Ruth Adewuya, MD (host):

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Ruth Adewuya, MD (host):

This episode is part of our Hot Topics Mini-series, and is supported in part by an unrestricted educational grant from GlaxoSmithKline. Christopher Gardner holds a PhD in nutrition science and is a Professor of Medicine at Stanford. For over 25 years, his research has examined what to eat and avoid for optimal health. This includes more than 20 nutrition intervention trials conducted with over 2000 participants. He's also actively involved with the American Heart Association, American Diabetes Association, and Menus of Change Collaborative involving scientists, business leaders, and chefs focusing on unapologetically delicious, healthy food. Dr. Gardner, thanks for chatting with me today.

Christopher Gardner, PhD (guest speaker):

It's a pleasure to be here, Ruth.

Ruth Adewuya, MD (host):

Let's begin with some background on your interest in nutrition. I know that you started your academic career as a philosophy major. How did your interest develop from philosophy to nutrition?

Christopher Gardner, PhD (guest speaker):

I actually like sharing this story with a lot of my advisees at Stanford because this shows how many different times in my career I pivoted and that it's okay to do that. So, when I finished college, I really wasn't sure what I wanted to do. I tried a Bohemian lifestyle. I lived in Colorado and tried to learn how to ski, in Santa Barbara and I tried to learn how to surf, and I did a bunch of projects. Along the way, I met a girl and lived with this girl and it was looking really good and left to move in with her in California, in Southern Cal, and she dumped me. She was a vegetarian, and I thought, "Oh, maybe she'll take me back if I'm a vegetarian because I'm not," and she still didn't take me back. I liked being a vegetarian. I kept being a vegetarian.

Christopher Gardner, PhD (guest speaker):

As I was going and living in these different places, I found one of the easiest ways to get a job was to be a waiter or a restaurant manager. So I worked in a lot of restaurants, and after quite a few of these adventures in thinking I needed to grow up and have a real job, I thought, I guess I'm going to pick having a restaurant. And I guess it's going to be a vegetarian restaurant. I think somebody's going to make fun of my amino acids. So, I better be ready for a response about where do you get your protein?

Christopher Gardner, PhD (guest speaker):

I think I'll show up at Berkeley or Davis and see if I can get into a masters program, and they kind of laughed at me. And they said the only science course you ever took was Psych 101, and I said, "Yeah, that's how I got out of my gen ed requirement for science." They said, "You have to have regular chem, organic chem, biochem, biology, et cetera." And I said, "Ah, I'm not scared. I'll do it." And I went back. I took all those courses, Ruth, and as an older student, I actually got much better grades than I ever did at

Colgate University for Philosophy. I said, "Now can I apply for the master's program?" And they said, "Why don't you just get a PhD?" And I thought, well, I don't need a PhD to open a restaurant, but oh, I remember how your life is so full of potential when you're in school. So, okay, go ahead, sign me up for the PhD.

Christopher Gardner, PhD (guest speaker):

I actually thought I did a pretty untestable hypothesis. I was pretty tired of it by the time I was done at Berkeley. It was a fun project, but it wasn't very scientific to be perfectly honest. But I was a really good teaching assistant. I got rave reviews for being a teaching assistant, and so I got a PhD. I was applying for everything, and the last one I found was a seminar at Stanford with the Stanford Prevention Research Center. And somebody noticed me in the audience and said, "Why are you here?" And I said, "I'm desperately looking for a job, just got a PhD at Berkeley." And they said, "We have a postdoctoral fellowship," and they gave me the fellowship.

Christopher Gardner, PhD (guest speaker):

I signed up, and I had always been interested in food, thinking back to the restaurant. This group was about all kinds of challenges of making lifestyle behavior changes, so suddenly I was in this great environment. I stuck around for a while, and they had me doing cardiovascular epidemiology which means I start to look at big data sets, whoever eats the most of this and the least of that, who lives or dies. I started doing that. That was pretty fun. My mentors started giving me little bits of pilot money, and then I got more. Then I got NIH grants, and I started studying soy and garlic. Then I got a bunch of money to do weight loss diets with popular diets, and suddenly, I was a nutrition interventionist even though I really thought I was just going to open a vegetarian restaurant.

