

A sunburst graphic with numerous thin, light gray lines radiating from a central point behind the text.

Healthy Moms Podcast

BY **Wellness Mama**[®]
simple answers for healthier families

Episode 127: Using the Dental Diet to Reverse
Dental Problems with Dr. Steven Lin

Child: Welcome to my Mommy's podcast.

This episode is brought to you by My Green Mattress. If you've been reading Wellness Mama, you know that I have used and recommended natural and organic mattresses for years. And I've tried a lot of them. We spend a third to a half of our time in our beds, especially children. So this is one great place to optimize and reduce exposure to harmful chemicals. We've tried, like I said, several different mattresses over the years and I love all the ones that we've tried. They're all natural options. But I've been getting a lot of requests for a more budget friendly option that is good for kids. Which is why when our littlest needed a bigger mattress, we ordered one from My Green Mattress. They are GOT and GOLS certified, they are GREENGUARD certified and they're completely natural. They're also much less expensive than a lot of mattresses. So you can check them out and find out more at wellnessmama.com/go/green-mattress.

This episode is brought you to by Joovv red light therapy, which has become an integral part of my daily routine and here's why. Joovv has red lights with specific wave lengths of red light that increase ATP, which is Adenosine Triphosphate Production, in the body by supporting the mitochondria. Now since ATP is responsible for not just your energy that you feel, but pretty much everything that happens in your body, this is a big deal. This therapy is also known as photobiomodulation and it has well documented benefits for skin health, for energy levels, for recovery after injury or surgery, for improving thyroid health (which is what I'm using it for), and even as an anti-aging device because it increases collagen production and hair growth and reduces hair loss. So lots of cool benefits. You can check it out, the one that I use, at wellnessmama.com/go/joovv. You can also check out the show notes for more information.

Katie: Hello, and welcome to "The Healthy Moms Podcast." I'm Katie from wellnessmama.com. And I'm super excited about today's interview because this is a topic I have researched and loved for years. I'm here with Dr. Steven Lin who is a board registered dentist and TEDx speaker who's been featured all over the Internet. He was trained at USYD with a background in biomedical science, and he's a passionate whole health advocate, focusing on the link between nutrition and dental health.

His mission is to prevent dental disease instead of treating them. And he has a program that helps patients solve the cause of dental disease. It merges dental nutrition, breathing, airways, functional orthodontics, and sleep health. Today the oral-systemic link is clearer than ever, and it's helping the next generation of children avoid braces. Naturally, we're gonna delve into that a lot. And he also has an amazing new book called "The Dental Diet," which delves into ancestral medicine, the human microbiome, epigenetics, and gives you a blueprint for how to have healthy teeth for your whole life. So, Dr. Steven welcome and thank you for being here.

Steven: Hey, Katie, it's a pleasure. Thanks so much for having me.

Katie: Like I said, I'm super excited because I am the geek that loves...I love to research oral health. I had a couple cavities as a kid and decided I didn't wanna have them anymore. When I got into the health side of things, I really started researching it, and my mind was blown when I found that there actually could potentially be a choice here. And I had my own experiences with improving my dental health through my diet. So I can't wait to jump in with you because I know you have the research to back up the experience that I have. So let's start at the beginning. Why do you think we're seeing so many dental problems today across the board and especially like crooked teeth? I know that that was the thing that wasn't really a big deal when my grandparents were kids.

Steven: Yeah, exactly. And that was a big issue I kind of saw in my dental practice going through dental school. You know, you kind of trained this very mechanical trade. And so I was trained in biomedical science and kind of had a background in sports and nutrition. So I always thought about how lifestyle and, you know, how food affects our body. But when I started to practice to see patients and work with dental disease in the community, I found that our mouths are very, very sick.

And when I looked back on our conventional training, we don't have answers for this, and this includes even to the decay gum disease but also crooked teeth and wisdom teeth impactions. There's no answer for why kids can't grow 32 teeth, which a human is supposed to grow and has for our entire anthropological history. And wisdom teeth infections are the same thing. It's the same problem that our jaws aren't growing. So this kind of led me down this path of trying to find the answer for why this is happening.

And the real answer was food. And my original passion kind of...you know, where my instincts lie was with that food has destroyed our mouths. And unfortunately, we've missed this conversation, but we now have the science to back it all up. So I'm really excited to share this, you know, the journey that I've been on in terms of, you know, we've had this kind of amnesia in terms of what our teeth should be and what we should eat for healthy dental arches and smiles.

Katie: Yeah, I agree. And I know I've talked to... There's some great dentist I feel like they're just getting out of school who maybe are starting to be more open-minded thinking about this. But I had talked to several dentists several years ago who said that there's absolutely no link between nutrition and dental health other than maybe if you give your baby a bottle of juice, it might cause cavities. And that was, you know, sugar causes cavities. That's the extent of the link between dental health and nutrition. And I know like you have found the opposite to be true. So can we like start there, like what did you start finding in your research?

Steven: Exactly. In dental education, you're taught that sugar causes cavities. And we've known this for decades, right? And actually, the dental industry was well ahead of the medical industry in identifying how harmful sugar can be for the body. We didn't really identify how metabolically harmful sugar can be until around 10 years ago, a bit less. But we've known it causes cavities, but that was the extent of nutritional training in dental school.

