



EPISODE 944

How to Naturally Boost GLP-1, Reduce Cravings, & Lose Weight Faster

With Guest Dr. Karan Rajan

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SHAWN STEVENSON: The age of fat loss is upon us. Before the age of fat loss to be initiated, it had to be preceded by the age of fat gain. And so as our society is trying to figure this whole thing out. We are also entering the age of fat loss related medications, including the hot on the streets GLP ones. Now, here's the rub, and you're hearing it here, probably first. This is just one of many to come because we have a vast array, dozens of other satiety related hormones. And right now, food manufacturers are proactively trying to find ways to add ingredients to their foods, these ultra processed foods to work their way around the GLP one medications.

So that even if you're taking one of these medications, you still want to have an extra twine or you still wanna have some extra potato chips or Pop-Tarts or soda pops. All right. Food scientists, they're not just gonna take this sitting down. All right. They want you to sit down. Brilliant food scientists are proactively working to find ways to combat these new innovations, and so simultaneously drug manufacturers are designing more medications to address our other satiety related hormone. We got so many. GLP one is just one. We've got adiponectin. We've got CCK, we've got Peptide YY.

I can go on and on and on. But today, in this very, very special and powerful episode, you're going to hear from a world renowned physician and surgeon with an expertise on gut health. To share with us how we must first and foremost work with our bodies and understanding, remembering that GLP one and all these other satiety related hormones are produced naturally within our bodies if we're doing certain things, and there are things beyond food that can mess that system up. And so he's gonna bring that up as well. But what are those foods that can support our body's natural production of these satiety related hormones and help to kind of keep in check our hunger related hormones? Alright. There's this beautiful synchronistic dance that's happening when we can get our bodies in a healthy state and create a healthy environment within our own systems.

And so he's gonna be sharing that and he's gonna be sharing some straight up crazy stuff that you probably never even think about, like eating with your hands. All right? If you're like, well, what else do you eat with, right? Do you eat with your feet? Do you eat with a robotic arm?

Yes, the robots will be able to feed you. Okay? It's just coming soon. But I mean directly food to hand, not fork, knife, chopstick. Food to hand. You're going to hear some interesting data on how this can impact satiety. So really interesting things and one of the biggest takeaways is understanding this gut-brain connection at a whole new level and how our thoughts, how our perception is impacting our satiety.

So this is absolutely packed with incredible insights. And without further ado, let's get to our special guest and topic of the day. Dr. Karan Rajan is a world renowned physician, surgeon, and educator. His compelling and enlightening teaching style has engaged audiences all over the world, and he now reaches over 11 million social media followers. Dr. Karan is also the founder of Lone Science. A company that's pioneering microbiome solutions. He's the host of the Dr. Karan Explorer show and author of the Number one Sunday Times bestseller. This book may save your life. Let's dive into this conversation. With the one and only Dr. Karan. Rajan, we've got Dr. Rajan in the house. How you doing today man?

DR. KARAN RAJAN: Ah, thank you so much. It's a beautiful studio and like it's great to have a chat with you outside and even here, man, I can tell on the same wavelength.

SHAWN STEVENSON: We should have had everything rolling in advance. Like we've already covered so much ground. Yeah, but you know, we are existing right now in a changing paradigm when it comes to medicine, when it comes to nutrition, fitness.

You know, a lot of people are interested. And that's a great thing. And part of this paradigm is this new innovation, this new wave of GLP one drugs. And I've been talking about this for quite some time. I know that there are others that are, you know, quickly coming down the pike here, uh, addressing other satiety related hormones. And so you being an expert in gut health, I wanna ask you about this because with this emerging paradigm, this is related to our satiety. Right? And these are things that our bodies naturally produce. And it's great to have medical interventions as well, absolutely. But one of the things that I'm learning from you is how our bodies produces stuff in relationship to certain foods that we eat. And so can you talk about. Are there any foods that we can eat that can encourage our bodies to produce more things like GLP one, leptin, CCK, things like that?

DR. KARAN RAJAN: Yeah, it's a really good point, and whilst I'll caveat this by saying that nothing we eat can be equivalent to a natural ozempic, you know, a lot of people are trying to sell supplements or sell products, which are natural ozempic. That's the caveat and nuance we need to take into account. And so we've got dozens of satiety hormones, right? And from GLP ones to GIP to amylin receptors, Oxyntomodulin, CCK, cholecystokinin, Peptide YY. There's so many, right? And the food we eat can actually stimulate all these different things. And that can lead to, uh, you know, improved satiety.

And in addition to that, not just food, but even the habits and lifestyle things like sleep that we take care of can stimulate other satiety hormones like leptin and ghrelin. You know, whenever you slept terribly, the levels of ghrelin can go up so you feel hungry the next morning and you overeat calories, which can lead to weight gain long term. So that's the whole context we're playing in. It's such a complex system and ultimately I would say the two food groups, which are gonna help you most with that satiety, weight loss and appetite hormone stimulation would be fiber and protein. Specifically soluble fermentable fibers, uh, prebiotics, which can have a prebiotic effect on the microbiome and high protein foods.

And you know, the sort of top tier would be foods, which can give you both at the same time, like beans, right? High fiber, high protein. And basically what happens on a microscopic level is that food, which is. Harder to digest and spends more time in the colon being fermented by gut bacteria means there's more stimulation of GLP and PYY and leads to longer half-lives and elevation of GLP one, which is gonna have the best effect and gets as close as possible as we can to those medical interventions.

