

Villanova University Fitzpatrick College of Nursing  
MacDonald Center for Nutrition Education and Research  
Monthly Webinar Series for Health Professionals

*Are All Plant-Based Diets (PBD) Created Equal? Comparing Health and Metabolic Syndrome Impact  
by PBD Type*

Maria-Luz Fernandez, PhD

9/25/24

Audio transcript

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00:00:15.540 --> 00:00:36.150

Lisa Diewald MS, RDN, LDN: Good afternoon. Welcome to a brand new season of monthly MacDonald Center for Nutrition, Education, and Research webinars. My name is Lisa Dewald, and I am the Associate Director for the Villanova University, Fitzpatrick College of Nursing's, MacDonald Center for Nutrition, education, and research, otherwise known as MCNER.

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00:00:36.200 --> 00:00:46.810

Lisa Diewald MS, RDN, LDN: I have the pleasure of being the moderator for today's webinar. We are so pleased that 275 health professionals are registered for today's webinar.

3

00:00:47.290 --> 00:01:01.569

Lisa Diewald MS, RDN, LDN: We're excited today to introduce a three-part series on plant-based eating, and we'll be welcoming speakers, presenting a variety of different perspectives and research on plant-based eating over the next 3 months.

4

00:01:02.020 --> 00:01:15.639

Lisa Diewald MS, RDN, LDN: According to a Us. News and World report survey, the use of plant-based diets has more than doubled in the past decade from 12% in 2012 to 26% in 2022,

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00:01:15.800 --> 00:01:29.999

Lisa Diewald MS, RDN, LDN: Because there are differences in the way plant-based eating styles are defined and adopted, they may vary widely in nutritional composition, in food, selection, in health and environmental impact.

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00:01:30.230 --> 00:01:34.749

Lisa Diewald MS, RDN, LDN: Consequently, the impact on preventing or reversing metabolic syndrome

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00:01:34.880 --> 00:01:49.090

Lisa Diewald MS, RDN, LDN: present in one in 3 adults in the United States, and characterized by central obesity, dyslipidemia, insulin, resistance, hypertension, and low-grade inflammation may vary, based on the type of plant-based diet consumed

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00:01:49.120 --> 00:01:56.980

Lisa Diewald MS, RDN, LDN: During the 1st of our 3-part series, we will explore different types of plant-based diets and their impact on a variety

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00:01:57.430 --> 00:02:01.290

Lisa Diewald MS, RDN, LDN: of health biomarkers that affect chronic disease risk.

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00:02:01.330 --> 00:02:06.639

Lisa Diewald MS, RDN, LDN: As with many other eating styles, one size does not always fit all.

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00:02:06.760 --> 00:02:16.820

Lisa Diewald MS, RDN, LDN: And so, it's important to be open to a variety of perspectives and research, so the findings can inform conversations with patients and clients, and provide a sound basis

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00:02:16.850 --> 00:02:21.749

Lisa Diewald MS, RDN, LDN: for shared decision making in practice. So thank you for joining us

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00:02:23.730 --> 00:02:34.299

Lisa Diewald MS, RDN, LDN: Before we begin the presentation, I would just like to remind you that Pdfs of today's Powerpoint slides are posted on the MacDonald Center for Nutrition Education and Research website.

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00:02:34.550 --> 00:02:44.859

Lisa Diewald MS, RDN, LDN: After going to the website, look for Webinar on the Menu bar and follow it to this month's webinar presented by Dr. Maria Luz Fernandez.

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00:02:45.000 --> 00:02:54.540

Lisa Diewald MS, RDN, LDN: the Q&A box will be open throughout the presentation for you to ask a question. Dr. Fernandez and I encourage your questions, so go ahead and send them in.

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00:02:54.850 --> 00:02:59.850

Lisa Diewald MS, RDN, LDN: We will address as many questions as possible at the end of her presentation.

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00:03:00.060 --> 00:03:09.500

Lisa Diewald MS, RDN, LDN: The expected length of the webinar is 1 h, and the session, along with the transcript, will be recorded and placed on the Mcner website within the next week.

18

00:03:10.370 --> 00:03:27.720

Lisa Diewald MS, RDN, LDN: If you used your phone to call into the webinar and want ce credit for attending, just please take a moment afterwards. Send us a email at [Mcner@Villanova.edu](mailto:Mcner@Villanova.edu) and provide your name so that we can send you a link to an evaluation, and you can receive your E-Certificate.

19

00:03:28.710 --> 00:03:31.900

Lisa Diewald MS, RDN, LDN: Villanova University, M. Louise College.