And so the real key to how food shapes our dental arch and the immune system inside each of our teeth, every tooth has immune cells that make us immune to tooth decay. We're partially probably taught this in dental school. But it's all to do with calcium balance in the body, and that is managed by a specific set of nutrients called the fat-soluble vitamins. And these are the crucial vitamins that we've actually stripped out of our diet and not many people are aware of them, and health professionals aren't aware of what they do in the body either.

And there's actually an amazing story behind the fat-soluble vitamins in terms of there was a dentist in the '30s that went around the world looking at how traditional cultures and societies ate their foods and what happens when the modern diet comes in. His name was Weston A. Price, and the book was called "Nutrition and Physical Degeneration." Now, I found this book by accident. But what he showed was that traditional societies ate diet rich in fat-soluble vitamins, and there was three of them, vitamin A, vitamin D, and one he called Activator X. And Price actually died before he identified what activator X was. But 70 years later, in 2007, we found out that activator X is actually vitamin K2, which is a fat-soluble vitamin as well. And that was really important because that actually filled the picture in, vitamin A, vitamin D activate all the bone cells in

your body to absorb calcium.

The vitamin K2 actually activates the proteins that carries calcium into bones, so it helps our bones to grow themselves but also into teeth as well. And the other thing they do is it activates proteins that carry calcium out of our arteries. So it stops us from having heart attacks. And so studies have shown that if we give osteoporosis product women vitamin D and calcium supplements they actually increase their risk of heart attack and increase their bone density.

So there's this amazing link to what we eat and how our body manages calcium, yet we've misunderstood it. And this is a story we go through in dental diet, there's an amazing human story in it. But the real everyday 2018 picture now is that we need to eat so that our jaws grow and that our teeth are immune to decay. And we can do this today. In our children, in ourselves, we need to be able to heal and understand how nutrition shapes the dental arch.

Katie: Yeah, I also read "Nutrition and Physical Degeneration." And it was one of those early books that literally just blew my mind. I was amazed because it's not something you ever consider when you grew up in the normal paradigm. So I'd love to go a little bit deeper. You mentioned that the teeth are part of the immune system, and I know like when baby's teeth just as a mom, like they tend to sometimes get like a runny nose or like even a mild fever. I'm curious if you've seen any research, is this related to the immune component that's happening there or any ideas?

Steven: There's a big connection between, for instance, allergies and, for instance, mucus production in the nose and the child's dental health. The teeth themselves have immune cells so they're part of the osteoimmune system, so when inside your bones you have stem cells that are released and they take signals from the fat-soluble nutrients. And so some of those stem cells become what's called the odontoblast, which is inside the teeth, and they actually sit in the dental pulp and they send out immune factors that are activated by the vitamin K2.

So you've got these little kind of...they're like SWAT cells, kind of swatting down bad microbes. And they actually fix problems in the teeth if they go wrong. But so if kids are having, you know, immune problems, allergies, and other issues, it is a general problem with the immune system, which is related to this fat-soluble vitamin system. So when you fix a child's diet to eat foods rich in fat-soluble nutrients, their immune system settles as well and they become much more tolerant and they get less allergic reactions, you know, they get sick less and their teeth are healthier naturally. It's how our bodies are designed to eat.

Katie: That makes sense completely. So why then... So this seems like a really drastic thing and to like go backwards. So Weston Price, he found all these cultures that had really straight beautiful teeth and they didn't have signs of tooth decay, and they are living in these kind of like isolated populations from what I remember. But it's pretty drastic because, until like not that long ago, we were all living like that. So this means this change has happened in a pretty short amount of time as far as like throughout history. So it's a lack of fat-soluble vitamins. Are there other factors that come into play, and what do you see as the biggest reasons for the decline in fat-soluble vitamins?

Steven: Yeah, that's exactly what it what Price wrote about. He showed that, because when he went to each culture, into 14 cultures around the world and he showed that every point, you know, these people had been living for thousands of years with healthy dental arches, 32 teeth, no wisdom teeth impactions, straight teeth,

no decay. And he looked at this through the ancestral record and then he looked at where dental disease pops up, and it shows at the Industrial Revolution.

So in one generation, we can destroy our teeth, and that's purely when the modern diet intercepts. And so what Price did, he actually found a snapshot of this in the '30s. He went around where he found these cultures living as, you know, functioning human beings, and he lived amongst them watched what they ate. And so he really measured what I think was one of the fleeting snapshot of the traditional diet dying around the world before the modern diet basically swallowed the entire world.

So he showed that when we start to eat refined sugars, flour, vegetable oils, we not only strip out the fat-soluble vitamins, but we introduce harmful factors. And he couldn't actually explain all that. But now we've got the science to back up to show, well, when you eat these things, we actually destroy our microbiome. And so the oral microbiome connects to the gut microbiome. When you lose diversity in the oral microbiome, that's when dental disease starts to pop up, and that all happens around the Agricultural Revolution.

And hunter-gatherer populations had really diverse bacteria living in the mouth. And we've destroyed that, you know, through our scrubbing, through our mouthwashes, through our poor diet. And that's resulted in the lack of protective factors, probiotic species in the mouth. And this is what Price couldn't explain, but it's now all collaborated in this lovely scientific kind of collaboration in 2018 that Price didn't have...didn't at his disposal. So we've we put all these pieces together. Price made all these observations, took all these fantastic photographs, but he couldn't put the pieces together. But we've got it all today in terms of where the research has led us.