SHAWN STEVENSON: Mm, that's so powerful. But you know, this part of the conversation has been left out. Right. The education around, like your body has the ability to self modulate, to find that homeostasis, but we have this paradigm of, you know, ultra processed foods that kind of, you know, throw all this caution to the wind and kind of gum up these systems and, disrupt it, disrupt its natural tendencies. But you just said sleep influences it as well. Our movement practices stress. It isn't just this one trick pony, like, we just gotta get this one hormone to do this one thing and it's gonna solve all of our problems.

DR. KARAN RAJAN: Yeah. I think, even this is a problem with modern medicine as well. You've got cardiologists, you've got gastroenterologists, rheumatologists, neurologists, endocrinologists. All of those are specialists, and that's great, but we need to stop thinking about the body as individual systems and an interconnected network and a hive mind. And so when we are talking about these hormones, they're influenced by our mood, our brain, the movements, sleep, circadian rhythm as well, even our microbiome, the bacteria living in our guts have to follow on our slave to the circadian rhythm. They're sometimes more active in the daylight hours and less active in the nighttime hours. So all of these body systems are interconnected and you know, to your point, one thing is just the one wheel of the car. You need all the wheels to work to get the car moving.

SHAWN STEVENSON: I love this. I love this already. So fiber, protein. Our target foods ideally are foods that give you both, right? So get you someone who could do both. All right, so beans are one and You know, I knew that I was gonna be talking to you about this, and this is one of the most fascinating studies that I've seen recently. And it speaks directly to your point. And this was published and we'll put this study up for everybody to see in the Journal of Research and Medical Sciences. And it put study participants on matching reduced calorie diets for three months with one interesting difference. One group included almonds in their diet while the other group did not.

It's a three month study. After the data was compiled, the folks who included almonds in their diet lost twice as much weight, what? Twice as much weight, and had a greater reduction in their hip to waist ratio than the almond free group. Now, here's what relates to our point. The researchers found greater improvement in insulin sensitivity and GLP one in the almond group, right? So there's something special about these natural foods that provide protein, but also provide that dietary fiber.

DR. KARAN RAJAN: Excellent study, dietary fiber, proteins, other compounds like lignans, which are just hard to digest. And also, we should mention fiber, protein, but also healthy fats as well. So healthy fats have probably the greatest effect that stimulating cholecystokinin, CCK. And CCK slows down gastric emptying the rate at which your stomach empties,

especially as it's entering the first part of the small intestine, the duodenum. So you just generally get that increased satiety from a physical point of view.

And one other thing I should mention as well would be flavonoids and polyphenols you get from really darkly colored foods. And this is super interesting that not a lot of people know. Not only do those foods likely have a high antioxidant content and probably high fiber content like raspberries or blueberries. But there is some data suggesting that foods that are rich in their flavonoid content, even things like coffee, have a direct role at upregulating GLP one gene expression in the L cells, which are cells, which line the colon. So you're getting that direct. They're directly stimulating the gene expression, so there's more GLP one being pumped out in those kind of foods.

SHAWN STEVENSON: Amazing. Oh, this is so good. So good. When I think of CCK, I also think of spicy foods. Is there a relationship there?

DR. KARAN RAJAN: Yeah, I would say that spicy foods are interesting because I would say one of like, and a lot of the spicy foods may be tied to fatty foods as well, right? You have like a spicy curry or some tacos that's spicy or some sort of like, you know, salsa thing where it's fat and spice.

So that may be the sort of overlap there, but also spicy food. You know, most spicy food contains a chemical called capsaicin, and capsaicin directly binds to these receptors called TRPV-1 receptors. And our body can't really tell the difference between heat in temperature and spice. We don't have like a receptor for spice and we kind of correlate it with heat. And so when you eat something spicy, your body thinks there's like an irritant or something hot, which actually has. You know, the same mimicking effect of feeling full. So when you eat something spicy, you probably feel more full, even if it's the same amount of calories as something which is not spicy.

SHAWN STEVENSON: That's fascinating. I know a lot of people have had that experience of just having that spice in your system and just kind of quenching or slowing down your desire to eat more food. Right. Just that heat is enough to just be like, I'm good. Right? And so it's a

natural thing that we kind of experience, but we might not think that much about. So maybe add a little bit more spice to your food.

DR. KARAN RAJAN: Yeah. And you know, there's something cool that when I was growing up, I didn't, I always thought it was weird, but now knowing the science of it, I get it. Because when my grandma used to just cut me like a plate of fruits, you know, pears or kiwis or guava, she used to sprinkle some chili, salt and just other like spicy seasoning on it. So it'd have these like sweet fruits with some spice on them, and it would keep me so full. In addition to the fiber, it's just that contrast in flavoring. And yes, spice a hundred percent, even like a spicy sauce, like, you know, like a Tabasco sauce, you know, it can fill you up. And the additional benefit is Tabasco scores is actually a fermented food.

SHAWN STEVENSON: Hmm. Look at that. You know, I just actually cut up some mango for my son this morning along with his breakfast. And you know, that's one of those things that I haven't been exposed to, which is like putting the spice with the fruit, right? And so, like my wife is, she's from Kenya and she'll, she'll dabble in that, you know, having some, some spice along with the fruit. But it's just like some, we don't tend to match that up like a lot of people in my culture.

DR. KARAN RAJAN: It's such a weird thing, and I think in the western world we like simple flavors and simple combinations. And actually, you know, places in Africa, in Southeast Asia, in South Asia, there's such a contrast in flavors and colors and texture and beyond just taste that provides dietary diversity. Which ultimately is, you know, the beneficiary is you, your gut health and your microbes.

SHAWN STEVENSON: Yeah. 'cause we're trying to get these inputs, right? We're trying to get all of these different foods. Every time you have a different food, you're getting different inputs. You are taking a bit of that foods microbiome, that data. It's like a file sharing. And so how can you get, and this is where the science is at, and I'd like to ask you about this, is affirming that we need to try to target a certain amount of different plant foods. Specifically plant food inputs each week to really help to provide because our different microbes are looking for different inputs.