20

00:03:31.940 --> 00:03:38.459

Lisa Diewald MS, RDN, LDN: Fitzpatrick College of Nursing, is accredited as a provider of nursing continuing professional development

21

00:03:38.500 --> 00:03:42.979

Lisa Diewald MS, RDN, LDN: by the American nurses Credentialing Center's Commission on Accreditation.

22

00:03:42.990 --> 00:03:47.560

Lisa Diewald MS, RDN, LDN: This activity awards one contact hour to nursing professionals.

23

00:03:47.620 --> 00:03:56.000

Lisa Diewald MS, RDN, LDN: This activity also awards one Cpeu in accordance with the Commission on dietetic registration cpeu prior approval program.

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00:03:56.040 --> 00:04:01.690

Lisa Diewald MS, RDN, LDN: This is a level 2 activity and the suggested performance indicators are listed on this slide.

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00:04:02.780 --> 00:04:09.799

Lisa Diewald MS, RDN, LDN: Today's webinar objectives are to understand the definitions of plant-based diets, both on food based and

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00:04:09.990 --> 00:04:11.450

Lisa Diewald MS, RDN, LDN: plant-based diets,

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00:04:12.003 --> 00:04:18.529

Lisa Diewald MS, RDN, LDN: on both food, composition and availability of nutrients, and why they can be healthy or unhealthy

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00:04:18.560 --> 00:04:26.139

Lisa Diewald MS, RDN, LDN: to explore a variety of plant-based diets, using the latest clinical trials with emphasis on the impact on chronic disease and metabolic syndrome,

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00:04:26.250 --> 00:04:38.940

Lisa Diewald MS, RDN, LDN: and look at the role of eggs as part of a healthy, plant-based diet in metabolic syndrome, and finally, to discuss the health implications of plant-based diet selection on guidance for patients.

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00:04:39.570 --> 00:04:46.450

Lisa Diewald MS, RDN, LDN: There are no relevant financial relationships with ineligible companies for those involved in planning this activity.

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00:04:46.560 --> 00:04:54.330

Lisa Diewald MS, RDN, LDN: The planners will review participant feedback to evaluate for any real or perceived commercial bias in any activity.

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00:04:55.430 --> 00:05:21.819

Lisa Diewald MS, RDN, LDN: And now I have the privilege of introducing today's speaker, Maria Luz Fernandez, PhD. Spent 26 years as a full professor of Nutrition at the Department of Nutritional Sciences, University of Connecticut, and is currently teaching at the school of Nutritional Sciences and Wellness at the University of Arizona. Dr. Fernandez conducted research around the world on the effects of dietary strategies

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00:05:21.870 --> 00:05:37.350

Lisa Diewald MS, RDN, LDN: and drug treatment to prevent cardiovascular disease. She received her PhD in nutritional sciences from University of Arizona, and is an author on close to 300 journal

publications, as well as a sought after international speaker.

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00:05:37.970 --> 00:06:04.820

Lisa Diewald MS, RDN, LDN: In addition to her extensive research experience, during her tenure at University of Connecticut, Dr. Fernandez was major advisor to 36 Phd, And 23 master's students from all over the world in areas of diet and heart disease. And they currently, she's very proud to say, hold prominent positions in academia industry and government agencies.

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00:06:04.950 --> 00:06:14.090

Lisa Diewald MS, RDN, LDN: And so with that, Dr. Fernandez, I am going to turn the screen over to you and issue a warm welcome. We're so glad that you're here.

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00:06:15.590 --> 00:06:19.160

Maria-Luz Fernandez, PhD: Thank you very much. I'm gonna share my screen now.

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00:06:23.750 --> 00:06:31.060

Maria-Luz Fernandez, PhD: So good afternoon, everybody for me still, Good morning, because, I am in Arizona.

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00:06:31.110 --> 00:06:32.519

Maria-Luz Fernandez, PhD: but I am very happy.

00:07:00.800 --> 00:07:01.550

Maria-Luz Fernandez, PhD: Okay, I'm sorry about that.

Alvin Wong: There you go, perfect.

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00:07:06.840 --> 00:07:16.650

Maria-Luz Fernandez, PhD: So I was saying that I am very happy to be here, and I really would like to know what you think about some of the things that I'm gonna be discussing

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00:07:16.740 --> 00:07:40.459

Maria-Luz Fernandez, PhD: about plant-based diets. And because I've been teaching a lot of precision nutrition in the last 2 years, I have realized how important it is to know more about the clients and the patients that you are advising for the best diet. So 1st of all, I want to define plant-based diets they are.

