Was the research you conducted and collected at your Loma Linda Clinic the foundation of your groundbreaking book, *The Alzheimer's Solution?*

It wasn't limited to that. We did a lot of work outside Loma Linda where we collected data on folks at churches, community centers, nursing homes, and more, and we consistently came to the same conclusion about the powerful impact of diet.

When your book came out in 2017, it clearly put the two of you on the map of the plant-based movement. While there have been lots of books written about the benefits of plant-based living for reversing and preventing diabetes, heart disease, and hypertension, I am not aware of any other books addressing the impact of diet and lifestyle on Alzheimer's. Am I right?

You are correct. None has focused on brain health. Unfortunately, many of the books that have come out have been very soft, watered-down versions of healthy living. But that's fine, since we always say that if you change your diet from a standard American diet and consciously eat, even if it has some meat and fish and all of that, you will be significantly healthier.



Team Sherzai includes Alex, 15, and Sophie, 13, who have their own YouTube channel and have already written two books.

How many copies of your book have been sold?

We've done very well! Over 100,000 copies have already been sold.

Who came up with the title, you or Ayesha?

We came up with it together, just like we do everything else. We actually have family gatherings every Sunday in our dining room where we sit and discuss things. We have a large whiteboard and right there on the top it says, "Our vision is to help reduce suffering."

So you are Team Sherzai!

Not just the two of us, but the kids as well. We are proud to say that both of them have always been plant-based, and they are terrific kids. Sophie is 13, and Alex is 15. They are doing very well and have already written two books of their own. They are currently writing a third book about food and the environment, and we're all in it together.

That's truly amazing! Let's turn our attention to Alzheimer's disease, which seems like it's everywhere. From what I recall, the first real national attention to the subject was when Ronald Reagan was diagnosed with it in 1994, and that was 26 years ago. Is Alzheimer's really something new? Whatever happened to simple senility?

Alzheimer's has been there for a long time, but it's just that people have become more aware of it. The real question is, "Has it always been there for millennia?" and the answer is yes. If you live long enough, you will most likely get it. But the problem, or more accurately the fortunate matter, is that none of us used to live that long. As much as people think that they lived longer before the 1940s, before penicillin, before hygienic methods of oral care or surgery, they didn't. The fact of the matter is that before all these antibiotics and better living conditions, people didn't live past 40 or 50. When I was the Deputy Minister of Health in Afghanistan, one out of four children died before the age of five, and one out of six women died in her childbearing years. Those are the kind of numbers we lived with in large parts of the world well into the 1940s, '50s, and '60s. So, people living longer today puts them at greater risk—but let me be clear, aging does not mean that you will develop dementia.

And by the way, I think it is important to define dementia and Alzheimer's. Dementia is the umbrella category, which by definition means when your mental decline is bad enough that you can't do some of the cognitive things that you could do before. Alzheimer's is a major subset of dementia—60 to 70 percent of all dementia is Alzheimer's—but there are other types as well, like Lewy body, Parkinson's, vascular, and many others. This is new in the sense that we're diagnosing Alzheimer's more; also, it's more prevalent because we're aging better and living longer—at least in the last 20 to 40 years.

Are you saying that while we are clearly living longer, we may not be living better—particularly in terms of mental health?

Exactly.

Prior to my relatively recent retirement from the legal profession, I was continually surprised to see the number of colleagues and contemporaries of mine who were diagnosed with what they called "early-onset Alzheimer's." What amazed me was the speed of their mental deterioration, to the point that they needed nursing home care. That is something I just don't remember witnessing growing up, except for folks in their late 80s and 90s—not folks in their 60s and 70s.

Two things are happening here. The first is better diagnosis. In the past, folks might have been told that this was just the result of a stroke, rather than Alzheimer's. Second, we're

now experiencing the perils of the Western diet, which results in more diabetes, more cholesterol, more hypertension, and more kidney failure. While we're surviving those conditions, they are having a significant effect on cognition that is only now beginning to be understood. Ayesha and I did a major nationwide paper using the NHANES database. We excluded diabetics and just looked at insulin resistance in prediabetics, and what we found was amazing: even prediabetics had a lower cognitive function and were at greater risk of dementia.

Quality sleep is critical for the brain to recover, recoup, consolidate memory, and cleanse itself.