DR. KARAN RAJAN: Yeah. And, just before I answer that, like to expand on the point you just made about this kind of different inputs. It's so different that even the same food in two different countries can have a different microbiome composition, right? Like for example, why is the coffee or the coffee beans grown in different countries like Ethiopia or Costa Rica or even the USA? Why are they different? Because. Each of the coffee bean farmers in those different countries have different skin microbiomes, and when they're treating them and growing them and cultivating them, their skin microbiomes go in the coffee beans.

So different microbes are fermenting those beans producing different flavor profiles. And so even if you go to Italy and have mozzarella cheese from Italy and mozzarella cheese from the US, there's different microbes being made and involved in that fermentation process. So actually the health benefits are slightly different. And why we need dietary diversity is because we have different bacterial species throughout our colon. They're like a, they're picky eaters. They each like to preferentially eat different foods. So bacteria A might like to eat this food over bacteria B that likes to eat a different food. And when they get those different foods, they then produce different compounds, different short-chain fatty acids.

They perform different roles. And if you get more diversity, you get more of these functions, like more gifts unlocked. And so that's the key with diversity.

SHAWN STEVENSON: Oh wow. Holy smokes. And when you talked about the diversity of just getting food from different places. The same food. Yeah, from different places. And you went right to skin, like, I didn't know you were gonna go there to that input, but we don't think about that. Right. Let alone the soil, the atmosphere, the environment, the temperature, the, you know, the cross pollination, whatever, all these other inputs, but literally the people handling the food makes that food different.

DR. KARAN RAJAN: You know, we think about the microbiome, but you just mentioned. You know, the aero biome, the different microbiome in the environment, in the air. Even me coming here to see you today, we are exchanging our different microbiomes by, you know, shaking hands, just speaking to each other, being in the room with, you know, two other people as well, and that's wild. And that correlates so well with the data that we have.

Epidemiological data, which suggests that especially in childhood children who grow up in non-urban environments, around pets with older siblings, have stronger, more resilient immune systems and microbiomes, which leads them to have a lower risk of autoimmune diseases and allergy risk compared to kids who've grown up in, you know, households with, they're the only child, or in urban environments where there's more pollution and less nature and animals and don't have pets. So that's because of environmental exposure.

SHAWN STEVENSON: So powerful. You know, it was such a beautiful design of this whole thing, and this is largely an invisible process, right? Of course, we've got wonderful technology where we can see some of this activity now. But it's just keeping in mind like to, as you just mentioned, like having this microbial file, sharing it ba. I liken it to like a light workout, you know, for your immune system and just getting more inputs like allowing your system to kind of pick up new data, like how do I respond to this and interact and even take certain things on and to share certain things as well.

And this is how we really evolved. As a species. And so we need each other. We need to be proactive at having some of this file sharing. And today, more than ever, we're more and more isolating ourselves and going, spending much, much more time indoors. And it's wonderful. We've got a lot of cool stuff indoors, but we need to also get out, go to different places, um, travel, right? All of these things are really great for, and, and this, it's reminding me, we've got multiple studies now on how travel extends your lifespan. Right? And it just gets me thinking about what about the invisible stuff, right? Let alone the experiences and the novelties. So good for the brain, but what about the microbial impact of being somewhere else?

DR. KARAN RAJAN: That phrase, file sharing is just so crazy good. And you mentioned like we are more isolated these days and that correlates with this steady erosion we're experiencing in our own microbiome. Our collective microbiomes are experiencing a loss of biodiversity. We are losing these species over time. And then if you compare that with some of these non-industrial population groups around the world, the Yanomami Tribe in the Amazon, Hadza Tribe in Tanzania, certain tribes in North and South India. One of the things they have, well, one of many things they have in addition to high fiber intakes and all those things, is they have this community.

You know, they're, they're tribes. They're very close cohorts of people and they're sharing microbes with each other because they're in such close proximity to their mother, their father, their children, their nephews, their in-laws. They're all just living in kind of tightly packed spaces and we are not, and we are not benefiting from that microbial file sharing.

SHAWN STEVENSON: Wow. I wanna go back to flavor because you said something, and I don't want everybody to miss this. You mentioned that spice isn't something that we taste. Right, and I know that there are many people who are just like, I could taste spice. Can you talk about the distinction there? Like how are we not tasting the spice but we are experiencing something spicy?

DR. KARAN RAJAN: So it's a weird one. So flavor is not one input your percept. It's a perception. Right. And your perception is built through multiple sensory inputs. So, and there's lots of studies that, uh, professor Charles Spence from Oxford University has done on just like perception. So if I give you like, you know, a Pringle. Right. You expect that Pringle to be snap crunchy, and that adds to the perception of the taste. But then if I give you another Pringle that's like flat, it's a bit soggy. That would affect your taste perception of that thing. So by that, we know that the perception starts in the brain, auditory inputs, the snap of a chocolate bar, the crunch of an apple.

Then you've got the smell that adds to flavor. Most of flavor comes from the smell, right? The sort of nasal input of that thing. And then there's obviously like the texture of something. Is it smooth? Is it crunchy? Is it kind of like crinkly? All of these things are important. And then you add in your memory of that thing nostalgia and how it made you feel some emotional impact. So what you taste directly on your tongue, in your taste receptors and taste buds is one of multiple inputs. So when you give me like a spicy enchilada or you know, just like some Tabasco sauce on something. I'm putting multiple inputs, all of my senses in that one thing. So spice is not merely just that binding of the capsaicin to the TRPV-1 receptors on your tongue, but all of these other inputs which make you think, oh, that's a spicy food.