Katie: That's so fascinating. So I know a question people may be thinking is like this was a diet that people had years and years ago. Is it possible in a modern society, like are we too far gone? Have we changed our diets as a culture too much or are there things that you found that we can actually do to kind of counteract what's happening?

Steven: There are parts of what we do, you know, in our past. You know, and epigenetic studies show that, for instance, our grandparent's life will affect our own life. So there are factors that we are influenced by. But the message here is that our environment and what we put into our body is, you know, the most powerful factor here. Epigenetics shows that when we eat, we have the power to change our health outcome.

And so that's really what we're, you know, what the message is and that's actually what the research shows. So using vitamin D as an example. So, Price showed that people ate 10 to 20 times as much foods rich in vitamin D. We know vitamin D, for instance, you know, contacts thousands of genes all over the body, and so that's genes waiting, starving for vitamin D. And so when we don't turn these on, they send their genetic messages that shift out our phenotype output.

But we can reverse this by eating and getting more sunlight and eating foods rich in these nutrients. So what I see in patients is we get a very quick turnaround, especially in children. In adults when we have chronic disease, it sometimes takes a bit of a turnaround. But once we understand how influential, for instance, a dental arch is, food becomes very, very simple. In "The Dental Diet," I've put together a 40-day plan to get back to this eating in a modern day world because I live in the modern as well. I'm busy. You know, I have 10 minutes to cook a meal.

And if we understand the principles that Price put together and how we can use it today, you know, it is about getting back to eating traditionally in terms of getting some traditional cuts of meat like organ meats and meat on the bone and fermented foods and good quality source of dairy. So these are the foods that Price found that cultures ate. So there is a little bit of tweaking we need to do, but it's possible. We can do it as long as we understand the principles of how food shapes our teeth and dental health.

Katie: Got it. And if I'm hearing you correctly, for all the parents listening, that there's actually hope of avoiding braces potentially or even wisdom teeth removal that it's not just a genetic thing, is that what you're saying?

Steven: It's absolutely not a genetic thing. Our genes will determine how our teeth become crooked. So, different races will get certain types of crooked teeth. But the reason why crooked teeth occur... this was a big awakening moment for myself, is when you go and talk to any anthropologist, they laugh at you when you ask them about crooked teeth in human history. It doesn't happen ever and wisdom teeth impactions are the same. And so we actually have an orthodontic model now that can prevent braces. And we know that function and breathing actually defines the dental arch.

So it's a really exciting area of functional dentistry where we intercept early enough in a child's growth and development we can guide the dental growth naturally so that their jaw grows straight, they have teeth without ever having braces. And that's addressing the cause of the problem. And so just by getting a child, for instance, to breathe through their nose, to sit with their tongue against the palate, and posture their lips close, that will send the mechanical forces because remember that the jaw is a biomechanical joint just like any other joint.

So when you exercise it properly, it grows in the right way. And breathing and tongue function, you know, is a powerful epigenetic message that you send to your jaw. We can program a kid's jaw to grow naturally. So this is a really important message for mom. We have the orthodontic model there that is just budding where we can prevent braces. So to forget about waiting until your kid is 12 and extracting teeth that molly's over.

If you have that recommendation now, I would get two, three other consultations before extracting teeth and putting braces on because the crooked teeth are just the symptom. And underlying all this is the child's food. So if we get a child eating right, if we get them functioning right and breathing right, then their dental arch will develop naturally. And we can correct this as well in teens and adults. It's a very exciting field of preventative dentistry.

Katie: And if I'm understanding right, then also if you're just doing braces and just kind of moving the teeth around, then you're not actually addressing the palate problem, to begin with, and the arches at all. So could there still be further problems even beyond if someone had braces?

Steven: Katie, that's exactly right. So we've unfortunately walking into an epidemic of adults and kids that have breathing disorders. And so when your teeth don't develop straight, your jaws are malformed by definition. And that means that your airways are malformed, so the maxilla, the upper jaw where your teeth sit it into. When you have a higher palate, that is exactly impinging on where your nasal sinuses should be. So that's a volume where you should be breathing.

And so kids that can't breathe through their nose are forced to mouth breath then. And so what that does is it

starves them of nitric oxide, which is synthesized in the nasal passages. And so that needs to be delivered to the lungs in order for the child to deliver oxygen all around their body, especially to the brain when they sleep. And so what happens is that we are basically turning ourselves into a race that cannot breathe.

And so it's really concerning. We now have sleep apnea. It has become an epidemic in adults, but we have a whole spectrum of people with upper airway resistance syndrome, which is often characterized by cold hands and feet, digestive problems, poor sleep, anxiety, depression. And the reason is, is when you go to sleep, your airways have increased pressure and sending choking messages to the brain and you're not sleeping. You're going to deep REM sleep. And this is happening in kids as well. And so we're now prescribing 10% of ADHD medications to kids when actually they're not sleeping or breathing right. And if we just correct this, get their dental arch growing properly, then we can get to the problem before it all happens.

Katie: Yeah. And even from the little bit I've researched, and I'm not quite done with your book, but I've started reading it. From what I understand too, you mentioned the teeth in the mouth or a rich place where stem cells are. And I believe the periodontal ligament is as well. And so even for adults, I believe there's ways you can address the arches, is that right?