One of the reasons that we're seeing earlier dementia is that more people are developing diabetes. Today, we have an epidemic of uncontrolled obesity and diabetes. In 1990, we had only three states that were morbidly obese. Now we have only three states that are *not* obese. In short, all these things are related to food, our relationship with food, and the consequent diseases that are related to food, which include diabetes, hypertension, cholesterol, and even cancers. All of these things then have their own effects on the brain.

Do you think that the reason more people, even in the plant-based movement, don't recognize the impact of diet on dementia is that they just think the brain is different and far more complex? That it's simply not as easy as reversing your diabetes, lowering your cholesterol, or reducing your hypertension, since the brain is an organ that just doesn't respond the same way?

You just hit the nail right on the head. People have this magical relationship with the brain, as if it operates completely differently from other organs. But everyone needs to understand that the same things that affect your heart, your kidneys, and all your other organs exponentially affect your brain. Believe it or not, your brain weighs only three pounds and represents only about 2% of your body's weight. However, that little organ consumes 25% of your body's energy, and at times 50% of your oxygen. It's an incredibly overworked organ!

Here's another problem with the brain. It's hermetically sealed in what's called the blood-brain barrier, which creates an enclosed environment that has difficulty getting rid of waste. The whole concept of sleep evolved because of the brain. The brain got so overwhelmed that it needed eight hours to recover, recoup, consolidate memory, and cleanse itself. Sleep was so important that it put the body in peril for those purposes; during those eight hours we're not just asleep, we're all paralyzed for most of the night, and that can't be evolutionarily advantageous. Animals could come and eat you, but that's how important sleep was—and is. The brain is overwhelmed.

So, those same processes of diabetes that affect your heart? If high sugar levels—not even diabetes, just regular high sugar levels—affect your arteries or your kidneys, imagine what they do to your brain!

Are you saying that inflammation has the same adverse effect on the brain as it does on your heart or your lungs or other vital organs?

We say that the four horsemen that destroy all systems—but especially the brain—are oxidation, inflammation, glucose dysregulation, and lipid dysregulation. The body doesn't use any of those independently, but sometimes one of them takes the lead. In diabetics or uncontrolled diabetics, it's the glucose dysregulation. In those people who have persistent high cholesterol or lipid levels, it's lipid dysregulation. In people who have inflammation as a result of repetitive head injury or repetitive chronic diseases, it's inflammation. And then oxidation is the result of consuming things that have oxidative capacities and properties. It's the same thing in each process, but the brain is going through a lot more.

"If people take the right path—at any age—their brain's ability to recover, recoup, rejuvenate, and create reserve is absolutely astounding."

Now, here's the good news: if people take the right path—at *any* age—their brain's ability to recover, recoup, rejuvenate, and create reserve is absolutely astounding. However, if they don't, there's going to be a tipping point from which they can't return anymore. That's why our sense of urgency is high. We are public health advocates. We're not selling any vitamins, or anything else for that matter. We're just telling people that our approach for brain health is the best safeguard against the tsunami that's overwhelming the country and the West.

Currently, Alzheimer's disease is the third leading cause of morbidity and mortality in the U.S., and soon it will be number one. It's already number one in the U.K. and Japan, and it's the fastest-growing epidemic in the world. We've taken the wrong path with it for decades--the molecular and pharmaceutical path—and it has not worked. In fact, that path has been a 100% failure with zero successes. But we have shown that if you take the comprehensive approach, you can not only forestall, but reverse, the decline in more than 90% of those at risk.

Tell me about the acronym NEURO, which I believe stands for Nutrition, Exercise, Unwind, Restorative sleep, and Optimize.

All of those factors play a part in brain health. We say that nutrition, stress management, and sleep create the environment for growth. They also provide the resilience and the nutrients necessary for the brain to recover, recoup, and regrow. Exercise and cognitive activity, the "E" and "O," actually grow the connections between neurons. That means you need all of it. My grandfather and Ayesha's grandfather were the most brilliant men you could ever imagine. One was a Prime Minister, the other one was Secretary of Education and Health—super-geniuses—but they both died of Alzheimer's. Why? Not because of the "O," because they had plenty of cognitive reserve, since all they did was read, challenge, think, and write. They died because their diets were so poor that both of them had diabetes, hypercholesterolemia, hypertension—all of the chronic diseases. And on top of that, they never moved. It is often said that great thinkers are not supposed to move, but the opposite is true. We are supposed to move throughout the day, since movement creates connections between neurons. In the big picture, exercise does even more for your brain than it does for your muscles.

