

Transcript of Cerebrum Podcast: The Four Pillars of Alzheimer's Prevention

Guest: **Dharma Singh Khalsa**, M.D., is the president/medical director of the Alzheimer's Research and Prevention Foundation (AARPF) and the author of *Brain Longevity* (Warner Books, 1997). He is also a clinical associate professor, Division of General Internal Medicine, Geriatrics, and Integrative Medicine at the University of New Mexico Health Sciences Center in Albuquerque, and an associate editor of *The Journal of Alzheimer's Disease*. Born in Ohio and raised in Florida, Khalsa graduated from Creighton University School of Medicine in 1975 and received his postgraduate training in anesthesiology at the University of California, San Francisco. He is board certified in anesthesiology and pain management and a diplomat of the American Academy of Anti-Aging Medicine.

Host: **Bill Glovin** serves as editor of *Cerebrum* and the *Cerebrum Anthology: Emerging Issues in Brain Science*. He is also executive editor of the Dana Press and *Brain in the News*. Prior to joining the Dana Foundation, Mr. Glovin was senior editor of *Rutgers Magazine* and editor of *Rutgers Focus*. He has served as managing editor of *New Jersey Success*, editor of *New Jersey Business* magazine, and as a staff writer at *The Record* newspaper in Hackensack, NJ. Mr. Glovin has won 20 writing awards from the Society of Professional Journalists of New Jersey and the Council for Advancement and Support of Education. He has a B.A. in Journalism from George Washington University.

Bill Glovin: The conventional medical community, for the most part, has rejected the idea that Alzheimer's disease can be prevented, preferring to focus on the promise of drugs. But while we sit around and wait for the magic pill to appear, more than five million Americans are living with Alzheimer's, and one in three seniors dies with Alzheimer's or some other form of dementia.

Hi, I'm editor Bill Glovin, and our guest on the phone this month is Dr. Dharma Singh Khalsa, co-author of this month's *Cerebrum* article, "[The Four Pillars of Alzheimer's Prevention](#)." Dr. Khalsa is the president and medical director of the Alzheimer's Research and Prevention Foundation, and the author of *Brain Longevity*. He's also a professor at the University of New Mexico Health Sciences Center, and an editor at the *Journal of Alzheimer's Disease*. His colleague and co-author of the article, Dr. George Perry at the University of Texas, is editor-in-chief for the *Journal of Alzheimer's Disease*.

Welcome Dr. Khalsa. You and Dr. Perry make a formidable team. Did you and Dr. Perry meet at the journal?

Dr. Khalsa: Well, thank you. It's great to be with you. Dr. Perry; interestingly, I don't even remember how we connected, but he's been such a strong supporter of our work that we're just so happy to have him, as being on the scientific advisory council of the Alzheimer's Research and Prevention Foundation. So, we've met a number of times since then, but he's just so supportive. It's just really very gratifying to have him with us.

Bill Glovin: Why has it been so difficult to develop a drug for Alzheimer's and other dementias?

Dr. Khalsa: I think that's a great question, and the way I look at it is this: the brain is very complex. Initially, in the early 1990s, maybe a little before, the people in conventional medicine and Big Pharma thought that by increasing the chemical acetylcholine, that would help solve the problem. But it didn't turn out that way, and as you see, even advertised on TV today, drugs that do that are said to help some people, some of the time.

Then the hypothesis of this amyloid, which is a sticky plaque in the brain, being the culprit, and then people, the powers that be in conventional medicine, and research, and Big Pharma, and in the government, thought, "Okay, let's try taking out that amyloid and seeing if that can actually prevent the disease." Well, it hasn't worked out yet. The drugs that have been studied have not worked.

There are some other studies that they're researching. Especially one down in South America, where there's families that are prone, by genetics, to develop Alzheimer's, and they're trying the amyloid drugs with them. But Dr. Perry does not believe amyloid's the culprit, and neither do I.

In fact, I remember back in medical school, which was quite a while ago, in 1975 I graduated, and we had a phenomenal pathologist, Dr. Sissen. And he would lecture us and talk about, in his funny voice that he liked to put on, "Amyloidosis." And he would say that amyloid is part of the aging process. And it happens to be in the brain. So it doesn't mean, necessarily, taking it out is going to prevent Alzheimer's disease. We have to think about why it's there in the first place, not just removing it. It's like whatever that expression is, "After the horse leaves the barn, closing the gate."

So that's one reason, and I can go on and tell you another reason, I think, just really quick, is that, as I said, it's too complicated. It's a complex organ. But on the other hand, the brain is flesh and blood just like the rest of the body. And that's why I believe, and why my whole career, I've been working on developing prevention strategies. Because if the brain is flesh and blood, then it should respond to things we can do for ourselves. That we can eat well. That we can manage our stress, so we can increase blood flow, and exercise, and take care of ourselves to create well-being.