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00:07:40.930 --> 00:07:43.800

Maria-Luz Fernandez, PhD: beneficial for heart disease.

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00:07:44.090 --> 00:07:53.080

Maria-Luz Fernandez, PhD: And we're going to be talking about that. Then I am going to be discussing what is the differences between healthy and unhealthy, plant-based diets?

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00:07:53.170 --> 00:08:01.289

Maria-Luz Fernandez, PhD: And then I am going to discuss what are the classifications of plant-based diets according to the components, the food components.

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00:08:01.330 --> 00:08:12.319

Maria-Luz Fernandez, PhD: And then what do we know about plant based diets and metabolic syndrome? And finally, I would like to discuss with you a clinical study that I



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00:08:12.350 --> 00:08:23.479

Maria-Luz Fernandez, PhD: conducted at the University of Connecticut.

I use eggs as a component of a plant-based diet,

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00:08:23.720 --> 00:08:29.230

Maria-Luz Fernandez, PhD: and then we will do a summary discussion, which I think it's the most important part of this webinar

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00:08:29.920 --> 00:08:31.640

Maria-Luz Fernandez, PhD: to recommend.

00:10:59.010 --> 00:11:09.210

Maria-Luz Fernandez, PhD: Okay, sorry about this. So I was talking about what is the definition of the plant based diets? I was saying, it's an eating pattern that focuses

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00:11:09.370 --> 00:11:17.190

Maria-Luz Fernandez, PhD: on plants. But I also want to mention that they can include minimal or no animal food. That's an important point to consider.

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00:11:17.380 --> 00:11:28.769

Maria-Luz Fernandez, PhD: They have become very popular. They are environmentally healthy, and we know that they provide multiple health benefits, not just in the whole body, but also in the brain.

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00:11:29.170 --> 00:11:38.840

Maria-Luz Fernandez, PhD: For example, in the case of cardiovascular disease, low-fat vegetarian diets have been shown cessation and

reversal of atherosclerotic plaques.

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00:11:39.220 --> 00:11:47.470

Maria-Luz Fernandez, PhD: They have shown that the risk factors for heart disease are less frequent in those people who follow these type of diets.

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00:11:47.570 --> 00:11:58.340

Maria-Luz Fernandez, PhD: And finally, a meta-analysis of 7 randomized trials has showed that, compared to omnivorous diets. Vegetarian diets result in lower blood pressure.

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00:11:58.350 --> 00:12:07.600

Maria-Luz Fernandez, PhD: So we have here 2 important components that protect against heart disease, the reversal of atherosclerotic plaques, and that they lower blood pressure.

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00:12:07.900 --> 00:12:15.199

Maria-Luz Fernandez, PhD: In the case of cancer there is not sufficient evidence of plant-based diets and cancer prevention.

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00:12:15.240 --> 00:12:24.099

Maria-Luz Fernandez, PhD: I did a lot of research on this because of the classes that I'm teaching, and they cannot find that there is a correlation in the prevention side.

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00:12:24.180 --> 00:12:42.830

Maria-Luz Fernandez, PhD: However, once patients have cancers, for example, the American Association for cancer has shown that for every

10 grams increase in fiber survival after diagnosis increases by 13%.  
And this is important because plant-based diets are very rich in  
fiber.

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00:12:42.940 --> 00:12:45.550

Maria-Luz Fernandez, PhD: also for

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00:12:46.230 --> 00:12:55.099

Maria-Luz Fernandez, PhD: cancer patients. It is recommended those  
high protein, plant-based diets contain things like beans, lentils,  
and soybeans.

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00:12:55.260 --> 00:13:03.809

Maria-Luz Fernandez, PhD: Just to recap what I was saying, I want you  
to see this recent study meta-analysis done by Molina Monteseror.

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00:13:03.860 --> 00:13:10.759

Maria-Luz Fernandez, PhD: She was trying to compare if there were  
benefits of vegetarian diets compared to non-vegetarian diets.

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00:13:10.810 --> 00:13:12.569

Maria-Luz Fernandez, PhD: As you can see here,

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00:13:12.660 --> 00:13:14.940

Maria-Luz Fernandez, PhD: they do not have

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00:13:15.080 --> 00:13:24.489

Maria-Luz Fernandez, PhD: anything in lung cancer, prostate cancer,  
colorectal cancer, breast cancer or overall. So this means that

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00:13:24.870 --> 00:13:47.850

Maria-Luz Fernandez, PhD: they do not find a benefit, a preventive benefit. We're talking about prevention. However, in the case of diabetes there is a consensus that plant-based diets are beneficial to prevent diabetes. They promote weight loss, they lower adiposity, which is one of the main reasons that we have insulin resistance, and they are also very helpful for glucose control.

