Conversations With the Editors: Learning and Teaching the Concepts of Food as Medicine and Culinary Medicine

Melinda Ring, MD

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Featured Guest Biography: Melinda Ring, MD, FACP, ABOIM, is clinical associate professor of medicine (general internal medicine and geriatrics) and medical social sciences at the Northwestern University Feinberg School of Medicine. She also serves as director of the Osher Center for Integrative Medicine. She has an active clinical practice, directs medical trainee education and clinical and faculty fellowships in integrative medicine, founded the *Cooking Up Health* culinary medicine course, and conducts research. She is vice-chair of the American Board of Integrative Medicine. In 2021 she received the Bravewell Distinguished Service Award from the Academic Consortium for Integrative Medicine and Health, one of the highest honors in the field of integrative health.

EDITOR'S NOTE

To review some basic concepts of food as medicine and to discuss how we teach these concepts to medical students, health care professionals, and patients, I sat down with Dr Melinda Ring to get her thoughts. Dr Ring is a national leader in this field and is driving innovation in teaching food as medicine and culinary medicine to the next generation of physicians.

Ravi Jhaveri, MD: Thank you so much for joining us today. We're here to talk about food as medicine, but in order to provide some foundation for our readers can you briefly discuss what we mean when we use the phrase *food as medicine*?

Melinda Ring, MD: Sure, thanks. The term *food as medicine* is thrown around so much these days. If we really look at it closely and what is intended, it's going back to this idea that food, what we nourish our bodies with, has therapeutic potential. That's really at the core of all food as medicine is that we have to recognize that what we eat has the power to either help our bodies or hurt our bodies.

Dr Jhaveri: Just to follow up on that, how is that really distinguished from otherwise what is termed *healthy eating*? How is that different than *food as medicine*?

Dr Ring: Well, you know, they're like a Venn diagram. They cross over a little bit, and *food as medicine* is such a generic term, it can be interpreted in many different ways. I think the reality is that in our medical profession there has been too little attention on the power of nutrition to impact health, other than obesity or very broad generalizations about a healthy diet, when in reality we're moving into more personalized medicine in general. We

need to start thinking about that idea of what is the right diet for the individual person, the patient sitting in front of me, and that gets more into food as medicine. It's not that the Mediterranean diet is the right diet for everybody, it's not keto, it's not the Ornish diet. It's really saying, for this particular person with this complex of symptoms and syndromes or concerns, how can I best help them craft their nutritional intake?

Dr Jhaveri: If I could read into your answer a little bit, when we think about the healthy plate or balanced diet kind of guidance that the USDA gives to our kids for their school or for general health, that is not food as medicine. We are about people with specific conditions where food can really offer them specific health benefits because of their existing condition.

Dr Ring: Right, or because of their risk for particular conditions.

Dr Jhaveri: Excellent, thank you for clarifying that. Ancient cultures seem to have long had beliefs about and practices about food as medicine. When and how did our modern society sort of come back to this concept?

Dr Ring: That is pretty recently. These traditional medicines as they're being practiced today, like Ayurvedic medicine or traditional Chinese medicine, still incorporate nutrition as core to a patient's treatment plan. It's not just, "take these herbs" or "go do yoga." It's "for your constitution, this is the diet that's right for you." Biomedicine over the past hundred years has really become much more about interventions and pharmaceutical agents. I'd say the real attention has come with the obesity and diabesity epidemics and that growing awareness of the economic and health burden on our country and on our society and also some major studies coming out saying that nutrition is the number one risk factor for chronic disease and premature death.[1] When you see those kinds of things, you realize we've been focusing on smoking and other kinds of things, but really—nutrition, we need to start focusing more on this.

Dr Jhaveri: Excellent, thank you. As we consider our Western medical evidence hierarchy, we value randomized controlled trials as best evidence. Can you talk about some of the challenges to doing these studies with food-based interventions?