Steven: Absolutely. So we were taught in dental school that the maxilla, the palate at the top of the mouth, it fuses in like when you're in early adulthood. And what we were taught was that "Well, the growth is finished. It's impossible." But there are actually stem cells along the midline of your mouth. You can actually run your finger up and feel it. And so when you stimulate those stem cells, so that's by pressure, and so naturally that should be where your tongue sits. So the tongue should sit at the top of the mouth and exert pressure on the maxilla, and that's an expanding pressure.

But what we can do is there are orthodontic devices that can actually grow the maxilla outward and forward and correct models in adults. And I've seen brain scans in adults that have done six months of expansion and their whole face remodels, their eyes remodel because the maxilla has changed in response. The mandible and the angles of the jaw remodel, but what's most amazing is that the sphenoid bone, which is the base of the brain, the bone sitting right under your brain remodels as well. So we can change a whole adult's craniofacial system just by expanding their palate. This is how crucial, you know, the message that our teeth send us. But the teeth is just a symptom. There's an entire problem that needs to be addressed that begins with function and food.

Katie: That's so fascinating. So to take it back to the very beginning, most of the people listening are moms. So how can we know as moms like in the early childhood if our kids are having some of these problems or if there's gonna be a risk for braces or wisdom teeth problems? Because I know many people in my own life who have sleep apnea as adults. And obviously, I don't want my kids to get to that point. So how can we spot it early?

Steven: Exactly. And this is a really important message, is that moms can spot how their child's dental development is going right from birth. And so there's five quick steps that they can take. And I go into more detail on this on my website. So if they wanna check that out, I can give details for that after. But the first thing to check is the tongue, and so the tongue should be sitting at the top of the palate. But many kids today have oral restrictions or tongue ties, and that's actually a flap of skin under the tongue. And so there's many people that go undetected.

And so what that can do is it can stop the child from breastfeeding properly. It can stop them from posturing their tongue to the roof of the mouth. And so a simple check on yourself is to put your tongue to the spot behind your front teeth, the top of your mouth and then open your jaw as wide as you can and see if you can still get your tongue to that spot. If you can't, you've likely got an oral restriction or a tongue tie. Now you can test your child simply by getting them to lift their tongue to the roof of the mouth, seeing if you can see a flap of skin but also running your finger under the tongue. There should be no catch there. The tongue should be completely free of any connection or fraenum to the bottom of the mouth. And so that's the first step. And so you can actually get your child's tongue tie released. And that will help them to swallow properly, to function, and actually speak properly moving forward. And so that's important for oral function.

Next is their palate. So kids should have a nice flat u-shaped palate. Now many kids today have a V-shaped high palate. If you look at your kid's palate, which is the roof of their mouth, so get them to open their mouth and tip your head back slightly. We're doing kind a functional dental exam in the moment. If their palate looks V-shaped, so if there's a point behind their front teeth and it looks very narrow and it's high and inflamed, that means that their maxillary breadth or their upper jaw growth isn't quite where it should be and you should already be thinking about breathing problems because that high palate is impinging on their nasal sinuses.

So if you see a high palate, always think and check breathing. So that takes us to the next step, which is their nose. Does your child breathe through their nose comfortably? Get them to sit down for 20 seconds. Can they breathe just through their nose with their lips closed comfortably? Do they look labored? Do their shoulders move? How do they stand when they're just breathing and watching television? Does their mouth hang open when they're watching television? These are all signs whether your child habitually breathes through their nose.

That's where we need them to be. We need to have them breathing with their lips closed, through their nose. And so actually cleaning your child's nose with potentially a saline rinse or even a warm cloth would be more important than cleaning their teeth because if they breathe through their nose, their upper jaw is gonna develop. And the fourth step is a throat check. So you can get your child to open up wide and say, "Ah." And have a look at their tonsils. Can you see the throat?

You should be able to see the back of the throat. You should be able to see a lot of space above the tongue and basically right back to the throat. If you see large tonsils, inflamed tonsils, and if the tongue impinges your view, it's called the Mallampati check. You can Google that. There's an image. And so if the tongue impedes their view it means that their airways are impinged. And so that's a sign that you need to have your child checked for ear, nose, and throat impediments. And they might need their adenoids and tonsils checked.

The last is their sleep and breathing. So when they go to sleep, does the child sleep on their stomach? Do they sleep with their mouth open? Do they snore? No child should snore. And so if a child is snoring, that means they're struggling for air. And so what you need to do is watch your child sleep. If they wet the bed or they have restless legs, that's all a sign of neurological distress because they're not breathing right. So they need to get to a nice slow rhythm of breathing through their nose and with closed lips with tongue to the roof of the mouth all through the day. And they'll do that at night as well.

And so you can get dental professionals to assess and help you with this, but parents need to be able to identify their signs early and not wait until it's too late and say, "Well, my kid's teeth are crooked," or having a dentist tell, "Your kid's teeth are crooked and you need teeth extracted and braces." That's not addressing the

cause. We need to get these breathing and functional issues fixed first.