Ruth Adewuya, MD (host):

That is such an incredible story. Did you ever open that restaurant?

Christopher Gardner, PhD (guest speaker):

I didn't, but I got to tell you, it made me feel a little cocky like when my grants were getting rejected and my papers were getting rejected. I thought, if they kick me out of here, I was going to go back and start my restaurant. I'm not even supposed to be here.

Ruth Adewuya, MD (host):

That's a solid backup plan, and I really enjoyed listening to how you got here and just the fact that the journey doesn't have to be straightforward and there are many opportunities to pivot and to get to the destination that you're meant to. Such a powerful story. Thanks for sharing that.

Ruth Adewuya, MD (host):

So, let's start talking about some key concepts around nutrition, and I'll start with the internet. Sometimes what we find on the internet can be confusing. The internet abounds with advice on how you should lose weight and on diet, and it can be very challenging to determine credible information. Especially for those with low health literacy, but I think really for everyone. Given the relevance of your research to the health of Americans in the general public, can you synthesize for us some of the findings from your years of research on this topic?

Christopher Gardner, PhD (guest speaker):

Yeah. I think if you go to the literature, you will find some studies say low fat is better. Some studies say low carb is better, and as I was looking deeply into them, it looked like people had a favorite. And so, it's not that hard to set up diet A to be great and diet B to be not so good if you really like A and have A win, and vice versa, set up B to be great and A to be not so good and have B win. And it makes it look like the field is controversial.

Christopher Gardner, PhD (guest speaker):

Two of my biggest and most successful studies that were dealing with weight loss, a thousand different people signed up for two studies that I did, and in my world of randomized trials, that's a lot of people to do a nutrition study. So the first one I thought, I'm really tired of this low fat, low carb argument. There's all these popular books out there. So there's an Atkins book that's really low carb, and there's an Ornish book that's really low fat, and there's a zone that's kind of in the middle, and then there's a health professionals approach which is in the middle of all that.

Christopher Gardner, PhD (guest speaker):

And at one point I got NIH funding. I got 300 overweight and obese women to be randomized to one of those diets for a whole year, and at the end, the average differences were very modest. But one of my colleagues had encouraged me to present my data as what I call a waterfall plot, and the waterfall plot shows every single person as a bar on a graph, not just an average and a variability. When I put the four diet groups side-by-side, what was evident was in all four diet groups somebody lost 50 pounds, and in all four diet groups somebody gained 10. Those weren't outliers. If you looked at the way this was graphed it was everything in between. It was just stunning how it looks like some people got assigned the right one, and some people got assigned the wrong one.

Christopher Gardner, PhD (guest speaker):

And so we followed that up with another NIH study. This time it was 600 people with men and women. This time only two diets, low carb and low fat. And instead of reading a popular book, we wanted people to do the best low carb they could and the best low fat. Our first study looked into things that might predispose you to be better on one diet than the other. One was a genetic predisposition, and one was a metabolic predisposition which I'll just describe briefly as people being more insulin resistant or pre-diabetic. So we actually were completely agnostic to who would win the low fat, low carb contest. The whole hypothesis was if we give people a really good low fat, or really good low carb, there will be predisposing factors that help us understand this huge variability that we already see, so if we match them to their genotype and we match them to their metabolism, we'll see it.

Christopher Gardner, PhD (guest speaker):

It actually didn't work. The main part of this study worked. We got 600 people to enroll in a study. Collectively they lost more than 6,000 pounds.

Ruth Adewuya, MD (host):

Wow.

Christopher Gardner, PhD (guest speaker):

Once again, as we'd seen before, some people lost 30, 40, 50, 60 pounds. Some people gained five and 10 and everything in the middle, but the two predisposing factors, the genotype thing, didn't work. The insulin resistance thing didn't work, and we looked at these past papers that had shown some of these things, scratching our head. So Ruth, where that has led me is there isn't one diet for everyone. You can exceed on different kinds of diets. If you choose overall healthy foods, you're probably going to do pretty well. Most people, on average, lost weight on either diet.