All of these four pillars, and as we're seeing now, really have a much stronger effect in improving brain function, and at least delaying the onset. Sometimes people, as you mentioned, conventional medicine, they don't like to use the word "prevention." That's fine. But they're okay with saying, "If we can prevent the onset by five years, we can save billions of dollars, and do a lot to decrease the pain and suffering of people who do get Alzheimer's disease with age." And that's very worthwhile, I think. So that's why we do what we do.

Bill Glovin: Speaking of seeing it now, have advances in imaging changed the Alzheimer's landscape?

Dr. Khalsa: Yeah, I think so, because ... Well, two different ways. One way is that, even in the academic setting, you can see more about what's actually going on in the brain, whether it's ... Initially, it was SPECT scans and functional MRI, and PET scans, and now some more advanced scanning. So, I think that's been a very important advance.

And in our own work, from the ... Whether you want to call it holistic or integrative, or combined, multi-modal modality approach, we've utilized scannings very extensively to study the effects of our work with stress reduction, and meditation and yoga, and we've seen some very dramatic increases, important increases, in blood flow to very significant areas that have to do with the prevention of Alzheimer's disease, or the improvement in brain function as we age.

The key point is, many times we hear people say, "Oh ... " They expect, and you hear this all the time, "It's normal to decline in mental function with age." And I don't think that's true. I don't think you have to decline with mental function. I think the imaging studies show how we can improve brain function. And, actually, some of the studies have shown an increase in new brain cells, or neurogenesis, which never before was seen. So yes, I think these imaging studies are critically important.

Bill Glovin: For people who are unfamiliar with the term, what is epigenetics?

Dr. Khalsa: I'm an anesthesiologist originally, by training, and we used to do, and I was actually involved in research on epidural anesthesia. And back then, we were taught "epi" is "outside." It means "outside the dura," or the spinal canal. That's why epidurals are so much safer than spinal anesthesia, which goes subdural. Epidural is outside.

So, when you talk about "epigenetics," it's what you can do outside of genetics, or as other people like to say, "What you can do in addition, or on top of, genetics." Because the epidura is on top of the spinal canal, or outside of it, so "epigenetics," simply, is ... It's a simple thing. It means, "Okay, you're not subject to your genes. You can improve your genetic expression by how you live your life."

Whether it's diet ... All these things have been shown to improve genetic outcomes, so you can increase your positive gene. You can turn genes positive by the exercise that you do, the diet that you follow, the stress reduction that you do. And, actually, one of the best, and the new frontier in medicine and in research is what we call wellbeing. And there was just a big conference at UCLA March 8th and 9th, on how your wellbeing can improve your genetic expression.

And that's the interesting thing, Bill. What we do to ourselves, sends signals way deep down inside ourselves, all the way to the cells. Whether it's in your brain, or in your body, and these signals then give a message to your cells and your DNA, to say, "Okay, this is good. Things are going good. We feel well. We're going to increase chemicals that go throughout the body to decrease inflammation."

If, on the other hand, we're sending negative signals through either the thoughts that we think, even, or the diet that we eat. We're sending a high-fat diet. We're sending negative signals deep down inside ourselves, and then we're sending out chemicals, we're producing chemicals in our DNA and our messenger RNA, that sends signals of inflammation throughout the body. So that's why we need to really pay attention to the signals that we send through our body, through all these different aspects of our lifestyle.

Bill Glovin: You and Dr. Perry write that according to the NIH, "\$991 million was dedicated to Alzheimer's research in 2016, but how much of that went towards lifestyle modification and prevention is unclear." Is there any research money that goes into epigenetics or prevention?

Dr. Khalsa: Well, that's another good question, and there is more this year than ever before, but most of this research has been either privately funded, or through foundations like ours, where I became a colleague, and a friend, actually, of Miia Kivipelto from Finland and Sweden, who did the FINGER Study, the Finnish Interventional Study, which showed that what they call a "multi-domain program," can decrease risk factors. And so we funded that, and a lot of private funding went into that, although some of that funding also is from the Finnish government.

Now, here in the United States, not as much money as should, or could be, goes into that. Most of the money goes into drug studies. But I'm hoping that that will change. And I see that now, thanks to the work of Dr. Kivipelto, we see that, in her words, she has multiple, ongoing trials now in the United States and around the world that are funded partially privately, and partially through government funding. So I think things are slightly changing, and that's a really good thing.