SHAWN STEVENSON: This is so crazy. You know, this is going beyond again, just the superficial, you know, again, calories in, calories out, which is what I was taught in my

university education, and it was kind of the end of story. But just to realize how your perception impacts how the calories you associate with impacts your body. And this reminds me of that famous milkshake study with Alia Cru and her team outta Stanford and just blending up this batch of milkshakes and we'll put the study up for everybody to see. And basically it's, they're all the milkshakes are the same, same amount of calories, but labeling them differently, right?

Putting on some of them, labeling that this is at a high calorie indulgent milkshake at several calories. More than what's actually in there. And then having other labels that say it's, it's a sense of shake. It's a sensible milkshake saying there's several hundred calories less. And when study participants drank their respective milkshakes, the people who drank what they believe to be an indulgent milkshake, right, more calories in what they would think, they produce more satiety hormones, meaning they were likely less likely to be hungry soon after.

Whereas the people who had the sensible milkshake, same amount of calories, their ghrelin levels, leptin and ghrelin, you know, ghrelin being this kind of glorified hunger hormone barely changed at all. So they were, they were hungry quickly thereafter. Right. So just their belief about what they were drinking had an impact on how their body was associated with those calories. And this leads me back to even mentioning the Pringles. And I don't know if you know this, there was like a egg Nobel Prize awarded for this Pringles study.

DR. KARAN RAJAN: The sound experiment.

SHAWN STEVENSON: The sound experiment.

DR. KARAN RAJAN: That was Professor Charles Spence.

SHAWN STEVENSON: That was the one, yeah.

DR. KARAN RAJAN: Yep.

SHAWN STEVENSON: So you already know it. Man, it's so weird. Just the crunch, the sound of that crunch affecting your satiety and how enjoyable you think a meal is, that is so powerful.

right? So smell, sound, touch all of our senses. Yeah. Influence potentially our satiety, our satisfaction, what we're eating.

DR. KARAN RAJAN: And so two things. And what that tells you is that digestion doesn't begin here in your mouth. It begins in your brain. So right now, like Shawn, what's your favorite meal? What's your favorite meal?

SHAWN STEVENSON: Oh man.

DR. KARAN RAJAN: Like, you know, 365 days.

SHAWN STEVENSON: That's so tough.

DR. KARAN RAJAN: Yeah. Like something that your mom made or your wife makes, like what's your favorite food?

SHAWN STEVENSON: Man, that's like asking who's my favorite kid?

DR. KARAN RAJAN: It was just one of your favorite meals.

SHAWN STEVENSON: Okay. Ah, man.

DR. KARAN RAJAN: Like you'd if, like I asked you right now and you'd want it and you'd eat it.

SHAWN STEVENSON: Okay, let me think. All right. This is so tough. Let me just, my wife there. Oh, I got it. Yeah, I got it. So just something that I've had a taste for recently is this Sweet potato enchilada casserole.

DR. KARAN RAJAN: Okay. All right. So, you love that meal. Yeah. And you love how it tastes. If you are thinking about it right now, your digestive juices are beginning to activate. I feel it. You know, you start to salivate your sort of, you know, parotid glands and your saliva glands are working, pumping out some of that saliva. And your intestinal motility is starting to go, that's the engine that thought of a food of like a nice pumpkin pie or apple pie or something.

Just the thought of that is enough to get you salivating, right? I'm telling you, Hey Shawn, we are gonna go and get some food afterwards. You are already like hungry and you get that hungry. So that is digestion beginning at just the thought of a meal of a certain food. So it's already turned on then. Right. So that is another layer adding to the perception and flavor of something. And then, yeah, it's all these sort of multiple sensory inputs that go into that. And then the final thing would be, as you mentioned, touch as well in cultures where you predominantly eat with your hands, that provides a more mindful eating and digestive food experience, like in Ayurvedic culture.

And either the way they like old and ancient Indian medicine, you eat with your hands and you don't have any other distractions and you are directly making the connection between the gut and brain when you are eating with your hands because your fingers can sense the temperature so you can slow down when you're eating.

When you are not, you know, eating with like, uh, you know, drinking something directly or eating with like fork and knife with your hands, there's only a certain amount of food that you can put in right in one go. So you are naturally pacing things down as well, and you can really connect mindfully with that food. And it's like a better digestive experience when you have all of those different senses playing a part.

SHAWN STEVENSON: That's so fascinating. Like this has got me thinking about my mother-in-law, who I know she's listening right now. And she's from Kenya and you know, I've seen her of course eat with her hands several times. And, and my son, my youngest son as well, he'll like eat with his hands frequently even when you're not around. Mama Kami, he does this and he's just like, you know, I'm, I'm part Kenyan, so this is what we do, this is what we do. And in our culture, this is something that is not really seen. Now here's the thing, even as I say that, there are certain foods that are socially acceptable to eat with your hands. Right? Like picking up a slice of pizza.

But there are people, snobby people cut it with a fork, when they don't need to. No disrespect. But you know, there's certain handheld foods that you can eat with your hands while other stuff is seen to be like, that's not appropriate, right? It's just not a part of our

culture. And so to have this other awareness, like again, it's so much easier if you've got an apparatus, like a spoon or fork to just shovel food into your mouth. Right? And it's so funny. Last night we were watching Stranger Things, the most recent season because the new season the final season is coming and, this one of the characters, Hopper, he is in this situation.

And no spoiler alert, by the way, if you haven't seen season four. But he's in prison. And he makes this grand escape. I'm not saying if it works out or not, but he happens upon, and he's been in prison in like a Russian, like military prison, right? And he finds this crate of peanut butter and he doesn't just go in and start shoveling the peanut butter with his hands. Once he has that first bite, he literally puts it in his, his mouth and just. Oh, he eats it even though he is starving. And you could tell the actor he actually did lose a lot of weight for that role.