Christopher Gardner, PhD (guest speaker):

But I think it actually allows people some room for variability for something that's more culturally appropriate, something that's more taste appropriate, something that's more financially accessible to you, and so we've now been looking for some other factors that might predispose. I actually think satiety was a big part of this study that we've never taken all that seriously. In a lot of weight loss studies, let me describe that people often say, "Okay, your plan is to eat low carb or low fat and to cut back on 500 calories a day. We're giving you a prescribed calorie restriction." And your first reaction should be, "Crap. That sounds awful."

Ruth Adewuya, MD (host):

Yes.

Christopher Gardner, PhD (guest speaker):

That just sounds hungry. "How many days do I have to do this?" "Oh, for the whole year you're supposed to do this." "Oh my God. I don't want to be hungry for a year." So when we started our study we said, we know that doesn't work because when you try to cut back a prescribed amount everybody's stoic and can do it for a while until you can't and you're tired of it. And then when they go back, the weight comes back on. So, what we'd like you to do is get as low in carb or fat as you can, but we don't ever want you to feel hungry. So, if you're still hungry, you're going to have to add some food back, and I hope it's low fat or low carb. But if it's not, if you just can't maintain that, go ahead and add a little carb or a little fat back. So it's the lowest carb or fat you can be, but you're satiated. And so what that's kind of left me with is I think different people get satiated on different things.

Christopher Gardner, PhD (guest speaker):

My advice to clinicians and their patients is that the foundation of the diet has to be good. We never found in personalized nutrition that somebody should be eating jelly beans or you should be eating Dolly Madison cupcakes. Like you are the one genetically proposed to scones. No, we never found that, so if everybody eats right-

Ruth Adewuya, MD (host):

Yeah.

Christopher Gardner, PhD (guest speaker):

... there actually is some wiggle room to sort of biohack maybe your satiety-

Ruth Adewuya, MD (host):

Yeah.

Christopher Gardner, PhD (guest speaker):

... or personalize it for your culture. So as long as the foundation is good, there's a lot of room to make it personalized for you. I wish I had a better answer than that, but that's the answer that I've come to after doing these studies.

Ruth Adewuya, MD (host):

I'd like to do some quick myth busting with you on some of the more common nutrition myths that I found. And so, my first myth busting question is, is a calorie always a calorie?

Christopher Gardner, PhD (guest speaker):

On the one hand, second law of thermodynamics, yes. If you're going to lose weight you are going to have to have a calorie deficit, but my two other favorite questions along these lines are with what and instead of what? So, if we're just talking a tablespoon of sugar versus a whole head of broccoli, or a huge amount of broccoli, they might have the same number of calories, but when you eat them, you're going to want to have something with the sugar. Maybe more white flour, maybe something on top of that. It's going to fly into your bloodstream, and it won't be as satiating. Whereas if you took that broccoli and you steamed it a little and you put some almonds on it, slivered almonds, and you poured some olive oil over it, oh, and you baked it or sauteed it, it would be the same number of calories would be more or less satiating.

Christopher Gardner, PhD (guest speaker):

And so if you ended up eating less because of what you ate instead of or with something, counting calories wouldn't be enough to figure out what it really does for you. So, thermodynamically a calorie is always a calorie, but in the context of food that we eat, no. Depends on when you're satiated.

Ruth Adewuya, MD (host):

Great. Okay. Next question. Can high fat diets be healthy?

Christopher Gardner, PhD (guest speaker):

Yeah, and the place that we've really been seeing this is the response to the low fat message in public health for a long time led to people going toward more sugary foods and having a more high carbohydrate diet, and that turned out to be really bad advice for people that are predisposed to diabetes because of their trouble managing glucose. One of the most successful diets in this area, especially for people with diabetes or prediabetes has been a more Mediterranean diet, and the characteristics that we like to think of there are olive oil and not just olive oil. I'm not thinking Egg McMuffin, Big Mac, Whooper and then you put a jigger of olive oil in your nightstand, and before you go to bed, you chug a little olive. That's not Mediterranean, but if you had whole grains and beans and legumes, then you had olive oil, and you had nuts and seeds and fatty fish and avocados.