Exercise does more for the brain than it does for the muscles; it's critical for brain health.

"Muscle building is important in general, but especially leg strength. When the legs are strengthened, the brain is enlarged, especially certain areas, like the hippocampus."

As I am sure you know, when it comes to nutrition, even plant-based nutrition, the devil can be in the details. What is the right diet from the Sherzai point of view?

A whole-food, plant-based diet that's planned, and that's it. By planned, I mean you can't just eat potatoes all the time. You have to have a comprehensive approach, and if you do that, you'll give your brain the best nutrients you could ever imagine.

Dr. Alan Goldhamer, one of our NHA leaders, has always talked about being careful to avoid the pleasure trap of salt, oil, and sugar. Do you agree with that?

Absolutely, and that's fine if you can get it perfect. But if you have worries about nutritional adequacy, we are not against supplementation. We have not made a religion out of this. The fights within the plant-based world about this are unfortunate. Science has no fight. We go by the motto "to the best of our knowledge today." If tomorrow another piece of data comes out, we change with the data. Currently the data shows that if you're deficient in things like B12 or the omega-3s (and there are certain times that people can be deficient in them), then by all means take supplements. If anybody is fighting that, they've just made it into a dogma. Those people are not serious about our cause, and they're not serious about health. But let me be clear, in the totality of things, you usually can get all your nutrients from food alone.

Let's talk about the importance of exercise. I think it's Dr. McDougall who often says, "You can't exercise yourself out of a bad diet." Do you agree with him, and if so, what kind of exercise do you recommend?

I absolutely agree with McDougall about that, but I would add that you can't do any of the NEURO components without the others. You have to include all of them to maintain good health. As I said earlier, exercise does a lot more for the brain than it does for your muscles. Exercise increases connectivity in the brain, and that's something most folks don't recognize. The human body has 87 billion neurons, and each of those neurons can make a few connections or as many as 30,000 connections—imagine that! That's the increased level of power that cognitive activity and exercise gives to the brain. So, what kind of exercises are best for the brain? First, you need aerobic exercise—enough to get tired, up to 30 minutes five to six times a week. You need to pump up the blood supply to the brain, and you need to move so you're getting tired or short of breath.

The second thing is leg strength. Muscle building is important in general, but especially leg strength. When the legs are strengthened, the brain is enlarged, especially certain areas, like the hippocampus.

The third thing you need to do is to move throughout the day. If you work out for half an hour and then you sit for six hours in a row, you've actually negated the benefit of that workout. Instead, create an environment that allows you to be standing most of the time. Stand while you're watching TV, stretch on a regular basis, and do little minisquats so you are moving around all throughout the day. Those three things are critical for brain health.

Tell us about the Unwind, Restore, and Optimize components. Are

they linked to each other or are these three separate concepts?

They're all linked. Let's take Unwind. Unwind is essential for neural health for several reasons, but it's the central, most important concept. Without stress management there's no way anyone can escape their poor diet routine. You will find yourself going from New Year's resolution to New Year's resolution and from diet to diet.

Play an instrument, join book clubs, play cards, learn a new language, volunteer —challenge your brain in multiple domains.

Unwind means stress management to the extent that you can plan and create a strategy that becomes a habit, then becomes behavior, then becomes character, and then becomes culture. Managing stress and planning for it give you the ability to differentiate between good stress and bad stress. Good stress is the kind of stress that builds your brain.

Translate that into a specific action. Are you talking about something as simple as meditation?

Not at all. Good stress is getting rid of bad stress. Good stress is learning a new language, learning a new musical instrument, managing a team, building something, learning to dance. Good stress is also playing cards with friends—not just any card game, but a challenging card game. We wrote a meta-analysis in 2018 looking at what activities helped brain function in pre-dementia patients, and we came up with three things: complexity, challenge, and purpose.

"Do multiple things that challenge your brain throughout your life. The moment that you stop doing that—irrespective of food or exercise—your brain will collapse. Keep your brain challenged around complex, purpose-driven activities several hours a day."

An activity that improves brain function is one that is challenging and complex. Sudoku is great and is good for the brain, but it's not an activity that challenges multiple domains of your brain. Playing the piano is. It involves dexterity, has a visual-spatial component, requires memory, uses frontal lobe executive function, and engages emotion. Therefore, it involves all of the brain.