Katie: Yeah, I absolutely agree and I'm looking back on my own childhood. And at five years old, I had my tonsils and adenoids removed and looking back and thinking like, "If only I knew now," you know, could tell myself back then. But I also am curious if you have any insight. I've heard from a lot of moms who are breastfeeding their children and their dentist is telling them they need to stop breastfeeding because the baby is getting tooth decay or developmental problems from breastfeeding. And I have seen a lot of moms quit breastfeeding because of that. So I'm curious if you came across this in your research and is breastfeeding at night really causing tooth decay in newborns?

Steven: Yeah, this is a big problem because there's a big misunderstanding in the dental industry as to why that's happening. Now, there can be a cause of nursing decay from nighttime nursing, but it's not the root cause. The root cause is that breast milk is formulated by the mother's body, so there are a couple of factors here. So if a mother is vitamin D deficient, if they have an imbalanced microbiome, the breast milk has its own microbiome, so what the mother's body will do will transfer their own gut microbes to their breast milk.

So what we really need to be telling mothers here is that their own gut health, their own vitamin D level, their own diet is going to influence their breast milk. And bottled...sorry, nighttime decay from breastfeeding actually usually because if the child isn't swallowing properly. So if a child has decay, especially on the front teeth around the lips, that's usually because milk is pooling around the, behind the lips up in that sulcus and not being swallowed by the child. And so there's a number of issues here functional.

So I would always say go and see a lactation consultant. Go and have your vitamin D levels checked. Have your gut checked because breastfeeding is a crucial, crucial developmental period for a child. Nighttime breastfeeding does not cause decay. There are other issues that are happening, and so there's a big functional component here that we need to consider not simply to say, "Don't breastfeed at night." So it's a very simplistic way. It's like just saying, "You know, brush your teeth to prevent decay," Well, no, there's a lot more to the picture than simply scrubbing plaque off your teeth.

Katie: Yeah, and I love it. Like I said, I'm reading your book and it's so fascinating, and that was actually where I was hoping to go next because I've also heard from a lot of moms who are super like diligent with making sure their kids brush their teeth and floss and their kids are still having oral health problems. And so I'm curious if you could delve into that, like is it truly just that we're not brushing and flossing well enough when the kids are seeing these problems so early?

Steven: Yeah, exactly. And this is a problem I saw in dental practice all the time, is that kids, you know, don't...it's very hard to make the child brush properly. Let's be honest, right? I've seen very few kids and parents they can actually get in there and brush a child's teeth probably. It's difficult because kids don't like it. You know, it's hard to get them to do it themselves, it's hard to monitor. But brushing is a very superficial solution to a deeper problem. So the way I find I like to think of it is, you know, do you take your car with an engine problem to the car wash? No, you don't. You wanna take it to the mechanics to look under the bonnet.

And so what I found in dental practice is that kids that brush or don't brush or parents that brush well it doesn't always relate to whether the child gets decay or not. And it comes back to the fact that it depends on what the kid is eating. And so there's two big factors here. Inside your child's teeth are these immune cells that are hungry for vitamin D. So the first thing I would be checking is your child's vitamin D levels. Are they

getting some? Are you eating foods rich in fat-soluble vitamins like liver, eggs, cheese, grass-raised butter, anything that will provide...fatty fish. And what parents should do is I would recommend monitoring their vitamin D levels because in kids that have decay, I find chronic low vitamin D. And it's a good marker to see whether your child has those defense systems up. The other side is that plaque and bacteria are all part of the microbiome. You know, we've had plaque and we called biofilm now in the scientific community, you know, for thousands of millions of years in our mouth and we've not had decay.

So the issue isn't scrubbing just plaque off. It's actually having a healthy oral microbiome. And so introducing the probiotic species through fermented foods and lots of fiber and prebiotic fibers are the defensive factors in the mouth that will actually protect the tooth enamel. And that's what protects a child from tooth decay, so the protective bacteria, the immune system inside the tooth, all of a sudden you've got a biological system that is happy and doesn't get dental disease all. So diet and their function and lifestyle is far more important than just brushing their teeth. And so I used to try and get moms, you know, to brush their kid's teeth, and it's difficult. But the real message here is that you can prevent dental disease in your children's mouth through food nutrition and good function.

Katie: Yeah, I definitely have seen that in our experience because I read "Nutrition and Visible Degeneration" when my oldest child was really young. And so I've always had a focus of fat-soluble vitamins with them and none of our kids have ever had a cavity or even anything that like remotely like a cavity. So I think there's a huge connection because, with six of them, that's a pretty good sample size. So the fact that we've never had a cavity, which...and I wanna go deeper on this. So, you've mentioned like organ meats and broth. Let's go a little deeper on what foods and nutrients are most important for children to eat for healthy teeth.

Steven: Yes. The three vitamins are vitamin A, vitamin D, and vitamin K2. And what Price showed was that cultures would treasure foods rich in these nutrients. And the hard thing about these foods is that they actually come from a very small set of foods in nature. And this is what "Nutrition and Physical Degeneration" is about, is that how, you know, all the different societies kind of made sure that their people eat these foods. So foods that are rich in these things are certain cuts of animal food so, for instance, organ meats.

So I would recommend that parents try to introduce liver in some way even if it's in frozen form, in cubes, or if it's in...there's a recipe in "The Dental Diet" where I have organ meat meatballs where you mix it with mince. So you have a few slices of grass-raised liver. You mix it with meatball put in the bowl and sauce. Kids will never notice. They're getting a good dose of fat-soluble vitamins in. Making sure they're getting plenty of eggs, plenty of butter, full-fat foods. What we have to remember is that these fat-soluble nutrients are delivered and packaged like an amazing postage system called their blood cholesterol, and it requires fat to digest.