Christopher Gardner, PhD (guest speaker):

So, there is a group that's really hardcore low fat vegan, and when we see people do that clinically, we see triglyceride levels go up, HDL levels drop when you want those to be high. Then if we get them to add some vegetable oils, some nuts and seeds, some avocado, some fatty fish to their diet, it lowers the carbs because now you're increasing the fat, but it's still a Mediterranean diet. The foundation of the

diet is still a lot of plant foods in there, and you can have a pretty high fat diet, so yes. There is a way to do a higher fat, healthy fat diet.

Ruth Adewuya, MD (host):

Next question. Myth or fact: carbohydrates can make you gain weight.

Christopher Gardner, PhD (guest speaker):

Ah, and this is so unfair because it really does go back to the type of carbohydrate. It's just that Americans eat way too many grams of added sugars and refined grains, and then it all gets lumped together and they say, "Oh, it's the carbs." There's a great graphic, Ruth, that somebody came out with that sort of describes the American diet in macronutrients and type of macronutrients, and to oversimplify, I'm going to say it shows fats and kind of roughly 10 from saturated, 10 from mono, and 10 from poly. Then it shows protein. It shows animal and plant protein. A 10% animal protein, 10% plant protein. It's really less plant. Then it shows carbs, and it shows 10% high quality carbs. Okay, almost everything I said so far is 10, 10, 10, 10, 10, 10. Then it shows low quality carbs. More than 40% of calories come from low quality carbs, so overall the American diet is about 50% carbs, but 40 out of 50% are low quality.

Christopher Gardner, PhD (guest speaker):

So yes, all of us public health officials are in favor of getting rid of the low quality carbs, but think, you could replace that with higher quality carbs or high quality fats or both. So one thing that doesn't change much that I'll just add is protein never goes up very much. If you look at studies where they manipulate protein, I know of one study where the whole goal was to have one group eat 25 and one group eat 15% protein. At the end of the study, one group was eating 21 and one was eating 20%. Like they couldn't even instruct them to eat more or less protein. So, it's really going to be this shift between carb and fat, and if it's good carb and good fat, you're probably fine.

Ruth Adewuya, MD (host):

Okay, so here's my last myth busting question for you. And this is about sugar substitutes. Are sugar substitutes good or bad?

Christopher Gardner, PhD (guest speaker):

It's a with what and instead of what type thing. So, if you're just a coffee drinker and you're pouring sugar in your coffee and you want to do one of those pink, yellow, or blue little things at the restaurant, that's better. You're probably not changing. You're going to have the same coffee either way, and you just got rid of some sugar.

Christopher Gardner, PhD (guest speaker):

Diet soda versus regular soda. Yes, studies aren't really very strong on that. Not much of a benefit for swapping out. There's lots of things where the fake sugar can sort of mess up your physiology because you think you got some calories, you think you got something sweet, but you didn't so you're hungrier later. So, I got to write a position statement on this for the American Heart Association in 2012, and really what we found out is that the key word is compensation. So, if you're having a sugar substitute, like you're having a Diet Coke instead of a Coke, two things can happen later. At the moment, you did cut back on sugar and calories. Later in the day you said, "Ah, I had Diet Coke instead of Coke at lunch.

I'm going to have chocolate cake at dinner." And you weren't going to have it, otherwise, so you compensated for it. And the other way you compensate is you are actually hungrier later, and you end up eating more sugar later because you fooled yourself in the beginning.