Bill Glovin: Eating whole foods seems to be one of the keys to staving off Alzheimer's. How does that affect the brain?

Dr. Khalsa: Well, our diet is very important. I mean, even the Alzheimer's Association said, "What's good for the heart is good for the head." So, we know, just from studying heart disease, and decreasing heart risk, coronary artery disease. And it's a little bit of the, not so much scientific controversy, but there are people who are promoting a high fat, high protein diet, but the studies don't back that up.

Where we see that is eating something like the Mediterranean Diet, which is a diet that has primarily vegetables, some fruit, not too much, nuts, olive oil ... In other words, not a pure vegetarian diet, but kind of like a vegetarian type of diet ... People who eat that way are the healthiest people. Whether it's in Okinawa or in Sardinia. People who follow this Mediterranean type of diet are the healthiest people.

Number one, it decreases inflammation in the brain. And like we talked about, it sends positive signals, so it doesn't build up atherosclerotic plaque, which is bad for the heart. And what works for the heart, works for the head. And so on. So, what you eat is very important in maintaining a healthy brain as you age.

Bill Glovin: Is organic important?

Dr. Khalsa: Well, I think it is, because why should there be any place for pesticides, or herbicides, fungicides, and genetically modified organisms in a healthy diet? I don't believe there should be. Because we don't know ... I mean, there have been some studies showing that it's detrimental. But really, the bottom line is, you really don't know what the effects of eating all this stuff is, poisoning your body. I mean if it's there to poison plants from weeds, and things like that, then why should we eat that?

I think it's very important to go organic, and I do it, and many of the ... I recommend all my patients do it, and so I think that if you have a choice, organic is the way to go. And every place these days offers organic food. It's not as expensive as it once was, especially produce, so I don't think that there's really any reason not to do that. Yeah, I think organic food is really key in a healthy diet.

Bill Glovin: How about removing meat from your diet?

Dr. Khalsa: Well, it's not so much that you remove meat. It's that you limit meat. Because meat has been shown by the World Cancer Foundation to ... Having high amounts of red meat in your diet is unhealthy, period. It's bad on the heart. It's bad on the immune system. And it's bad on the brain. It's hard on the brain, because it increases atherosclerotic plaque, and things like that.

So, the less meat that you eat, the better off you are. I'm not going to tell everybody who's listening to this, "Well, you have to go out and be a vegetarian tomorrow." Because that's not practical. People like to eat meat. But just try to limit the meat that you eat, and make sure that it's healthy meat. That it's the type of meat that you can call organic meat, that's raised in a proper way, and things like that.

So yeah, we can eat some meat, but not a lot. And then substitute your meat meals with fish, like salmon, and some poultry. But also, there's other ways to get protein. I wrote a book on this, called *Food as Medicine*. How you can get

high protein in your diet without eating a lot of animal products. And it's called Food Combining. And you can easily do that, and I think people who do that lose weight. They feel healthier. And actually, it improves their mood, too. And I think it helps in the long run to build a healthy brain and prevent Alzheimer's as much as possible.

Bill Glovin: Your article mentions that supplements, or vitamins, are helpful. Is it one specific vitamin for people who may not be able to afford to buy a lot of supplements?

Dr. Khalsa: Well, I think it's pretty clear right now, that everyone should take a multivitamin mineral. Even the *Journal of the American Medical Association* had articles on that. So rather than one specific vitamin, I would say that a high-potency, by that I mean 50 milligrams of B vitamins, should be as a supplement to the diet.

I believe ... I go back and forth on this, but I believe that you can get a lot, not all, but a lot of your nutrients from food if you eat well. If you don't, then you're going to have to take more vitamins. But a multiple vitamin mineral is critically important, and within that multiple vitamin mineral, there should be B12, folic acid, and B6. So that's the most important thing, I think.

Bill Glovin: It seems like exercise, both mental and physical, is very important in terms of prevention. There's been a lot of controversy about seniors paying for brain games that have not proven to improve cognition. Do you recommend brain games?

Dr. Khalsa: Well, I'm right with you on that. I've read the articles, and it is controversial. They say that people who play these computerized brain games become great at that brain game, but it doesn't do anything for working memory or actually aggregate memory. So no, I think it's an expense, and it doesn't necessarily help.

I like things that you do on a regular basis. Whether it's reading a book, or doing things like that. Keeping your mind active. Taking classes, I think is really important, if you like these ... For example, I'm a physician, obviously, but I grew up playing music, so I like to play the piano. I play a little guitar, and things like that. And I've had patients who went back to doing art that they hadn't done in many years, and it seems to improve their mental function. So, I think it's important to keep your body moving, but also keep your mind moving. That's critically important.