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00:13:48.310 --> 00:14:03.580

Maria-Luz Fernandez, PhD: So the quality of the plant based diets. And this is something that we need to understand varies extensively. And of course it's going to depend on what are the dietary components that are present in those diets that protect

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00:14:04.160 --> 00:14:06.149

Maria-Luz Fernandez, PhD: against chronic disease

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00:14:06.260 --> 00:14:12.889

Maria-Luz Fernandez, PhD: and based on this, plant-based diets have been classified into healthy and unhealthy.

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00:14:13.370 --> 00:14:24.540

Maria-Luz Fernandez, PhD: so the healthy part of the plant-based diets is that they are rich in antioxidants because they contain a lot of polyphenols, anthocyanin, carotenoids.

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00:14:24.640 --> 00:14:31.610

Maria-Luz Fernandez, PhD: They have sufficient concentration of all

vitamins and minerals, and they are a good source of dietary fiber.

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00:14:31.930 --> 00:14:48.039

Maria-Luz Fernandez, PhD: How do we define a plant based diet as helpful or unhelpful? There is a way to do it. People have done calculations of indexes, and you can have, a healthful plant based diet index, or an unhealthy plant based diet index.

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00:14:48.080 --> 00:15:16.099

Maria-Luz Fernandez, PhD: And the way this classification is done, is that you take into consideration what is the whole diet of the person you are evaluating, and try to give points for the healthful items and the non-healthful items. So just to give you an idea of the health fruits that are important in these diets, we have whole grains, fruits, vegetables, nuts, and seeds, legumes, vegetable oils, unsweetened tea and coffee.

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00:15:16.410 --> 00:15:22.059

Maria-Luz Fernandez, PhD: In the case of those I would like to call them less healthy rather than unhealthy.

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00:15:22.573 --> 00:15:33.040

Maria-Luz Fernandez, PhD: We have refined grains, potatoes, sweetened beverage, and of course, sweets and desserts. I mean, we all consume these, but we need to know what is our index

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00:15:33.060 --> 00:15:53.790

Maria-Luz Fernandez, PhD: and high fat dairy. And of course we need to include the animal foods in this part, because, as I mentioned at the

beginning of the presentation, some people like to have minimal amounts of animal foods with their plant-based diets, so in this category are the animal fat that they're in fed and

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00:15:55.030 --> 00:16:00.979

Maria-Luz Fernandez, PhD: eggs, fish or seafood meat and miscellaneous animal based products.

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00:16:01.490 --> 00:16:06.489

Maria-Luz Fernandez, PhD: So, for example, this was a study done by Satija et. Al.

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00:16:06.790 --> 00:16:34.529

Maria-Luz Fernandez, PhD: He tried to classify a number of people, and gave the numbers according to how healthy the diet was. He classified into 3 tertiles. So in the first tertile people had a value of 30 to 48. In the second tertile it was 53 to 55, and in the 3rd, 63 to 84, so the highest the number the healthier is the plant-based diet.

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00:16:34.640 --> 00:16:55.019

Maria-Luz Fernandez, PhD: In this particular study. They associated the higher index with a presence in the diet of lower, saturated fat, lower trans fat, more protein, more fiber, more folate, and less energy. So those were the most important components that they observed in this study.

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00:16:55.430 --> 00:17:08.519

Maria-Luz Fernandez, PhD: So these are the nutrients that are associated with beneficial effects of plant-based diets. Dietary

fiber, we know, is beneficial because it lowers cholesterol and reduces the postprandial response to glucose.

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00:17:08.660 --> 00:17:33.689

Maria-Luz Fernandez, PhD: Then we have the omega 3 fatty acids, because they reduce plasma, triglycerides and inflammation. And I talk about the antioxidants. The polyphenols have antioxidant properties, lower blood pressure, plasma glucose and improve abnormal lipid metabolism. The flavonoids have anti-inflammatory properties, and protect against hypertension and hyperglycemia,

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00:17:33.810 --> 00:17:45.570

Maria-Luz Fernandez, PhD: and the carotenoids protect against alienated macular degeneration and oxidative stress in the liver and in the blood. So these are the nutrients that are beneficial in the plant-based diets.

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00:17:45.690 --> 00:17:51.839

Maria-Luz Fernandez, PhD: Now, I want to just very, very quickly about the classification of plant-based diets

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00:17:51.850 --> 00:17:54.299

Maria-Luz Fernandez, PhD: when we are looking at the foods.