Christopher Gardner, PhD (guest speaker):

So, those sugar substitutes work if you don't compensate, but what the literature suggests is a lot of people compensate later in the day which diminishes or negates the possible benefits of the sugar substitute. And by the way, I have never seen a sugar substitute in a red bell pepper or broccoli or... It's always in crap, right? So here's a cookie with no sugar and here's a cupcake with no, so I mean, show me that it doesn't make unhealthy food healthy. I suppose it could make it healthier, but not much. Just a little.

Ruth Adewuya, MD (host):

That's a great analogy. Never seeing a sugar substitute in a bell pepper. I love it. Let's talk about your work and how you are a proponent of stealth nutrition. Can you just talk a bit what stealth nutrition is, perhaps, and how does it work in practice?

Christopher Gardner, PhD (guest speaker):

Yeah, so this is a term I came up with with Tom Robinson, a pediatrician here at Stanford who helped me with a class. We taught an entire class on animal rights and welfare, food and global warming and climate change, or labor abuses in slaughter houses or in fast food franchises or in agricultural fields. Never mentioned health the whole time. Only mentioned... Another class was food in society. We actually wrote a paper on it and published this. There's some weaknesses to the paper. The students self-selected into our class. They self-reported their results, but I have to say it was actually career changing for me because in the context of this class, Ruth, they started talking about behavior change in ways that I had never accomplished with my NIH funded randomized double-blind placebo-controlled good-science studies.

Christopher Gardner, PhD (guest speaker):

And so, the concept came up of sort of stealth nutrition. So, it was really about food, but food in the connections to societal values and personal values. I want to make sure that I make it clear there's no deceit involved when I say stealth nutrition. It's not like I'm fooling you. The other really fun thing that I found in this class, other than how mindbogglingly engaged the students were, was that some of them really didn't care very much about animal rights and welfare. Some of them didn't really care about global warming or believe the links. Some of them didn't really see the human labor abuses as being the most important. But when we use those three topics in particular and sometimes another one, maybe like water use or something like that for nuts, almost everyone in the class responded and changed their diet. It was just amazing listening to them, but with not one specific topic that resonated as the most important with everyone, making me feel like, as a health professional, this is just adding to my tool chest.

Christopher Gardner, PhD (guest speaker):

"Hey, I really want you to eat healthier. This has high fiber, low saturated fat." Mm, not getting a response. "Hey, if you ate a more plant based diet, it would be better for the animals." Still not getting a response. "Hey, did you know that the greenhouse gas emissions should... Oh look, I could see your eyes lit up for a minute. Oh you're an eco-warrior. Ah, let's talk food and eco-warrior. Ah, now I realize I've

connected with you." Oh cool, I've got another tool in my tool chest. I hope it just sounds like a clever new tool that clinicians can use to hopefully engage their patients more often.

Ruth Adewuya, MD (host):

I think it's along the same lines of any conversation that a clinician will have with a patient. You have to start with building that connection. You have to start with building that trust. You mentioned that you worked with Dr. Robinson, pediatrician, which is a great segue into my next question around children and obesity here in the US with 19% of children considered obese. At least that was in 2017, 2018. And so, the question is we know that some kids have some say over their diets, but a lot of the times their parents make the call at the end of the day. To what extent do you think children should be educated about nutrition?

Christopher Gardner, PhD (guest speaker):

It's a great question and super challenging because of the range. So are we talking preschool, are we talking elementary school, middle school, high school? Are we calling them all children so that there's tons of opportunities to get them engaged? But they all face challenges. So our schools would be a great place to do this. I'm very concerned about school lunch. Super excited actually for the listeners who know this, for decades we've had a national school lunch program that you had to qualify for. And it had to be some income and some other guidelines that meant you qualify, and if the school is more than 50% eligible they get some extra benefits from the USDA. The pandemic threw a wrench in this whole thing because so many kids depended on that food, and so they just started making school lunch available to all kids for the pandemic.