And so if we don't eat these full-fat foods and these nourishing fats like butter, ghee, coconut oil, animal fats, lard talo, we don't absorb these nutrients. So reintroducing your children to these foods is so crucial and that's what creates healthy bones and teeth and dental arches when they have these nourishing whole fat foods. And this is what Price really shows that humans have always eaten, you know, these treasured foods, and also where they come from as well, so where, for instance...how a cow is raised, what it's fed, whether it's fed on grass or grain.

So, grass-fed cow that is in the sun will have the vitamins A, D, and K2. It's dairy rule as well and so understanding the sources. Vitamin K2, for instance, comes from two sources. It comes from animal sources, in butter, eggs, and certain organ meats, but it also comes from ferments, like fermented sauerkraut, Japanese

Nattō, and other bacterial sources, which is a slightly different type but introducing those also making sure that your kids kind of develop that palate helps as well.

And we go through this in "The Dental Diet," you know, to help kind of get a family eating this way because it's not a way that we've learned to eat growing up. It's not a way that I ate growing up. As you said, Katie, you know, our teeth suffered as a result. My sister had decay and she needed braces. I was lucky. I think I was growing up on more pre low-fat diet. But basically, what we've done in terms of a low-fat diet is we've destroyed these fat-soluble nutrients and how the body absorbs them.

Katie: Yeah, and I think that's so encouraging because I remember when I first read some of the research on it and especially about the arches even Dr. Price at that point seemed to think like you can improve your oral health. You can re-mineralize teeth, but your arch is kind of determined when you're in utero and you're kind of set in stone. And I love that what you're saying in "The Dental Diet," which I highly, highly recommend is that that's not actually the case. And that there is a way now to sort of like epigenetically change your dental arch even after it's developed or even when you're an adult. So I love that you have found this research because I think it's really hopeful for a lot of people.

Steven: Yeah. I've enjoyed the journey so much because actually there's been a lot of great dental professionals doing this work and there's a lot of help out there for people as well. So I get a lot of inquiries from parents about, you know, "Where can I find a dentist that does this stuff?" There's a lot of different ways that you can find dentists that are working in this way looking at the mouth and teeth and dental arch as a whole system, not just trying to fix teeth and put crowns on them and put dental fillings in.

So in your area if you're struggling to find a professional, I would recommend finding someone, for instance, a dentist that works in sleep or airways, myofunctional therapy, myofascial, orofacial myology, ask your dentist if they work with an EMT, with a sleep physician. All of these areas are coming together in a multidisciplinary way where we make sure that a child is developing and not simply fixing the crooked teeth at the end. And underlying all is nutrition. And I really think that the most important dental check-up that a child will get is the three that they get a day at home with their parents when they eat their food when they sit and breathe and watching TV. Parents have a profound, profound ability to influence their child's dental growth, and we need to get this message out there because our kid's jaws need to develop. I don't think we're heading in the right direction if our craniofacial and skeletal systems aren't growing right. And so I think it's a problem that we need to address quite drastically.

Katie: Yeah. I love that and I'm right there with you. I've for years like I've been on the bandwagon of let's avoid vegetable oils and sugars and refined grains. And I know that your research backs that as well. And we did this actually in our family, so my husband was diagnosed with moderate sleep apnea. And ironically, in the process of researching for him, I came across a dentist who specialized in like this kind of DNA device that epigenetically helps widen the archway in adults and they also do this in children. And since he and I both had braces, so we knew like there's already probably some deficiencies that I had even when I was pregnant and that they were already gonna have potentially working against them. That's something we addressed early. And it's been fascinating to see like because they all have these wide arches, and I'm now kind of like looking at other kids when I see them and just realizing it is really widespread and it's really, really sad to see and having been through really severe braces myself. Certainly, that was something I was happy to save my kids from having.

This episode is brought to you by My Green Mattress. If you've been reading Wellness Mama, you know that I have used and recommended natural and organic mattresses for years. And I've tried a lot of them. We spend a third to a half of our time in our beds, especially children. So this is one great place to optimize and reduce exposure to harmful chemicals. We've tried, like I said, several different mattresses over the years and I love all the ones that we've tried. They're all natural options. But I've been getting a lot of requests for a more budget friendly option that is good for kids. Which is why when our littlest needed a bigger mattress, we ordered one from My Green Mattress. They are GOT and GOLS certified, they are GREENGUARD certified and they're completely natural. They're also much less expensive than a lot of mattresses. So you can check them out and find out more at wellnessmama.com/go/green-mattress.

This episode is brought you to by Joovv red light therapy, which has become an integral part of my daily routine and here's why. Joovv has red lights with specific wave lengths of red light that increase ATP, which is Adenosine Triphosphate Production, in the body by supporting the mitochondria. Now since ATP is responsible for not just your energy that you feel, but pretty much everything that happens in your body, this is a big deal. This therapy is also known as photobiomodulation and it has well documented benefits for skin health, for energy levels, for recovery after injury or surgery, for improving thyroid health (which is what I'm using it for), and even as an anti-aging device because it increases collagen production and hair growth and reduces hair loss. So lots of cool benefits. You can check it out, the one that I use, at wellnessmama.com/go/joovv. You can also check out the show notes for more information.