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00:17:54.580 --> 00:18:12.240

Maria-Luz Fernandez, PhD: As you know, Vegan is when they consume exclusively plant foods. Then you will have the Vegetarian that may include dairy eggs, or both, and you will have the Pescatarian, because some people do include fish and seafood in their plant-based

diets.

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00:18:12.360 --> 00:18:23.450

Maria-Luz Fernandez, PhD: The Vegan diets are based on plants only, and on foods made from plants. It is a healthy diet, it is high in fiber and low in saturated fat.

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00:18:23.510 --> 00:18:29.480

Maria-Luz Fernandez, PhD: However, we have to be aware with these diets that some deficiencies exist.

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00:18:29.550 --> 00:18:36.360

Maria-Luz Fernandez, PhD: For example, they have identified B-12, the Omega-3 fatty acids, the vitamin D and iron.

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00:18:36.960 --> 00:18:45.589

Maria-Luz Fernandez, PhD: The Vegan diet is a very healthy diet, but people have to make sure they discover these deficiencies and take the necessary supplements.

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00:18:46.620 --> 00:18:55.850

Maria-Luz Fernandez, PhD: There are some documentations on the risk of Vegan diets. For example, there is a study that they proved that there was a high risk of stroke.

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00:18:55.890 --> 00:19:04.280

Maria-Luz Fernandez, PhD: However, it's possible that it was associated more to the quality of the diet that we just discussed rather than to the Vegan diet.



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00:19:04.570 --> 00:19:12.270

Maria-Luz Fernandez, PhD: Another study shows high risk of total and site-specific fractures, probably related to low calcium in the diet.

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00:19:12.540 --> 00:19:26.470

Maria-Luz Fernandez, PhD: And pregnant women have to pay attention to vitamin D, vitamin, b-12, calcium, DHA, and iron, because lack of these nutrients during pregnancy can lead to low birth weight or birth defects.

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00:19:26.610 --> 00:19:42.290

Maria-Luz Fernandez, PhD: In the case of the Lacto-ovo-vegetarian diets, I am putting together these for the vegetarian diets. They have been shown to increase HDL cholesterol, to decrease fasting, glucose, to reduce inflammation and to reduce oxidative stress.

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00:19:42.530 --> 00:19:59.539

Maria-Luz Fernandez, PhD: The pescatarian diets because they include fish, they are going to have good concentrations of the Omega 3 fatty acids. They have been shown to decrease inflammatory markers, and they have also been shown to decrease plasma triglycerides.

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00:20:00.000 --> 00:20:09.720

Maria-Luz Fernandez, PhD: This is just a summary of what I just said. This is a study that Mino Thomas, one of my PhD. students and I published.

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00:20:09.840 --> 00:20:16.490

Maria-Luz Fernandez, PhD: I want you to see that the 3 diets, the pescatarian, the vegetarian, and the Vegan,

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00:20:16.530 --> 00:20:32.260

Maria-Luz Fernandez, PhD: they all have beneficial benefits, as has been shown by different authors in body, weight, in blood pressure, in triglycerides and inflammatory markers, which are the characteristics of the metabolic syndrome, as we will discuss.

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00:20:32.270 --> 00:20:50.640

Maria-Luz Fernandez, PhD: However, what I want to point out in this case is that the Pescatarian diets have been shown to decrease mortality. Those are the only ones compared to this, and the vegetarian diets have also shown, are the only ones that have shown that they can increase Hdl cholesterol.

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00:20:51.800 --> 00:21:08.700

Maria-Luz Fernandez, PhD: So now I'm going to focus on plant-based diabetes and metabolic syndrome. As you know, metabolic syndrome is not a disease, but it's a characteristic, a series of biomarkers that are telling us that we are at high risk for disease.

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00:21:09.030 --> 00:21:24.969

Maria-Luz Fernandez, PhD: In those diseases, as being shown here. The most important ones that we have focused on are heart disease and diabetes. But we have also observed these in cancer. They can lead to cancer, polycystic, ovarian syndrome, or non-alcoholic fatty liver disease.

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00:21:25.180 --> 00:21:31.069

Maria-Luz Fernandez, PhD: So just to remind you, other parameters of the metabolic syndrome.

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00:21:31.110 --> 00:21:36.740

Maria-Luz Fernandez, PhD: The 1st thing that we need to consider here is that we can have central obesity.

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00:21:36.760 --> 00:21:43.199

Maria-Luz Fernandez, PhD: Central obesity is going to result in the liberation of free fatty acids into the plasma.