DR. KARAN RAJAN: Oh yeah.

SHAWN STEVENSON: Right. For that, for this part of the story. And he just was just taking, you know, dollops of this peanut butter and just enjoying it. Right. Because for me, I'd be like, if he's eating with his hand, he's starving, like he's just gonna shovel in his mouth. But really our kind of innovations can take us away and, and another step from really being present with our food.

DR. KARAN RAJAN: And I think that's to our detriment because you know, if we don't slow down our mealtimes, we may miss some of those satiety signals. And then that's the risk when you overeat, right? You need some time for the digestion to happen. For the GLP one, the cholecystokinin, the whole cascade of hormones to begin their release. And then if you overeat, you might miss those signals and then continue to overeat as well. And then, you know, is that one contributor to our crisis now with, you know, obesity rates rising.

SHAWN STEVENSON: Hmm. So fascinating. Alright, I wanna ask you in this context, with these foods that check those two boxes, fiber and protein, there have been controversy around these foods recently, right? And even though humans have been eating Beans and nuts for thousands of years. Today though, and in particular, let's talk about beans because they have certain compounds that can be injurious to human biology. Let's talk about How do

we prepare these foods? How do we actually prepare our beans so that we reduce. And can you talk about what are some of these kind of concerning or potentially problematic compounds?

DR. KARAN RAJAN: So I think some of the concerns around like plant foods, uh, like a villain that a lot of people quote are these kind of antinutrients, which could prevent the absorption of other things or, you know, phytates, which could also affect. The absorption of certain things and you know, like in small amounts they don't really affect us and the sort of quantities that we eat them, you know, they're ultimately the food is a beneficial food. But you know, you're not gonna eat eating raw beans. Most people are not gonna be eating raw beans.

So actually if you are boiling them, if you're steaming them, if you're pressure cooking them and you're soaking them, you're not only reducing the amount of all of these antinutrients, which are not Harmful to begin with, but actually you are reducing their FODMAP content. And FODMAPs are certain compounds within the foods which are highly fermentable and can trigger the guts of people who have sensitive guts. And so actually, when you soak and cook your beans. Pressure cooking is like probably one of the ideal ways. You not only increase the volume of the raw bean, which can add more to your satiety physically, but also you reduce the amount of some of these, you know, compounds which could affect, you know, bioavailability of other, you know, things that you eat as well.

SHAWN STEVENSON: Amazing, amazing. You know, obviously digestion is, to say that it's critical for our survival as a species is an understatement. In fact, it's so important that, can you share what is the first part of the human body that develops first? Once the egg is fertilized and we're developing as a human being. What's developed first?

DR. KARAN RAJAN: I'm biased because, you know, my background is like gut surgery and GI surgery, but the science doesn't lie. And when you are just a cluster of cells in your mom's uterus, the very first orifice to begin developing is known as the blaster pole, which then becomes to form the anus. So we are essentially an asshole when we start, and the gut and

the digestive system is one of the first organs or digestive groups, or the digestive system is one of the first organs to develop.

SHAWN STEVENSON: So everybody starts off as an asshole and then we work to become something other than.

DR. KARAN RAJAN: Well, hopefully, yeah, we evolve beyond that point.

SHAWN STEVENSON: Hopefully. Yeah, some people just stay. That's incredible. Incredible. So, you know, just the, the development of our gut and then, and our nervous system as well, intimately connected. And so we have this now, it's a big part of our lexicon and education. Grateful, grateful for that. The gut brain connection. And we are, we are still just scratching the surface on this and understanding it, but can you talk a little bit about how what we're putting into our gut affects what's going on upstairs? What is affecting what's going on with our brain?

DR. KARAN RAJAN: Yeah, so if you look at some of those anatomical diagrams where it just shows like the nervous system of the human body, you'll see this huge cord running through almost the entirety of their body, and that's the largest nerve in the body. The vagus nerve goes directly from the brain.

All the way through to the gut and then spreads out like a root into all of the different aspects of the GI and the gut organs, right from the intestines to the liver and beyond. And so there's that direct connection between the gut and brain, physically tethered by the vagus nerve, which is a bidirectional relationship. Messages go from the gut to the brain, brain to the gut, and so one layer is that the gut cells, the microbes in the gut produce neurotransmitters and other chemicals, which directly signal to the brain via the vagus nerve. But you also, the food that you eat and the food, which is then fermented by the microbes, then spit out compounds, which then stimulates the vagus nerve and then stimulates various neurochemicals which influence the brain. And then the state of the brain, whether it's stress, happiness, disappointment, whatever. Also directly influences the gut, which is why if you're going on a first date and you're nervous, you get this butterfly feelings in your stomach. That

is the gut-brain connection. In real life, if you are about to do a job interview and you are scared, you might have a pre-job interview nervous poop. That is directly the stress in the brain manifesting as gut problems. So it's so wildly interconnected.

SHAWN STEVENSON: So powerful. So powerful. Again, this is just a normal part of our culture, but we don't really think about it. We don't talk about it. And so, and it could be the opposite. It could cause constipation. Yeah, right. Stress, worry, fear, all these different things. It's just gonna depend on you and your you, your perception of things and your biology and how intimately they're connected. That's so powerful. I want to ask you about one of the one of the most widespread and also rapidly increasing in prevalence, gut related conditions. IBS, irritable bowel syndrome. But some people refer to IBS as is bullshit because it has so many different expressions. It could have a million different ways that it presents in different patients and it tends to be something that. You know, I don't know what it is, and upon my analysis it's IBS. Right.