What about the R of NEURO?

The R is for deep, restorative sleep. It is important to sleep through three to five cycles of at least 90 minutes each during the night; the optimal sleep time is seven to eight hours. It's during those times that the brain does two things that are profoundly important. First, it consolidates memory in the right files, folders, and cabinets, metaphorically speaking. Studies have shown that even one night of bad sleep reduces your ability to memorize significantly. Second, it cleans the brain. You have glial cells, which are euphemistically called "janitor cells," whose job is to cleanse the brain. They do their best work at night, clearing out the inflammatory markers, the amyloids, and they also get rid of bad connections.

What's the trick to getting that kind of restorative sleep? Is it setting certain sleep schedule for the night? Is it calming down before you go to sleep? Is it eating and waiting a period of time? What techniques do you recommend?

We talk about this quite often on our social media, and it's quite extensive; basically, it's sleep hygiene and cognitive behavioral therapy. We say that if given six months, we can get anybody to real restorative sleep. People spend (and often waste) all kinds of money on spas to achieve relaxation, but there's no greater spa than your bedroom, because you have those eight hours right there to restore and cleanse your brain.

Let's talk about the Optimize factor.

Optimize is good stress. By this, we mean find activities that challenge your brain, that serve your purpose, ones that take one, two, or three hours of your time. Even when you retire, don't retire, just rewire. Keep the brain challenged and run multiple domains. Don't just play a guitar, but play guitar and run a company, or play guitar and volunteer, or play guitar and be in a card game with a group of people where you talk and exchange ideas (obviously not at the same time!). Try debating or book clubs, but do multiple things that challenge your brain throughout your life. The moment that you stop doing that—irrespective of food or exercise—your brain will collapse. Keep your brain challenged around complex, purpose-driven activities several hours a day.

All of these techniques make sense and are great preventive measures, but what advice do you have for those of us who have friends and loved ones who have already been diagnosed with Alzheimer's and may be at a fairly advanced stage? Does modern medicine have anything to offer in the way of hope or slowing the progression? Is there really some magic substance found in jellyfish

that makers of Prevagen have locked onto that can arrest its progression, or does this just represent false hope and a waste of money?

The people who came up with these pills simply found a good marketing scheme, but they offer nothing. Zero.

Are there any medications that offer any hope?

There are some medications that actually work, if you are ready to write them down.

Cruciferous and green vegetables, fruits, legumes, mushrooms, herbs, and spices are the best "medications" for brain health.

Sure.

Cruciferous vegetables and other greens. Nuts, but especially walnuts. Fruits, but especially blueberries. And legumes, mushrooms, herbs, and spices. We have a thing called "NEURO 9," by which we mean nine foods that you should consume every day. They are foods that you don't have to buy from a pharmacy. You can go to your grocery store or farmers market and get them all.

What about the billions of dollars that are being spent on researching Alzheimer's disease? Is this just a waste of money because scientists are looking for an answer in all the wrong places?

No, we are not completely against medicine. We say that around 80% of medicine should be focused on prevention, but the other 20% or so should be devoted to studying the kinds of diseases that we can't address with lifestyle alone. We have found that even with Alzheimer's, no matter what you do lifestyle-wise, about 10% of people are going to get the disease, and for those people, we are going to need medications that might help curb the progression. But even for them, we believe that lifestyle modifications add value to the process.

It would be myopic and reactionary to say that all molecular research should stop. Molecular research has its place; the only thing we say is that medicine has to start focusing much more on prevention than it does on treatment.

Let's talk a little more about that tipping point. There is certainly a point at which consuming spinach, blueberries, and kale are not going to reverse your Alzheimer's, right?

There is, and we worry about that. When we wrote our book, many of our colleagues said, "If you just hint at the fact that you could potentially reverse Alzheimer's, you'll sell millions of extra copies!" But we said we can't do that, because we are neurologists and believe it is unethical to give people false hope. Our life is about ethics and doing the right thing.

We find it unfortunate that even in our plant-based world, some doctors are coming out and saying that they can potentially reverse Alzheimer's with food. They can't. Once a person has fulminant Alzheimer's, there have to be different priorities. Rather than paying money to institutes, foundations, and the like, funds would be better spent on the patient's own family and seeing that everyone's quality of life is taken care of during what is often a long and draining journey.