Bill Glovin: A lot of older folks suffer from arthritis, and exercise is difficult for them. What can someone with arthritis or some form of physical disability do to get the physical exercise they need to help prevent Alzheimer's?

Dr. Khalsa: Well, you have to ask yourself why ... I mean, if you're asking me, as a physician, I would say, "Why do they have such severe arthritis that they can't exercise?" Because even mild exercise can help them with their arthritis. But let's say that

they are slightly disabled, and they can't move, which is highly unusual. They can still stretch a little bit. They can breathe. They can do something in a chair. A gyrokinesis is a new type of exercise, that's fantastic.

I happen to be visiting a place in Miami right now. I'm taking some time off. And they have classes here, exercise classes. And a lot of the people in this particular place where I'm staying are elderly, or by elderly, I mean senior citizens, 65 and above. And they go to these classes that are done in a chair.

You can exercise if you have arthritis. So, we really have to say, "Why do you have this arthritis?" If it's osteoarthritis, wear-and-tear, then there's not really that much that can be done about it. You can take some supplements, maybe chondroitin, something like that, or maybe lose weight. But if you have arthritis, and you want to exercise, exercise in a chair. There's chair yoga, which is really good.

And then there's things like these gyrokinesis exercises. I've taken a couple of these classes. People really love them. They're very good. And they do get your arms moving, and they get the blood flow, so it's very good.

And finally, one last thing that a person with arthritis can do, if they can afford it, is to go into a gym and find a trainer. Because really good trainers do have the experience and education to work with people with arthritis. I would be optimistic and encourage people with arthritis to exercise as well, because it's very important for everything. For immune system, for your mood, for your wellbeing, and for your brain health.

Bill Glovin: I was scouring the Internet, and looking at some of your past interviews, and just trying to get a feel for some of your experience, and one of the things I found was you talking about studying with Yogi Bhajan. I'm not sure if that's how you would pronounce it.

Dr. Khalsa: Yogi Bhajan, is how you say it.

Bill Glovin: Yes, Yogi Bhajan. Can you tell us what you may have learned from him, in terms of your research?

Dr. Khalsa: Well, I learned a lot from him, on many different levels. He's a true yoga master. And the reason I was so attracted to his work and his teachings is because he came from a family of physicians in India, and he always talked about, "This exercise is good for the pituitary. This is for the hypothalamus. This is for the immune system." So I gravitated towards that.

I learned a lot from him about increasing health, increasing blood flow to organs. And basically keeping yourself in a state where, no matter what your age, you feel and you are healthier than someone would expect. And it keeps your mood elevated, and so you can be happier. And also, I think, it's important

... His teachings were very important to stay connected to your spirit. So I think that everybody has a spirit, so I think that's really important.

Now for me personally, what he did for me was, one day he actually instructed me to study the simple yoga exercise meditation that we study, called Kirtan Kriya, and he said to me, "I'm teaching you this, so you can share it with people as they age." And then he instructed us ... This is many years ago, I mean ... And then he instructed us to study that.

And if he had never given me that instruction, or given me that suggestion, I don't think ... Boy, I don't know if I would have ever done it or not. But that's what gave me the inspiration to go with the Alzheimer's Research and Prevention Foundation for the last 13 years, to use our funding at various medical schools around the country, to study this very simple 12-minute memory exercise. So, I think that's the main thing that he really instructed me to do, and gave me a lot of inspiration and teachings on that.

Bill Glovin: Can you describe the, what you call KK, or Kirtan Kriya?

Dr. Khalsa: Sure, sure-

Bill Glovin: And how it relates-

Dr. Khalsa: There's a lot to talk about, meditation. And basically, and just really briefly, it's really a lot simpler than people think, because there's just four requirements. You have to be comfortable, in a quiet environment, with a tool, or something that you're going to use, and then a focus of concentration. So Kirtan Kriya, Kirtan means "singing." Kriya is an exercise. It has specific effects. In this case, we're talking about brain boosting effects.

So, you can do this in a chair. Comfortably sitting. You let your breath come naturally. There's no prescribed breathing. You will sing out loud these sounds, what are called the primal sounds: "Sa Ta Na Ma..." You do this two minutes out loud, in an out loud voice like singing. Then two minutes in a whisper. What they call a stage whisper, like in New York, you have all these plays? So they call it stage whisper. "Sa Ta Na Ma." Then four minutes quiet, silently, within yourself. Which is a very deep meditation. You say it to yourself. Then you come out two minutes in a whisper again. Two minutes out loud. So that's one part.