But it can be dramatically different from patient to patient. And so it's just kind of this overall overarching label. Right. IBS So can you share some insights on IBS? Because I know there are a lot of people that are suffering with IBS and they have a myriad of different symptoms. What's at the root cause, right? Because again, I know this is a tough question. It's a big question, but I want people to be able to feel better and to think differently, and not to just like completely embrace this label, like, I'm broken and there's nothing I can do about it.

DR. KARAN RAJAN: So IBS is like an umbrella term. For several subtypes of IBS or symptoms that someone could have. And yeah, just as an example, there's IBSC where someone could have predominantly constipation type symptoms, the C. IBSD, where someone could have predominantly diarrhea type symptoms. And then there's even IBSM mixed type where you can get a bit of diarrhea, a bit of constipation, and there's so many different like subtypes of IBS and they each have their own overlapping treatments, but also, you know, specific treatments as well.

And so the issue with IBS is that, you know, previously people used to say, oh, it's all in your head. It's like not a real thing, but actually we know it's, yes it is in your head because it's a gut

brain disorder. Right? It is a functional problem maybe with the gut as well as it's connection to the brain. There's like a loss of Bluetooth connection almost between the gut and brain, which means that you may develop these gut symptoms, whether it's bloating or cramps or constipation or diarrhea. So it is a very real, very problematic condition for a lot of people where it can ruin their quality of life.

And I think we need to understand that. Unfortunately, it's both underdiagnosed in the people that it needs to be diagnosed in, and it's overdiagnosed in people who should not be labeled with IBS. And historically, there's another problem with the medical infrastructure. It's an easy catchall diagnosis when a doctor doesn't know what's going on, and it sounds like, yeah, some gut type stuff.

Let me just say that's IBS, because you know, there aren't any specific diagnostic tests beyond just asking someone a detailed history, where you can say, Hey, do this scan and it'll tell you've got IBS. And you doctors can sometimes live in the gray and patients can live in the gray, which is not ideal, right? If someone's got colon cancer, it's a horrible condition. It's cancer. You can do a CT scan and find, hey, they've got colon cancer here, and then do surgery and then remove the problem. But with IBS, it's not as simple, right? You have to take a detailed history from someone who's an expert in IBS or, or you know, eventually to manage that condition.

And so ultimately it's a gut brain condition, neuro gastroenterological condition, and there's so many different treatment options and interventions depending on the patient, and we need to focus on personalization. From lifestyle factors to their diet, keeping a symptom diary to even potentially involving a psychologist. You know, because is there stress that's the root cause of this and often case it may be stress is a huge component of IBS type symptoms being triggered.

SHAWN STEVENSON: Yeah, that's the, thank you for that. You know, that's the part that unfortunately is left out of the conversation a lot, which is the psychological impact. You've started off this whole conversation talking about that integration and it's so important. And also again, we are doing things from the top down and bottom up. And so from the bottom

up, let's focus back there again in the gut. We're gonna get back in them guts again, and I want to ask you about some of your favorite gut supportive foods. All right. We mentioned earlier in relationship to satiety hormones. You mentioned the category of beans, which are so broad. There's so many Yeah. Different things to select from there. Nuts were brought into the conversation as well. What are some of your other gut supportive foods?

DR. KARAN RAJAN: So, I think, you know, things which can easily integrate into people's lives from a gut point of view because, you know, I try to prioritize one thing which I think most people are missing in our modern day diets, which our sort of ancestral ancient diets used to have, and that is resistant starches.

And slowly fermenting fibers, which reach the end of the colon, which is where most of the bacteria live, and which is where the butyrate producing bacteria predominantly live as well. And our modern diets miss some of those types of foods. So plantains, cassava, root vegetables, some of those like dense beans, you know, rice, which is like left over for a, you know, a day or so and it forms more resistant starch. The resistant starches and fibers you get in some of those foods I just mentioned, go all the way to the end of the colon where all these bacteria just feast on them. And it's not just the bacteria living in the proximal first part of the colon or second part of the colon, but actually get to the end, right?

Like an apple would probably be like mostly digested in the first part of the colon. It's not. It's a fast fermenting fiber, but we want those guys who make it to the end. And even like green bananas, for example, they would make it to the end. Stuff like that is what I try to prioritize to really get, you know, that gut health benefit. And actually I should say, some of these darkly colored reds, purples, and blues, fruits and vegetables, which have things like that, like the blueberries, blackberries, raspberries, because you cannot match the polyphenol content of things like that. And polyphenols, which most people don't know, can actually act in a sort of prebiotic capacity as well and increase the efficiency and the power of the fibers you consume. So when you pair a fiber with a polyphenol, oh you get like real powerhouse of metabolic input.

SHAWN STEVENSON: Amazing. Amazing. So what about, you said this term in relationship to our bacteria fermenting certain things, but what about fermented foods themselves?

DR. KARAN RAJAN: Fermented foods are great and you know, a lot of people think that fermented foods are probiotic foods, and it's, and it's an easy, you know, thing to mistake to make, to think that fermented foods are probiotics. So probiotics are different. They're dosed differently, but almost every single person in the world can benefit from eating fermented foods every single day because they usually contain fiber.

Like if you think of kimchi or sauerkraut, it's like a fermented vegetable, but it's also got different microbial strains. We just dunno which strains specifically are there, but they've got different specific bacteria that are floating around in there, which just adds to the natural diversity in there and so fermented foods are great to add and improve gut resilience.

SHAWN STEVENSON: Yeah. There's so many different options as you mentioned. Um, you know, the one, the only one that I could think of that I had growing up was like some artificially flavored sugar laden yogurt. And that was pretty much it. You know, I can't even think of anything else that I had that was fermented. My mom would eat sauerkraut and I just thought she was just so gross. It was like this, these stinks, like, why would you eat this? And, but today I love, I love my fermented food. Pickles! I would've pickles, but. If they're pickled, actually pickled.