It sounds like the fire alarm you're sounding is the importance of doing the necessary things to prevent this debilitating disease from arising in the first place.

That is absolutely right. Don't wait until you have memory problems! But even if you begin to experience that, you don't have dementia, and you can still reverse and significantly affect it.

Alzheimer's is, by far, the most expensive disease in America, with direct costs of $304 billion and an indirect cost of another $240 billion. By contrast, heart disease, which is the second most expensive disease, is only half of that at $120 billion. From 2040-2050, Alzheimer's spending is expected to increase to nearly $2 trillion dollars, and that is going to overwhelm our health-care system. So even if we only delayed the disease by just five years, we would cut health-care costs by half. Isn't that worth it?

Those health-care costs are staggering. Equally staggering is the personal toll Alzheimer's takes on families. Since you are on the front lines of this tragedy, I am sure you see the twilight zone into which it plunges families struggling to care for their loved ones.

Ayesha and I know it all too well, both professionally and personally. As I indicated earlier, it was one of the most painful things in our lives to see our grandparents robbed of their intellect and dignity without their even knowing it, so preventing that from happening is what our journey is about. It's not about anything except making a difference in the lives of millions and millions of people who will be affected by this disease.

As I am sure you are aware, some leading lifestyle physicians like Drs. Joel Fuhrman and Michael Greger and others, like Brenda Davis, advocate the use of DHA-EPA supplementation as a preventive measure against the development of Alzheimer's, and they have come under some fire for their recommendations.

I don't think any of them is claiming that such supplementation will prevent the onset of the disease, but, instead, I think they are arguing that it helps with brain health. And

there's no controversy there. I further think it's unfortunate and silly for people to attack those who are simply highlighting data. They're not saying, "Oh, if you take it, you're going to prevent Alzheimer's." I know all three of those scientists, and they are ethical people who speak for the data.

We know that even mild B12 deficiency causes neuropathy and cognitive decline, and that should not be controversial. The same is true with omega-3s, and although we truly haven't had a good way of measuring their levels over time or knowing optimal levels—we have kind of contrived and extrapolated optimal levels—the data is clear that people who are omega-3 deficient have been shown to have a lower cognitive function. That's not even disputable. If someone is worried that they may be deficient and wants to supplement with non-fish-based, algae-derived omega-3s (just to make sure there's no mercury or anything), where's the controversy?

The Sherzais explain how to avoid dementia and cognitive decline on the Dr. Oz show.

Since you and Ayesha are both neurologists, are you concerned about the seeming explosion of ADHD diagnoses among children and all the psychotropic medications being prescribed for them at such young ages?

I truly am. Unfortunately, psychotropic medications are taken as if the drug treats specifically that disease, with no concern or recognition of the effect it has on the rest of the body. Let's take antidepressants. When you're taking an SSRI or SNRI, yes, it selects specific receptors somewhat, but no depression center is going to be independent of the rest of the brain. It significantly affects the serotonin across all of the brain, and if it's used long enough it changes the brain's entire chemistry. The same thing is true with dopamine drugs. I do worry about the long-term use of these drugs with this magical belief that it's helping one particular set of symptoms without any concern about what it does long-term in the rest of the brain. So, although medications should be used (under a doctor's supervision) for the time necessary, their use should always be instituted with a long-term plan in mind.

So back to the folks that bring us Prevagen, I assume you would agree that the only thing the advertisers have right is their slogan "A healthier brain, a healthier you!" The difference is that you know the real way to get the brain healthier—and it's without Prevagen.

Absolutely, and again, people don't have to buy anything from anybody for their brain health. They just have to follow the NEURO concept. Everything you need is free and right in your own home. Ayesha and I say health care is achieved in your home, your work, and your community. That's the purpose of our Healthy Minds Initiative: to raise awareness about brain health and community.

"What's going to affect our country the most in the coming years is the next virus that's going to come from these chicken farms, beef farms, and open markets. It's going to produce higher viral mortality, and we're not going to be prepared for it."

At the time of this interview we're still in the middle of the COVID-19 pandemic, and I have a strong hunch that it's still going to be with us in a few months when this interview is published. I couldn't help but wonder what your take is, as scientists and researchers, about how we got into this, how we're going to get out of it, and how we can prevent it from occurring in the future.