Katie: How quickly are you able to see results with children? Because I know a lot of parents may be really intrigued right now and wanting to know how they can help their child immediately start having better dental health. And so how quickly are you typically able to see results when someone makes these changes?

Steven: So, for instance, kids the very typical presentation we've seen in the dental office is kids walking in with their shoulders slumped forward. They have a very thin narrow face, bags under their eyes, mouth open. Their mom will say, "They don't sleep well. They don't behave well at school. "You know, that they generally...they're tired all the time. They have to sleep in the afternoon. And so that's a very, very common, and there's a picture in the book actually that shows this kind of... It's a facial development problem.

They'll have a high palate. They'll have crooked upper teeth. Their tongue will be sitting over their lower teeth and their lower teeth will be slightly crooked as well. And so in kids, you know, between three and seven, we can actually intervene very quickly in this. And we can actually get them on growth pattern. If we can get the function before five, you know, they may never even need intervention. We will actually see, for instance, if we fix their diet, get their vitamin D levels up and get them breathing right, all their allergies, all their tonsils will actually start to settle down. And they'll start to break even before we start treating before we start intervening.

And then for kids that are a little bit older, so between 5, 7, and 10. So that's when they're going through their mixed dentition stages when there's been a certain amount of development, but they're still in growth phases so there's lots that we can do. We can actually do slight expansion, continue on with the diet and the functional model, and they'll actually respond. And before they're 9 and 10, all of their premolars are erupting in naturally. So we can actually get to it before it becomes a problem.

And traditionally, with braces, that would be coming in when they're 11 and 12 and having those extractions if they needed it and having the braces, but we fix that before it goes in. For teenagers, it will require some expansion, so it does take a bit of time. And for adults, it will take time as well between six months and two years depending on the severity of the malocclusion and the functional problems. But it really is a matter of just addressing the root causes. And so getting that breathing right, getting the food and fat-soluble vitamins balanced and getting their oral posture right.

And the results are remarkable. And the great thing too is that it's such a settling feeling, there's so much parasympathetic innervation in the palate. And so a childhood is just gonna be so much more at rest once their jaw and teeth are set the way they should be and once they're on a trajectory towards growing. And so they're gonna behave different. They're gonna be a different person. You know, we've had people work with parents that have come in and said, "This is a different child." And it's because they're sleeping better, it's because their brain is at ease, and it's because they're growing the way they should be instead of being trapped in this colloidal system that is, you know, basically starving.

Katie: Yeah. I think it's such an important message. And I contrast like my own childhood up till about age eight versus our third child. So he was born via C-section, so I knew ahead of time and we did gaps diet with him early on that he was gonna have maybe more microbiome challenges than the other kids. But he was the one that ended up with the enlarged tonsils. When we started doing these treatments with the kids, he had the enlarged tonsils. He did snore a little bit when he slept. He didn't sleep that well.

And that was a part I noticed most drastically was he started sleeping really, really well and his focus went through the roof and his tonsils shrunk, which having had my tonsils out and having had teeth removed and those being pretty traumatic experiences in my childhood, I was so, so grateful that we were able to avoid that with him and with the other kids. So I think your message is so, so important.

And I know another question a little bit off-topic, but we'll loop it back in that people may wanna know your opinion on is oil pulling because there was a study that came out I guess a couple years ago now saying that like flossing alone doesn't prevent cavities. And then some people are recommending oil pulling. I've done it just because I feel like it helps my mouth. My teeth feel very smooth and healthy when I do it. But I'd love to hear if you have come across any research on it or have an opinion one way or the other.

Steven: Yeah. Oil pulling is a funny one. It actually dates back to Ayurvedic traditions. I mean, the basic principles of oil pulling are very sound in that you're introducing a fat to a microbial environment that becomes diseased when we feed too many simple carbohydrates into it. So in an environment where we are flooding our mouths with simple carbohydrates, whether it's white flour or refined sugars, oil pulling makes a lot of sense in that it may balance out the bacterial problems that cause things like tooth decay and gum disease.

In terms of research, we don't have the research there that shows, you know, what exactly it does in terms of oral health outcomes. There are a few small studies and low-quality evidence that you know, shows that it may have benefits. It does have a traditional backing. So that's something that I like to kind of look at is that you know, is there a history of this. You know, traditional medicine always...like to me I think is really coming forward in terms of what traditional doctors used to recommend to their patients. But we don't have the science yet.

You know, should we do it instead of brushing? Maybe or not. I think it's a great adjunctive. I always tell my patients if you like it do it. But the main message is make sure you eat a lot of fat with your meals. The most valuable thing you can do for your teeth and mouth is to eat more fat and you know, that's something that I really hope that people can come more comfortable with and yet change their own dental health because of.

Katie: Yeah. No, I think that's a great point. For me, it's a great alternative to like mouthwash, which has some pretty harsh stuff in it. And so I just find it's a daily routine for me, but that's a great point. And hopefully, we will see some more research on it in the future. What about cavities? Because we haven't really delved into cavities yet. I can say from my experience, I was able to reverse a couple of small cavities, but I'm curious if there's actually research that backs this up and what you've come across there.