DR. KARAN RAJAN: Yeah. In brine, not in vinegar. Yeah. So if they're B brined, a hundred percent fermented food, and actually you mentioned the sort of flavored yogurts. Some of these flavored yogurts are heat pasteurized after the fact, so they may have killed some of those beneficial microbes. So if you are looking at buying yogurts, look at the back of the pack and make sure it says it's got live and active cultures to make sure it's the real deal.

SHAWN STEVENSON: Thank you for that clarification. Of course, these certain things are kind of easy to make, right? So what are some things that people can make at home? Like what about Keefer?

DR. KARAN RAJAN: Yep. I mean, simply look it up online. It's actually quite easy to make once you've got a starter. And once you know the process, super easy to make. And even like kimchi or sauerkraut or literally any vegetable that you want to ferment, as long as you, you know, wash it properly, add the right amount of salt, you know, and, and then just sort of like soak it in whatever juice you want to, and then keep it in the fridge and you, you know, look up the recipe and follow it.

You can ferment anything you want, whether it was like grated carrots, or beet root or pickles or whatever you wanted. It's such an easy life skill to have. And then you've got a cupboard full of fermented foods.

SHAWN STEVENSON: Amazing. Amazing. Again, I know my mother-in-law is listening. She's been fermenting foods and just like all kinds of stuff. She's so creative and so thoughtful and has always been like supplying me, giving me the good stuff. She'll ferment some vegetables or, you know, and just keeping this in for all of us to just be aware of. We are living in a time right now where this information is just like becoming more and more widespread, and so there's more and more products that are available.

And I want to come back to some, I'm gonna make a specific point here, but wonderful companies have emerged. Of course, you know, there's different iterations of, you know, things like kombucha and kefirs and all kinds of yogurts. There's plant-based yogurts, there's dairy based yogurts. All kinds of different fermented veggies, fermented meats. Some cultures have fermented meats like Iceland, fermented shark and humans have been doing this for thousands of years. But our access has increased, and are kind of like distant from our food culture, let me be clear, because our access was just there naturally. One of the things that I did while working at the university was I had opportunity.

I work because I'm working at a university. I meet people from all over the world, and I got to this place where once I became interested in fermented foods and probiotics, I started to ask everybody that came into the gym Do what? Kind of like somebody from Ethiopia, like, do you have any fermented foods? Actually we have this bread, right? Somebody from, you know, Japan or somebody from, you know, Iceland for example, or Kenya or South America.

Every culture. A hundred percent of the time had some of, some form of culture food. If they're actually, they came to the university from their culture. They grew up there. They had some kind of fermented food that was used in their culture.

DR. KARAN RAJAN: Two fermented foods from my specific culture, so I'm Indian, but more accurately, I'm South Indian. Idley and doses, which are basically, you get a batter of lentils and rice. You make it into a batter and ferment it for 24, 36 hours, and then you steam them like basically like savory, steamed pancakes and savory steamed buns, and you dip it with some like chutney, which is often also fermented.

That is my kind of like fermented. You know, family legacy and yeah, like to your point, every culture probably has some fermented food, whether it was like Turkey or Egypt or anywhere else in the world. You just tap into that and you're tapping into like your culture, your tradition, and just really good gut healthy food.

SHAWN STEVENSON: Yeah. Yeah. This is great. You know, again, the thing I wanted to circle back to, and the point I was wanted to make was with all this innovation, there's also gonna be some stuff that's kind of sketchy and not necessarily ideal or proven, but might have some value in some cases. And because of people looking for this friendly flora, looking for what we refer to as these probiotics, right? Pro meaning probiotic, meaning life, right? We want the probiotics, we want all this good stuff, especially if I've had a stint of antibiotics or I just want to have better gut health. And so we might buy, you know, a variety of different probiotics supplements. Right. Now, again, not to negate potential value there, but what is your opinion on probiotics versus eating prebiotic fibers and, and probiotic containing foods like fermented foods.

DR. KARAN RAJAN: So, you know, I've flip flopped and changed my mind so much on this based on available evidence and my understanding of it and my, where I currently sit right now is that I will say, based on the evidence, we don't. We haven't reached the level of science yet where we can say a completely healthy person with no chronic conditions like you or I could take a general wellness probiotic, which claims to raise the level of your gut health just without any specific symptoms that you're aiming to target. I think that doesn't exist.

However, if you had specific conditions like you had traveler's diarrhea. Or you know, you had post antibiotic diarrhea, or you had a specific subtype of irritable bowel syndrome and or you had specific types of bloating.

There are numerous specific use cases for which there are clinically studied and validated probiotic strains, which are effective for that. Like for example, you travel somewhere, you know far away and you get diarrhea. *Saccharomyces boulardii* is very well studied for traveler's, diarrhea and gastroenteritis, and so that would be an effective probiotic to take in that specific case.

But in normal day-to-day life, I don't think there's any significant value taking probiotics if you are kind of fit in health in well, and you would benefit from just taking probiotic rich foods. Prebiotics on the other hand, sometimes they're harder to get from just fruits and vegetables. And if you took prebiotics additionally and supplementary, that is gonna be beneficial for almost everyone 'cause at the end of the day, it's just fiber. More fiber. You mean 95% of people don't hit their fiber goals, so anything you can do to increase your fiber intake? Yeah, it's great. Whether it's a fiber bar or fiber supplement, or just eating more fiber rich foods, for me, I think the evidence is overwhelmingly positive for that over probiotics.

SHAWN STEVENSON: Amazing. Amazing. I wanna ask you about this, because I think this might be so easily overlooked when it comes to digestive health and regularity, but what about hydration? How important is that?