Christopher Gardner, PhD (guest speaker):

Quite recently, California took the lead and approved universal school lunch for the entire state. No other state has done this, so you no longer have to prove your eligibility which took away some of the stigma. The school lunch quality still isn't there. We still very much underfund school lunch. We had a Healthy Hunger-Free Kid Act that Michelle Obama passed in 2010, and it gave them four years to implement it. In 2014, they tried to implement it and they said, "You know what? We put out fresh vegetables and whole grains, and the kids don't eat it. We should just go back. We should get rid of this legislation." It's like, "No, you probably need some more chefs, and you need some more teachers engaging the students." So, kids being exposed in schools is a huge opportunity.

Christopher Gardner, PhD (guest speaker):

Huge shout out to Michelle Houser who teaches a Teaching Kitchen class for med students who also show up saying, "Yeah, my family didn't cook. I actually don't have much in terms of culinary literacy." You know, some of these parents are working three jobs. Some of them are working really intense tech jobs, so how do we bring back culinary literacy and basic food literacy at home? So, even while we're working with the kids in the school when they go home, they're getting that reinforced. It's a basic life skill, preparing food, and I don't think you need to learn it with cookies and cupcakes. There could be stir fries and bowls and wraps, and there's a lot of things that you could make simple, healthy food with. So yes, it's a huge issue for kids.

Ruth Adewuya, MD (host):

I want to pivot now to the important conversation around people of color, and how even within that subset, black and Hispanic adults, have some of the highest obesity rates. How do you think cultural

awareness can be added into this conversation of nutrition counseling so that we are considering all of the different cultures?

Christopher Gardner, PhD (guest speaker):

It's one of those things that's a double-edged sword. It's a challenge and an opportunity, right? So, if you want to say, "Okay, we're going to take this traditional dish, but we would like you to think about your heritage, look into your heritage. How would you have made this dish? What kind of things would be offered?" And again, this is maybe a double-edged sword. It's a little embarrassing. You don't need to get foods in season, so when it comes to heritage, that's the string that we try to pull on there and say, look, most of the world, to be honest, ate a plant-based diet because they had a cow that they milked or plowed the field but they couldn't slaughter it because they needed it the next day and some of the grains and the beans that they were eating weren't as flavorful plain as they were spiced. It just takes a little bit of heritage or cultural awareness to go back and think of some of those things.

Christopher Gardner, PhD (guest speaker):

A thing that we haven't brought up yet that was part of my transition in my career was working more with chefs in this group called the Menus of Change which has morphed into the Menus of Change University Research Collaborative where we work with different chefs in different institutional settings. The thing that they have made it clear to me is for me to get behavior change, we need people to like the taste of the food. There's a great phrase for this. It's "unapologetic deliciousness" that my chef friend brought up to me, and I said, "I want something that's unapologetically delicious." So if you have some kind of combination of grain and beans and you look at the different cultures of the world, much of the world was raised on that combination, but not blandly. With some simple herbs and flavorings and spices that made them fun dishes.

Ruth Adewuya, MD (host):

What would be remiss if I didn't talk about the other side of obesity which is we know that obesity is a pressing public health threat, but then we also know the rate of eating disorders has also gone up.

Christopher Gardner, PhD (guest speaker):

Right.

Ruth Adewuya, MD (host):

And so, I'm wondering how you navigate this complexity in your research or in your conversations with clinicians or other public health professionals.

Christopher Gardner, PhD (guest speaker):

Yeah. Oh, that is a slippery slope. Ruth, it was back in about 2010 when I started thinking, actually even beyond clinical trials, into behavior change. There are schools that serve food. Universities, hospitals serve food. And just to give you an example, we do a lot of stuff with Stanford dining for college student food, and it's college student aged folks who are very susceptible to eating disorders. And so there's some things we've proposed doing. Oh, let's make sure we have a calorie count and label everything and put all this on here, and they very intentionally don't do that for a lot of the dishes they serve at the dining hall because of the evidence that for some people that exacerbates their, one is eating disorders, but actually a more prevalent issue is disordered eating.

Christopher Gardner, PhD (guest speaker):

So eating disorders are like anorexia and bulimia and actually have a clinical definition. That's the tip of the iceberg. Simmering below that is a lot of disordered eating where young adults trying to get some control in their life for one reason or another are completely abstaining from something or some duration of time are only focusing on one thing. So yes, clinicians absolutely need to be aware of that. It's not my specialty, but we definitely have people, again on campus, who specialize in that kind of psychological issue.