We are proud to say our kids have already made a video on its true cause, which is that we created these viruses. Not in some secret lab in China, but in animal markets, both live markets and factory farms, where viruses replicate in seconds, especially RNA viruses that don't have a good genetic correction mechanism so they evolve they mutate rapidly. The majority of mutations are deadly to the virus, but when they mutate billions and trillions of times, one of them is going to be beneficial for the virus, and then the virus becomes more viable and spreads. The longer we have these big petri dishes, the more likely that next novel virus is going to be worse. In addition, our current politics prevent us from creating a centralized approach for isolation.

So, we're playing Russian roulette?

I have a very bad feeling that what's going to affect our country the most in the coming years is the next virus that's going to come from these chicken farms, beef farms, and open markets. It's going to produce higher viral mortality, and we're not going to be prepared for it.

That highlights the importance of removing the cause. But for a

world that is already in the grips of COVID-19, is the answer to be found in a promised vaccine or is building our natural immunity the key?

It's the latter. Obesity seems to be the biggest risk factor, and some of it has to do with the persistent inflammation in the body that produces receptors for the virus. So, if we change our eating habits and eliminate meat, cheese, butter, and all of the processed foods, we will lower the obesity epidemic, and then the chance of getting or succumbing to the negative outcomes of COVID is going to be much lower. I am not very optimistic about the vaccine path, because we have not succeeded in creating a vaccine for an RNA virus like this which has evolved so rapidly.

Dean and Ayesha Sherzai are "Building Healthy Brains, Together."

Let's talk about your current practice.

We have a clinic in Loma Linda where we still see patients and do research two days per week. Outside of that, we run the largest community-based brain health research initiative in the country in Manhattan Beach and Hermosa Beach. In our work, we implement lifestyle intervention, check people's cognitive function, and follow them over a three-year period. It's the largest program of its kind in the world at the community level, and through our Healthy Minds Initiative, we're hoping to expand it through multiple other communities.

You and Ayesha are very active on social media. Where can our readers find out more about your work and access the resources you have developed?

You can find our website at TeamSherzai.com, and you can visit us on Instagram and Facebook. We share the latest science on Alzheimer's and brain health and offer tools that people can apply in their lives and in their communities.

Is there another book in the offing?

We have a lifestyle book that's coming out at the beginning of this coming year. The book is completed, the pictures are amazing, and there are more than 70 recipes that people will love. The book is extremely unique in that it not only contains a comprehensive lifestyle approach plus recipes, but in addition, given that we are also behavioral specialists, a healthy-habit-building model that will change people's lives.

Tell us some more about your amazing children.

They *are* amazing, and we are very proud of them! Sophie is in her first year of college, and Alex is in his third year.

How is that possible?

They were pretty precocious from the get-go, but we attribute a great deal to their planned, plant-based diet, which has allowed them to be both amazingly healthy and active. They each took their SATs at age ten and scored in the 90th percentile, but they both waited until age 13 to enter college, because there's a special program offered in Los Angeles. As it happens, they're very lifestyle-oriented and nutrition-oriented, but they're both going to do engineering and computer science. Together, they have a social media presence of their own called TheScienceKids.com, where they post all kinds of health and science information. They've also both spoken at conferences about food and lifestyle, and they love it.

Are they musically inclined?

Oh, my gosh, yes! And thank goodness I didn't ruin their genes! Their mom is a singer, but Sophie is an opera singer, and she's amazing. In fact, an unusual thing happened at last year's American College of Lifestyle Medicine Conference. They usually have professional entertainment at the end of the conference, but they had heard how great my wife and daughter were and asked them to sing "Prayer," popularized by Andrea Bocelli and Celine Dion. They brought the house down! Not to be outdone, Alex is a talented producer who also plays the piano and creates songs.

How does Team Sherzai balance work, family, marriage, children, education, and all the rest?

We talk, we organize, and we plan epic days, epic trips, and epic life moments where we center our life. On these amazing trips, we separate ourselves from everything and just enjoy the moment. The rest is just being organized, so we can fulfill our fundamental purpose of reducing suffering in the world. That is the big driver.

It's truly been a privilege getting to meet you and to discover the great things you and Ayesha are doing. You've chosen an amazing niche for yourself in the whole-food, plant-based health movement, and based on what we all know and are experiencing every day with our friends and loved ones, it's certainly one of the most important undertakings that there is in health care.

It's wonderful connecting with you, Mark, and learning about the wonderful work you are also doing and the remarkable life you've led. We're honored and privileged as well.

NHA