Dr Ring: I think it's pretty intuitive to anybody who's tried to change their own diet, even for a day. There are so many different issues: randomizing people and then adherence to a prescribed diet can be challenging. We can see changes in the short term that may not have long-term health benefits, so does a change in a lab value correlate to a meaningful health impact? There have been studies showing that people's microbiome affects whether a particular diet works for them or not. Their genomic characteristics, too. So, I think when we do these [dietary] interventions, they're not getting to the real core, and they're looking at a single factor. If we add half a cup of nuts, does that change somebody? That's not how nutrition works. Nutrition is a holistic practice that fits into somebody's whole being and their whole lifestyle. A lot of the studies end up being retrospective or epidemiologic studies, saying, well, this population who eats this way has less of this disease, you know, like the Seven Countries Study.[2] Those are great for leading us down initial directions, and I think the research is incredibly important to keep doing, but at the same time we still need to consider each individual patient in front of us and what their particular circumstances are.

Dr Jhaveri: Thank you, if I could just follow up. I was reflecting that I was cooking with a jalapeno pepper that wasn't particularly hot. You could imagine that with the variability between key ingredients from crop to crop or from item to item, that depending on the power of its effect, this also raises significant challenges in trying to study interventions.

Dr Ring: Right. For example, some of the Mediterranean diet studies have shown a benefit to olive oil, but looking more closely at the quality of the olive oil makes a difference because of how many polyphenol antioxidants are in it. It may come down to the quality of what we're eating more than what it is we're eating, and so I think you're absolutely right. The way our foods are grown, the way that they're prepared, all impact the end effect they have on our body.

Dr Jhaveri: How well established is sort of the process for, you know, defining let's say either a general diet or a general food group as having positive properties and then doing studies to really dig deeper to understand just what it is: whether it's the chemical nature of the components or a combination of those chemicals. Are we still learning those processes or do you feel like those are well established?

Dr Ring: We're definitely still learning. I think, when you look across all of the diets, I think the one undisputed fact is that plants are good. We know that they contain these phytonutrients and that each color of the rainbow has unique phytonutrients, whether it's allicin from garlic, lycopene from tomatoes, resveratrol from grapes. Those have been fairly well characterized in terms of the antioxidant, anti-inflammatory effect on different cells, so that's been pretty well established. Food combining, for example, is less well defined. Turmeric is a popular spice and dietary supplement, but studies show that when it's eaten with piperine, which comes from black pepper, then it is absorbed better in the gut. Now that naturally happens in traditional cultures and their cooking, which differentiates it from how we might use it in a dietary supplement form. Some of those compounds need fat or oil in order for our body to actually utilize and absorb them, so there are many of those nuances. Even how we cook foods will affect how well our produce, for example, maintains the nutrient content versus what gets lost in the water. I tend to not get too crazy with my patients when it comes to that because I just want them to eat more vegetables and fruits and plants as a whole. When it comes to some of the other food categories, like animal products, dairy, red meats, fish, even grains, where people are like "Oh, are they good for us? Are they bad for us?" What about lectins in them that are antinutrients? I think in those categories, there is much more controversy, which is why you have always had this debate between the Keto people and the Mediterranean diet, for example. The one common theme that they all agree on is that we need plants as the base of our diet.

Dr Jhaveri: Just to follow up on one point you made, you talked about combinations of nutrients potentially adding to the effect of each other, whether it's absorption or food nutrients as modifiers. For medications that we're taking by prescription, how much attention has been paid to that? Beyond the metabolism effects that certain well-known herbs have had on stimulating liver metabolism of certain agents, what about potentially adding to the effect, either from an absorption standpoint or at the cellular or organ level?

Dr Ring: I think most of the data have really focused on what you're saying [how food affects drug metabolism]; the classic is grapefruit for inducing cytochrome p450 enzymes. Those are more categorized. I think that when it comes to supplements, what I see happening more, for example, is if you take cinnamon, calcium supplements, or Berberine, it may lower blood sugar and require somebody who is on insulin or metformin to have their dose adjusted. If you take a coenzyme Q10 supplement, it may lower your blood pressure, which may affect somebody on antihypertensives. I don't think as much attention has been focused on diets because usually if somebody is eating a variety and only eating certain foods in moderation, they don't have that same effect as when we're taking something at a therapeutic medicinal dose. Rather, in terms of food and medicine, what I think about more when I think about the medication-food interaction is the growing awareness over the past decade that medications deplete our body of many nutrients and block the absorption of others. We have people on so many medications at this point that we have to start moving beyond the proton pump inhibitor and vitamin B_{12} and realize that most medications affect nutrient absorption, and therefore a patient's diet may need to make up for some of those by being more potassium rich, magnesium rich, etc.