Ruth Adewuya, MD (host):

My last question for you, as we wrap up our conversation, is how would you advise clinicians to advise their patients about changing their food behaviors or even making better food decisions?

Christopher Gardner, PhD (guest speaker):

I kind of have to reframe that question because I feel really bad for clinicians. There's not much nutrition education in medical school. And it's funny, I saw a round of papers come out recently. "Oh, I'm aghast. Did you know there's this much?" I have a series of papers that are 25 years old that say exactly the same thing.

Ruth Adewuya, MD (host):

Oh gosh.

Christopher Gardner, PhD (guest speaker):

This is not new information. Just kind of cycles back every once in a while. There's a big challenge with them getting nutrition education, but I'm kind of thinking that the traditional nutrition education, and they get some of this in biochem actually, isn't what they need to counsel their patients. What they really need is they need to tell their patients what they made for dinner last night or something that they're excited about cooking. The idea of being that when you see your patient and they say, "Doc you have any ideas?" Instead of saying this many grams of fiber and this many grams of fat say, "Oh, I got this great lentil soup recipe. It was actually pretty simple. I made it at home last night, and I made it in a big enough pot that it actually was super convenient for me because I got to put some in the freezer, some in the fridge, and I had some for dinner. I had multiple dishes afterward."

Christopher Gardner, PhD (guest speaker):

And building on that one concept just a little more, Ruth, there's an emergence of food pharmacies where we've partnered with Second Harvest Food Bank. This is happening all over the country. So the pharmacy is almost F-A-R-M pharmacy, food pharmacy. So doctors are writing prescriptions saying, "Okay, so it looks like you're headed toward pre-diabetes, and I don't want you to go to full blown diabetes. This lentil soup I made last night was great. I'm writing you a prescription for lentil soup and here it is. And there's a Second Harvest distribution site downstairs in our clinic, and they have lentil soup, all the ingredients, bagged up for you. So if I write you this prescription, you can pick up the bag. You can go home and cook it because the ingredients are inside and they're fairly simple and your family will love it. So, thanks do what I do." I'm really hoping more of the clinicians will... And I'm seeing more and more of them get excited in this. There are ways like that for clinicians to get involved where maybe you're not getting the nutrition lectures from Professor Gardner, but you're learning some basic culinary skills that you can pass on to the patient.

Christopher Gardner, PhD (guest speaker):

We are writing a paper right now for the American Heart Association, it should be out any week, differentiating food security and nutrition security. There's a very simple questionnaire that you could give to a patient to find out if they're food insecure or not, as a clinician. We are proposing that we need another step forward because that's almost the calorie thing. Are you getting enough calories for the day? That you're food secure. But really some of the things that they're getting aren't particularly healthy and don't have all the nutrients you need. So can clinicians and health professionals change that? Are you nutrition secure? Are you getting all the nutrients you need? And I know you're in some challenging situations financially and with access to food, but I need to help you find food that will support an optimal life. Not just from a caloric level, but from a nutrient level. Hoping that this shift from food security to nutrition security will also help clinicians because a lot of this is targeted as some of the safety net programs that we have across the country and hoping that will be integrated with the work of clinicians and health professionals as we focus more along those lines. So I think more resources and clever ideas and data are becoming available and hoping that the listeners of the podcast can find different ways like that to get engaged themselves.

Ruth Adewuya, MD (host):

Thank you so much, Dr. Gardner, for talking with me about all of these topics. I know we could spend hours really diving into all of the different things, but I think this was a great snapshot for clinicians and our listeners. The work that you're doing, but also debunk some of the myths that we find on the internet and some really great action steps for clinicians as well.

Christopher Gardner, PhD (guest speaker):

This has been a pleasure, Ruth. That was really fun. Thanks a lot.

Ruth Adewuya, MD (host):

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