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00:21:43.240 --> 00:21:53.509

Maria-Luz Fernandez, PhD: These free fatty acids are going to go either to the pancreas, to the liver, or to the muscle to all these tissues. So what happens when they go to these tissues?

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00:21:53.550 --> 00:22:08.940

Maria-Luz Fernandez, PhD: In the pancreas, they cause beta cell dysfunction in apoptosis. In the liver. they are going to cause an increase in the secretion of VLDL and in the muscle there is going to be triglyceride deposition.

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00:22:09.330 --> 00:22:14.670

Maria-Luz Fernandez, PhD: So central obesity is characterized for a larger waist circumference.

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00:22:14.690 --> 00:22:18.249

Maria-Luz Fernandez, PhD: Beta cell dysfunction leads to increases in

glucose.

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00:22:18.420 --> 00:22:21.630

Maria-Luz Fernandez, PhD: The problem is, when we secrete more

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00:22:21.690 --> 00:22:43.699

Maria-Luz Fernandez, PhD: LDL we have increased triglycerides in plasma and decreased HDL and the triglyceride deposition leads to insulin resistance, and it increases in blood pressure. There you are!

Those are the 5 parameters of the metabolic syndrome, waist circumference, glucose, triglycerides, HDL, and blood pressure

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00:22:44.480 --> 00:22:48.650

Maria-Luz Fernandez, PhD: So, excessive adipose tissue in the trunk area

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00:22:48.870 --> 00:23:05.660

Maria-Luz Fernandez, PhD: most of the time is a trigger of the metabolic syndrome, because it's going to result in the deposition of a lot of fat, and this is going to increase the risk for heart disease 2 times and the risk for type 2 diabetes to 5 times.

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00:23:05.720 --> 00:23:11.830

Maria-Luz Fernandez, PhD: So it's very important to think in this situation, trying to improve metabolic syndrome.

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00:23:12.840 --> 00:23:20.680

Maria-Luz Fernandez, PhD: So, in addition to those parameters that I just mentioned, metabolic syndrome is also characterized

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00:23:20.720 --> 00:23:22.730

Maria-Luz Fernandez, PhD: (it's in the bottom of this slide)

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00:23:22.860 --> 00:23:29.030

Maria-Luz Fernandez, PhD: by oxidative stress, vascular endothelial dysfunction and inflammation.

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00:23:29.550 --> 00:23:38.879

Maria-Luz Fernandez, PhD: So because of this plant-based diets have been shown to provide health benefits for cardiovascular disease and diabetes, as I just showed you.

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00:23:39.240 --> 00:23:46.940

Maria-Luz Fernandez, PhD: And we know that a metabolic syndrome is very important to control, because it's going to increase the risk for both of these diseases.

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00:23:46.990 --> 00:23:53.599

Maria-Luz Fernandez, PhD: Therefore the plant-based diet should be helpful to reduce the metabolic syndrome.

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00:23:53.980 --> 00:23:59.309

Maria-Luz Fernandez, PhD: So what has been shown in terms of plantbased diets in metabolic syndrome?

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00:23:59.390 --> 00:24:13.439

Maria-Luz Fernandez, PhD: For example, there was a case control study in female vegetarians, 80% of whom were lacto-ovo vegetarians and was

associated with reduced risk for metabolic syndrome and insulin resistance.

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00:24:13.730 --> 00:24:24.680

Maria-Luz Fernandez, PhD: When we compare vegetarians versus non vegetarians, they had lower values of blood pressure, glucose, and Ldl, but also Hdl and I'm marking it here

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00:24:24.760 --> 00:24:30.249

Maria-Luz Fernandez, PhD: because we have shown in other studies that eggs increase Hdl cholesterol

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00:24:30.330 --> 00:24:35.610

Maria-Luz Fernandez, PhD: as well as the large Hdl and increased plasma Antioxidants.

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00:24:35.630 --> 00:24:44.140

Maria-Luz Fernandez, PhD: So because of this, we decided to do a study to have eggs as part of a healthy, plant-based diet.

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00:24:44.460 --> 00:24:51.849

Maria-Luz Fernandez, PhD: So the objectives for this clinical trial we hypothesize that the inclusion of eggs with a plant-based diet

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00:24:51.950 --> 00:24:59.490

Maria-Luz Fernandez, PhD: would result in additional benefits in lipoprotein metabolism, circulating antioxidants and choline.

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00:24:59.660 --> 00:25:11.570

Maria-Luz Fernandez, PhD: Our main objective was to compare the consumption of 2 eggs daily for 4 weeks with 0 eggs or egg substitutes on the parameters of the metabolic syndrome.