Steven: So in dental school, we're taught that the dentin, so the inner layer of the tooth above the dental pulp under the tooth enamel, there's this diagram in the book that describes this. It actually has a reparative capability. So it's called reparative dentin. And this is this immune system is that teeth do have the ability to heal themselves. Tooth enamel cannot be healed because it's acellular, it doesn't have live cells in it. So if a child loses tooth enamel, you can't grow that back, but you can repair the inner layer, the dentin underneath.

And so what a lot of parents are kind of looking at now is, you know, whether we need fillings in deciduous teeth. That's a case-by-case decision, but there are reparative capabilities in children and adult teeth. And so if a child has a small cavity, then it may be wiser to go down the road of changing their diet, removing the sugars, flowers, and vegetable oils, getting their vitamin D levels up, getting that K2 in there, you know, swishing with an emu oil or a coconut oil and taking away, you know, the mouthwashes and toothpaste. Then we might create the environment that allows reparative dentin to form. The body can do it, and kids will respond very quickly. It is possible.

In certain cases, it may be more preferable to get a dental restoration because it's going to seal off certain part of the tooth that may get re-infected. But for the most part, if you balance those factors, the oral microbiome, if you get that immune system inside that child's tooth working, the tooth will heal itself and adjust. And so parents should, you know, really be, you know, don't lose so much hope if you do see your child has a hole, especially in deciduous teeth because, you know, there is hoping that they are going to come through. You can manage it potentially without getting a dental filling, but a child may need a dental filling moving forward pending on the diagnosis. And if it's infected and if there's swelling around the gums, I would definitely get that checked out. But there's definitely capability to heal teeth.

Katie: So cool and super fascinating. And I guess the sister question would be what about gum disease? Because that's apparently on the rise in children as well. And I would guess that the answer is gonna definitely include nutrition for sure because that seems to be the key to all of it. But are there any other things people can do to help improve gum disease?

Steven: Yeah, exactly. And so gum disease really I think is... So when your gums bleed, you know, when you see the first signs of gum disease, which are kind of swollen pocketing around the teeth. It's a sign that your immune system isn't happy. And so I think bleeding gums are the first sign of leaky gut. And so you mentioned you went to a gut protocol with your child who had a cesarean birth, and so that was a very smart thing to do. If people are showing progressive gum disease, I would very much go down the road, is they need to get gut checked out because their immune system and their microbiome isn't in a good relationship.

And so I always go down the road of checking food intolerances, making sure that will remove your harmful foods, getting lots of renourishing factors in such as bone broths and collagen and lots of fat-soluble vitamins. But so if you're thinking along those lines and...so a gap style, especially for people with, you know, with severe periodontitis will, you know, hopefully, start to heal that immune system that will help the body to begin to heal the gums instead of eating it away. And so one of the biggest correlations to disease in the body between gums is autoimmunity.

And so this is all a gut problem as well. It's basically the body eating away at your gum. So it's like an autoimmune condition. And it's crazy that we haven't classified it that way before. So, basically, the three factors you should look at are vitamin D, your sleep because the microbiome and vitamin D levels are closely connected to sleep apnea, so there's likely a sleep problem as well and gut problems. So if you address those three factors, they will usually underlie what is causing the gum disease in the first place. And then you can go down the line of if you need periodontal therapy, we may be able to reverse that or at least stop the progression of pocketing.

Katie: I could literally talk to you about this all day, I think. But I wanna make sure I respect your time. So obviously, I would recommend and I'll have links to all of this in the show notes on your book. And you have a course as well that's kind of an immersion into all of this. But where can people find you online and where would you recommend that they start if they're kind of new to this concept but are definitely struggling with oral health problems?

Steven: Yes. So they can find me on my website drstevenlin.com, so www.drstevenlin.com or on social media on Facebook and Instagram @drstevenlin. So, I've got a lot of articles on there, over 150 on functional oral health topics. I've got a program on there called "The Healthy Mouth Healthy Body Challenge" where parents can go through all these facts, go through seven modules and alongside "The Dental Diet," which is available now and go through all of the factors that are going to affect their child and their own and the whole family's dental health.

And so there's ways that we can understand this from home. And so all of this information, including, you know, we go through this whole journey in "The Dental Diet," everything we talked about, Katie. And it's so great that you heard about Weston Price. I love that. But I'm really excited to share this information. And if anyone, you know, wants to ask a question, then please reach out to me on my website or social media pages.

Katie: Yeah, it's awesome. I think you are putting all these puzzle pieces together in such a great way. And like I said, I'm reading the book and I'm almost done, and it's amazing so far. I highly recommend it. But I feel like it would be hard for most people to jump into reading "Nutrition and Physical Degeneration," but you make it very doable and very understandable and you are a great teacher in that way. So all the links you mentioned... You have some great blog posts, I'm gonna link to a few of those in the show notes as well, wellnessmama.fm for anyone who wants to find that. But I thank you so much for your time and being here. This is one of my favorite things to research, and I feel like you've put all the pieces together so perfectly. So, thank you so much.

Steven: Katie, it's such a pleasure. And thank you for all the great work you've done, it's such an important job to help moms, you know, really realize how they can influence the kid's health. Thank you very much.

Katie: Absolutely. Thank you for your work. And thank you to all of you for listening, and I will see you next time on "The Healthy Moms Podcast."

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