DR. KARAN RAJAN: It's important on multiple fronts. You know, purely from a functional purpose, you know your colon and your intestines form poop, and to form a well softened, bulky poop that's easy to pass, it needs water. A lot of our stool and feces is water. So from that bulking point of view, it's needed so you're not straining and then causing yourself hemorrhoids. But also if you think about our body, our immune system, our gut lining, the mucus lining of our gut, it needs that lubrication in the form of water. The lymphatic system transporting immune cells all across our body.

We need water for that transportation. And so water is essential for, you know, multiple reasons. Not purely just gut health, but actually the functioning of virtually everybody system. The liver to filtrate and function and metabolize all of those sort of toxic compounds. It needs a good blood flow through it as well. Blood flow depends. It's kind of your hydration levels as well. So, yeah, I mean, water is fundamental. Like if you are doing all of these other things right, but not taking care of one of the basics, then you're letting yourself down.

SHAWN STEVENSON: Yeah. I, I just, I've seen it before, you know, and I know you have as well where people are like, okay, I'm gonna get in this fiber, but then they're just not doing that basic checking that box of drinking plenty of water. And they might notice that. When they get in an extra, you know, 32 ounces of water in a day, like they have great bowel movements versus when they're, you know, less hydrated. So these simple boxes, you know, we've gotta check these things off before we start jumping into other fancy pants things.

But, you know, this is one of the things I really enjoy about the education that you share is, it's so practical. It's also fun. It's great, it's really fun to learn from you and it's just such a great experience. You know, just being able to hang out in your world and to have you here today is such a blessing as well. You know, I know that you're visiting, you know, you came across the pond to be here with us today, and so I'm so grateful. I know we're gonna have many more conversations and there's so many other things that we could talk about. But you know, for now I want people to be able to just connect with you, hang out in your world, get more information. Where can people connect with you?

DR. KARAN RAJAN: Everywhere on Instagram, TikTok, YouTube. I am Dr. Karan Raja everywhere. Amazing.

SHAWN STEVENSON: This has been awesome. Like seriously. And so is there anything else you wanna share too before we go?

DR. KARAN RAJAN: You know, just, I'm starting my microbiome startup. It's coming out next Wednesday. And so like that's all about prebiotic fibers and advancing gut health research as well.

SHAWN STEVENSON: Amazing. You've already given me some behind the scenes.

DR. KARAN RAJAN: Yes.

SHAWN STEVENSON: On this creation. And where can people get more information about that?

DR. KARAN RAJAN: If you go to loamscience.com, that's LOAM science.com, that's where you'll find all the information.

SHAWN STEVENSON: Fantastic. Again, this has been amazing and you know, I just appreciate you because I know it's taken a lot of work and intention to just, to be able to consolidate things for people to understand and you know, this, you know, as a physician and an educator, it's, it's transformative. When you can actually know what's going on with your own body even we've got data on that. I saw you recently shared on our experience of pain. Just being able to share that actually.

DR. KARAN RAJAN: So yeah, I mean, even pain, it's not just a physical sensation, but actually dialed up or dialed down by your brain, right? If something hurt you before, you are expecting that same level of pain, even though this time it may not be as bad, which is why like, yeah, like to your point, if someone is giving you an injection and you look away, the pain is less because you are not getting that visual input that's dialing up the pain. So like there are again, all of these sensory inputs into the pain in addition to your memory and past experiences, which determine the level of pain that's amplified or attenuated.

SHAWN STEVENSON: Right? Right. So our perception is so our perception is our reality.

DR. KARAN RAJAN: Yes. Everything that you think of, you manifest in either pain or how you experience everything. Like if I came into this podcast in a low mood, this conversation wouldn't have been as good. But if you come in like, oh my God, I'm gonna have fun today, that also determines the direction of play.

SHAWN STEVENSON: Yeah. And on top of that being aware, and this was something also that I learned from you. Being aware of how your pain works and where it comes from helps us to better manage it. And for us, for it to not impact us as deeply, to be able to move through pain once we are, have a better association with where it comes from.

DR. KARAN RAJAN: I've dealt with so many patients where sometimes you reach your barrier in terms of what you can do for some of their symptoms. But I've found that explaining it to them, drawing out diagrams of how stuff works, actually sometimes is enough for them to be like, okay, I understand this pain and I can deal with it now. It's that understanding.

SHAWN STEVENSON: Yeah. So whether it comes to gut health, whether this comes to nutrition, whether this comes to what's going on upstairs with our brain and cognitive function, you're teaching on all of these subjects in a enlightening and fun way. So, you know, I just give you a huge prop for that. I really do appreciate it, man.

DR. KARAN RAJAN: Thanks for having me and big fan and I, yeah. Here's to more conversations.

SHAWN STEVENSON: Boom. The one and only. Dr. Rajan. Thank you so much for tuning into this episode today. I hope that you got a lot of value out of this. If you did, you already know what to do. Share it with somebody that you care about. Sharing is caring. We've gotta spread the good news. All right. And of course, if you are listening or watching on Spotify, that's right, we are on Spotify Heavy. You got video episodes here in the studio with me on Spotify. You can leave a comment. Below this episode, share your voice. Share your heart. It really does mean a lot, no matter where you're listening. Apple Podcast, shout out to Apple Podcast. Apple Podcast was the first app to feature us as the number one health podcast in the United States. Huge love for Apple Podcasts, you can leave a review for the Model Health Show on Apple Podcasts as well, and share your voice there, or no matter where you're listening, share your heart, share the information, and apply, apply, apply. We've got some incredible masterclasses and worldclass guests coming your way very, very soon, so make sure to stay tuned. Take care, have an amazing day, and I'll talk with you soon.