Dr Jhaveri: Thank you very much. Alright, we're going to shift gears and talk about some of the educational efforts of your Osher Center (Table 1). Could you talk a little bit about the approach and some of the concepts you use when teaching food as medicine principles to the next generation of physicians?

Dr Ring: Sure. Another related concept is that of culinary medicine. Culinary medicine was described by Dr John LaPuma about 5 years ago in an article as "combining the art of food and cooking with the science of medicine."[3] Culinary medicine, really what it's getting at is this idea that it's one thing to hand a patient a handout and say, "Eat less salt." It's a different thing to take them into a kitchen and teach them how to actually prepare the things that are going to make their health better, for example, how to use herbs and spices in place of salt to make food delicious. That hands-on approach has been associated with meaningful changes, both at the patient level and with what

Table 1. Resources for Food as Medicine Information

Resource	URL
Northwestern Osher Center for Integrative Medicine	https://ocim.nm.org/
Cooking Up Health initiative	https://www.cookinguphealth.net/
Cooking Up Health culinary medicine course	https://www.feinberg.northwestern.edu/sites/ocim/education/medical-students/culinary-medicine-course.html
Teaching Kitchen Collaborative	https://teachingkitchens.org/
Healthy Kitchens, Healthy Lives	https://www.healthykitchens.org/
Center for Mind-Body Medicine Food as Medicine conference	https://cmbm.org/trainings/food-as-medicine/

we're doing, which is at the health professional level. So, at Northwestern we created a course called Cooking Up Health, an elective for health professionals and trainees (Table). We've been running it since about 2017. Initially, in prepandemic times, we ran it over the course of a semester, and the students had 6 didactic type sessions followed by getting into the kitchen to actually prepare a heart-healthy meal, a [low] FODMAP [fermentable, oligo-, di-, monosaccharides, and polyols] meal,[4] an anti-inflammatory dish. So, they were learning the food as medicine science concepts but then actually learning how to prepare a dish, so they can share with their patients how easy is it to prepare a dish. The trainees then go into the community to teach kids in at-risk communities about nutrition. They actually got to apply what they were learning and hopefully have an impact on some of the local health disparities around food. In the pandemic, we shifted to an all-virtual curriculum and actually have found in our pre/post data that it has a similar impact in terms of improving the trainees' confidence in their ability to counsel patients about nutrition and obesity. Interestingly, even though in both the live and the virtual options there were reported improvements in their own cooking confidence, the medical students who had to cook at home over Zoom with me said, "I think I'm more likely to cook now because I've done it in my own kitchen." That's how we've been employing it to date, and we're now working with an initiative called the Teaching Kitchen Collaborative (Table) with faculty from across the country to try to create a collaborative curriculum that could be utilized by any program that's interested.

Dr Jhaveri: That sounds very exciting. What positive or negative preconceived notions do you encounter most frequently when you're doing these classes?

Dr Ring: Well, currently at Northwestern Feinberg School of Medicine Cooking Up Health is not a mandatory class, so we're getting people who sign up voluntarily as an elective. Although right now we're doing it for Northwestern's Lake Forest family medicine residents and they all are required to do it, so we'll see if there is a difference between required versus elected participation. Most of the students who opt in already have an idea that nutrition is important; some of them sign up because they want to learn to cook and they think it sounds fun. I think the biggest change that we see in our postsurveys in the qualitative comments is a much better appreciation of the power of nutrition to have an impact on health and that, in fact, it is as powerful as a prescription medication. That is a big change for a medical student when nutrition is otherwise such a small portion of their training. It hopefully has a dramatic impact on how they approach patient care in the future.

Dr Jhaveri: Excellent, thank you. How do we better engage with our patients in terms of communicating some of these concepts about the power and healing properties of the foods they eat?