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00:25:12.190 --> 00:25:28.669

Maria-Luz Fernandez, PhD: Before I go into my study I want to give you a little bit history about eggs. I have become very interested in trying to understand how people respond different according to their genetic makeup, their ethnicity,

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00:25:28.940 --> 00:25:35.960

Maria-Luz Fernandez, PhD: and many reasons, their health status about food. So I want to tell you some history about the eggs.

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00:25:36.360 --> 00:25:46.970

Maria-Luz Fernandez, PhD: You probably remember that the American Heart Association recommended no more than 300 milligrams of dietary cholesterol per day.

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00:25:47.600 --> 00:25:54.090

Maria-Luz Fernandez, PhD: Where did these recommendations come from? I'm sure you're wondering. Let me tell you a secret.

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00:25:54.800 --> 00:26:05.509

Maria-Luz Fernandez, PhD: So how do we get to 300 milligrams per day? This is a story that was told to me by one person who was in this committee. So it's real.

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00:26:05.610 --> 00:26:09.679

Maria-Luz Fernandez, PhD: A group of scientists got together in the 1960's.

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00:26:09.690 --> 00:26:23.639

Maria-Luz Fernandez, PhD: They could not come up with a number for dietary cholesterol. They did not have on the clinical studies that we now have, and all those population analysis and Meta analysis. So they just came together.

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00:26:23.710 --> 00:26:25.230

Maria-Luz Fernandez, PhD: And there were

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00:26:25.270 --> 00:26:42.270

Maria-Luz Fernandez, PhD: 2 very polarized groups. It seems like polarization is something that has been going on for years. So the arguments went between 0. There were some people that said we should not consume any cholesterol. Of course you

184

00:26:42.270 --> 00:27:01.920

Maria-Luz Fernandez, PhD: you have to be a Vegan to follow the diet to consume 0 cholesterol, and the other people were a little bit on the other side. They were saying, no, we can consume as high as 600 milligrams per day, and nothing happens. So the arguments went back and forth. You're guessing where I'm going right. They settled in the middle.

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00:27:02.050 --> 00:27:07.859

Maria-Luz Fernandez, PhD: They said, Let's do it. Let's put 300 milligrams per day.



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00:27:08.520 --> 00:27:20.500

Maria-Luz Fernandez, PhD: Now, I just want you to see that this particular recommendation didn't come from reviewing hard data, clinical results or meta-analysis.

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00:27:20.820 --> 00:27:27.729

Maria-Luz Fernandez, PhD: This was the consensus of 2 group of people that thought completely different about dietary cholesterol.

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00:27:27.840 --> 00:27:37.220

Maria-Luz Fernandez, PhD: So this brings me to something that Dr. Walter Willett said, and many years ago he was a department head of the Harvard School of Public Health.

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00:27:38.160 --> 00:28:06.669

Maria-Luz Fernandez, PhD: and he said, one of the problems is that strong recommendations have often been made on very weak data. It may have been the best guess at the moment, but very often those recommendations are repeated so many times that people forget they were rough guesses or consensus in the 1st place, and come to think they are hard facts. So you guess where I'm coming now, what is the food that has more dietary cholesterol?

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00:28:06.820 --> 00:28:17.459

Maria-Luz Fernandez, PhD: It is the eggs right? So eggs were used as the icon for dietary cholesterol, and they were restricted to consume no more than 2 per week all over the world.

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00:28:17.900 --> 00:28:18.910

Maria-Luz Fernandez, PhD: So

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00:28:19.020 --> 00:28:33.920

Maria-Luz Fernandez, PhD: there is a big problem with this blanket recommendations, this recommendation of no more than 2 eggs per week caused problems in other regions of the world. And I know for sure, because I talked to the people in Peru.

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00:28:33.950 --> 00:28:40.320

Maria-Luz Fernandez, PhD: So there was children from a small town in Peru. They invited me to give a talk to egg producers.

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00:28:40.630 --> 00:28:48.949

Maria-Luz Fernandez, PhD: And they were told I don't know by whom that eggs were bad, that they should not eat eggs, so they stopped giving eggs to the children.

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00:28:49.110 --> 00:28:57.080

Maria-Luz Fernandez, PhD: They saw them, they bought potatoes, and they replaced their only high protein food that they had

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00:28:57.560 --> 00:29:13.709

Maria-Luz Fernandez, PhD: by potatoes. Guess what, they develop Kwashiorkor. This is a true story. You know what Kwashiorkor is. It's a protein deficiency that is associated with wasting and with infections. And so this is a very sad story. This is why

197

00:29:13.770 --> 00:29:26.250

Maria-Luz Fernandez, PhD: blanket recommendations should not be made.