Another part is touching your fingertips in sequence as you say these sounds. So each time you say "Sa," you touch your thumb to your index finger. "Ta," middle. "Na," ring finger. "Ma," pinky. (singing) In sequence, never backwards. And what we've seen in our scanning work, and our other research, is this sends a lot of blood flow into specific areas of the brain. And the reason's simple. We're the only species that can vocalize ... I mean, monkeys can communicate a little bit, maybe they can use their fingers, but we're really the only species that communicates and picks up things with their hands.

So that's why these ancient Yogis somehow knew, and went down through the eons, thousands of years, that when you touch your fingers in sequence and sing the sounds, you're activating certain areas of the brain. And then we've seen over the years, every medical student, nursing student, or whatever, knows this. That we have what they call the map of the brain, and the map to the brain is very highly represented with your fingertips and what they call your vocal apparatus. So, when you sing these sounds and touch your fingers, it just ... blam! You're sending a lot of energy and blood to your brain.

And that's what we've seen on scans. And I think that's why it helps so many people. It's just very easy to do. It's fun. It's safe. It's effective. It's fast, and it's affordable. Because there's a lot of, like I said, meditation techniques, and quite a few of them are expensive, and take a lot of time. This takes no time. You can do it with a CD that you can get on our website, alzheimersprevention.org, and you just ... First time you do it, we've seen that really ... very good results. That's why we love Kirtan Kriya.

Bill Glovin: Will these exercises, I guess, reduce stress, and improve sleep, and other things that are really associated with suspected causes for Alzheimer's?

Dr. Khalsa: Right, right. Well, we have ... in the article I did a little review summary there, and various studies, either at West Virginia University, University of Pennsylvania, UCLA ... We've seen that, as you mentioned, stress is reduced. It's ... improvement in sleep. Poor sleep is a risk factor for cognitive decline. We've even seen reversal of memory loss. People who were suffering from memory loss had that improved. Increased energy levels ... Like we were talking about genes before, so we see that genes are improved, upregulated. Decrease in anxiety and depression, so you feel better. And a lot of other things.

One of the keys is, and this again was presented recently at that UCLA conference, is doing this increases the health of your DNA. It increases what's called telomeres, or telomerase, the enzyme that makes the tip of your genes stronger. And so it doesn't wear out as fast. So, when that doesn't wear out as fast, you're healthier.

And there's a great book out now, by really the leader in this field, Elissa Epel, a PhD from UCSF, called *The Telomere Effect*, that talks a lot about this. So, we see that Kirtan Kriya's a very simple, easy way to improve actually every part of your wellbeing. Your health, and your brain health, and your immune health, everything like that. So it's a very simple, easy way to do it.

Bill Glovin: Is there anything that I've left out that you might want to add, or have we covered it?

Dr. Khalsa: No, you've covered a lot. I would just add, if anything, that the diet, exercise, stress reduction is very important, and it's almost mainstream now. Everyone knows about it. But really the newest frontier in Alzheimer's prevention is this

concept of wellbeing. Psychological and spiritual wellbeing. How connected you are to your spirit. How you're connected to other people. Whether you get up every day and feel that you have a purpose in life. If you feel that you have a purpose, then that does a lot to improve your health.

In fact, having a purpose in life has, in and of itself, been shown to decrease risk for Alzheimer's. And, as I wrote in the article, in a very recent, and as yet unpublished, three-year study ... It will be presented at the Alzheimer's Association meeting in London in July. The study showed that how you relate to yourself on a spiritual level, and this is not religious, it's just how you see yourself, showed that people who feel a connection with their spirit had an associated lower brain decline rate. Lower atrophy rates in their regions of the brain related to memory.

So I mean, it's a whole lifestyle. But it's very simple. You don't have to do it all at once, unless you want to. To change your diet. To exercise. To reduce your stress. In my opinion, especially through yoga and meditation, but there's many others. A walk into nature, reading the Bible, whatever works for you. And then, finally, developing or focusing on, or thinking about ... especially in this era, today, where in such a high stressful and negative world, age ... that's causing an age of stress, an age of chaos. To focus on your wellbeing, your inner self, I think will do a lot to improve a person's brain health, and go a long way to help them preventing cognitive decline with age.

Bill Glovin: Great. Well, thank you so much, Dr. Khalsa. That was just tremendous. I think there's a lot to be gleaned out of these words of wisdom. So thank you again.

Dr. Khalsa: Yeah, it was my pleasure. Appreciate it. Thank you very much for all your support.

Bill Glovin: And that wraps up this month's *Cerebrum* podcast. This and all other *Cerebrum* podcasts and articles can be found at the Dana Foundation's website, at dana.org. I'm editor Bill Glovin, and thanks for tuning in.