Dr Ring: Well, the first is always practice what you preach; this is part of our mission with our culinary medicine training. Medical students, health professionals, and doctors are all suffering from burnout and need to focus on

self-care. So, I would say, heal thyself first. Secondly, studies have shown that, even if you don't know a lot about nutrition as a health professional, but even if you just acknowledge to a patient the importance of changing and improving their diets or losing weight, even that very general guidance makes a difference in that patient's behavior. I would say don't shy away from a conversation because you don't feel like you have enough knowledge. It is a team-based approach. This is why we have nutritionists and health coaches and others to help support. It's not the physician's role to take that on. Another option, for people who are interested, is to explore ways to bring culinary medicine and teaching kitchens into your own practice. Group visits, for example, are a great way. It's being done across the country in different places, ranging from the Cleveland Clinic to other institutions and health systems across the country, where cooking is being brought into medical care. Teaching kitchen group visits can be reimbursed by insurance as part of the education of patients. Sometimes the doctor does it, or sometimes they partner with a nutritionist or chef for the cooking components. I think it's a fun learning experience. It's definitely a change from your usual clinic, but it can be covered by insurance when coded the right way. Group visits, I think, are a wave of the future. There are also many conferences out there on food as medicine so that you can further your own education since again you probably didn't learn so much in your own training. Take advantage of things like Healthy Kitchens, Healthy Lives, like the Center for Mind-Body Medicine's Food as Medicine conference, and others to learn and educate yourself (Table).

Dr Jhaveri: I think, appropriately so in the last couple years, we've really focused more on social influencers of health. When we think about the availability to purchase fresh vegetables, you have to have markets close by that have stock. Obviously, many of them tend to cost more than highly processed non–plant-based foods. Can you just talk a little bit about navigating those challenges with patients? How do we get them to cook better and healthier when time and money are often big limiters along with availability of these ingredients?

Dr Ring: Food access is definitely an issue, whether you talk about deserts [an area that has limited access to affordable and nutritious food] or swamps, where there's 8 fast food places on the block between the train station and your house. This goes back to think about what you do and how you care for yourself. Physicians/health providers are very busy, and we need to learn the same tricks to be able to make healthy choices that don't take hours to prepare. I talk to patients about preparing in bulk. You never prepare for just one meal. If you're making grain, make enough for three meals, so you're going to have enough during the week, so it's ready to go. Frozen vegetables are a great way to have easy access. They're picked at the peak of nutrition. So, there are ways certainly to eat healthy on a budget. There are a growing number of programs available, especially in the past year in the pandemic, that are delivering vegetable and fruit packages to families in these at-risk communities. I do fully agree though that this is a system issue, and there need to be changes so that a salad doesn't cost 5 times as much as a hamburger.

Dr Jhaveri: At the risk of pressing you a little bit, you list some high-value vegetables, seemingly affordable but really pack a nutritional food as medicine punch.

Dr Ring: I think beans and legumes are a clear winner. You can buy a bag of them for less than $2 and gain huge nutritional value, so that's a big one.

Dr Jhaveri: There is a reason why beans and rice dishes are so prevalent across the entire world, for all those reasons.

Dr Ring: Yes, exactly. That's probably one of the highest ones. I think the other are green leafy vegetables that are just rich in so many things that help health in many ways. Again, I go back to eating colorful because they all do have different health benefits, so variety is important. I don't want somebody to just eat the same thing over and over again. Eating seasonally sometimes helps in terms of cost. Winter squashes and things like that are rich in many of our vitamins and nutrients and last a long time. It is easy to get a bunch of them and just keep them in a cool place all winter.

Dr Jhaveri: Before we close, Dr Ring, do you have any concluding thoughts you'd like to share with our readers?

Dr Ring: I would just say, it's a fun area, it's an exciting area—food as medicine and culinary medicine. There are a lot of resources out there for you and for your patients to learn more. I think it's a really rewarding thing to bring into your practice and start to feel like you're really helping patients with behavior change. I think anybody who does it is,going to start to see an improvement in the way that they feel in their energy, their resilience, and in their own ability to make it through the workday. An apple a day, right?

Dr Jhaveri: Excellent. Dr Ring, thanks so much for your time. After this discussion, I'm ready for an early lunch.

Dr Ring: There you go.

DECLARATION OF INTEREST

None declared.

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