And Lisa, talked about it at the beginning. It's very important to consider this when you are dealing with different people in different parts of the world.

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00:29:27.310 --> 00:29:34.020

Maria-Luz Fernandez, PhD: So concepts to change. In 1984, this came out in the Times, that eggs were the worst food ever.

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00:29:34.050 --> 00:29:50.060

Maria-Luz Fernandez, PhD: But then there was this study, the nurse study that was conducted in Harvard, and then they decided that eggs were not that bad. So just to finish this, I want to tell you about the dietary guidelines. So in 2010,

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00:29:50.140 --> 00:29:55.750

Maria-Luz Fernandez, PhD: they said, what is the effect of dietary cholesterol on the risk of cardiovascular disease?

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00:29:55.830 --> 00:30:14.020

Maria-Luz Fernandez, PhD: And they reviewed all these studies. The ones in red are coming from my lab. That's why I wanted to show you this. Mutungii et. al was a study with obese people, Green et. al with elderly people, and Ballesteros et. al with children. So they concluded that one egg per day was okay.

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00:30:14.100 --> 00:30:16.909

Maria-Luz Fernandez, PhD: After all these these things that have happened.

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00:30:17.180 --> 00:30:20.190

Maria-Luz Fernandez, PhD: But then, in in 2015,

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00:30:20.220 --> 00:30:33.179

Maria-Luz Fernandez, PhD: and you might be aware of it. In January of 7 of 2016, they came to the conclusion, the dietary, cholesterol upper limits no longer apply.

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00:30:33.370 --> 00:30:45.820

Maria-Luz Fernandez, PhD: The last dietary guidelines of 2020 were released in 2021. They still are saying this. The next review of the dietary guidelines would be next year

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00:30:46.100 --> 00:31:04.720

Maria-Luz Fernandez, PhD: in 2025, and we will know what they say about dietary cholesterol. But right now this is where we stand. So I want to talk about my study now the metabolic syndrome with eggs. So this is a clinical trial. The intervention was a lacto-ovo-vegetarian diet.

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00:31:04.810 --> 00:31:15.009

Maria-Luz Fernandez, PhD: So we ask our subjects not to eat meat at all, and we also had to ask them not to eat fish, because we didn't want to introduce another variable, which is the fish.

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00:31:15.070 --> 00:31:23.770

Maria-Luz Fernandez, PhD: Because fish, because of the omega. 3 fatty acids, has a lot of other good things. So this is the design.

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00:31:24.050 --> 00:31:42.720

Maria-Luz Fernandez, PhD: So subjects came to the study, and there was a washout period at the beginning in which they were not allowed to eat any eggs. Then they were randomized. They were randomized to consume either plant-based diet and 2 eggs, or a plant-based diet with egg substitute.

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00:31:42.720 --> 00:32:04.119

Maria-Luz Fernandez, PhD: At Baseline we took all the measurements and the dietary records. After 4 weeks in the intervention there was a washout period of 3 weeks, and subjects were allocated to the alternate treatment, and then they proceeded with 4 more weeks, and we got all the data that we needed at the end of those 4 weeks.

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00:32:04.150 --> 00:32:14.170

Maria-Luz Fernandez, PhD: I want to tell you something that we did. We ask our subjects to consume their eggs with breakfast and with spinach

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00:32:14.430 --> 00:32:23.190

Maria-Luz Fernandez, PhD: and and it was a little bit of a mistake, because the spinach is very highly nutritious. But I will talk about this later.

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00:32:23.230 --> 00:32:40.240

Maria-Luz Fernandez, PhD: But we wanted to make sure that they were really consuming a plant-based diet, so we gave them several recipes. I'm showing here one of them, and so they were going to take 2 eggs or the equivalent of egg substitute daily with breakfast with spinach.

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00:32:41.070 --> 00:32:48.180

Maria-Luz Fernandez, PhD: So that you know what are the different components in the eggs. The egg substitute in the spinach, because those are the ones

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00:32:48.200 --> 00:33:06.270

Maria-Luz Fernandez, PhD: there are going to be associated to the characteristics that we find at the end. So it's very clear that the cholesterol concentration in the diet was higher when they were eating the eggs, because the eggs were contributing 370 milligrams of cholesterol

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00:33:06.590 --> 00:33:15.560

Maria-Luz Fernandez, PhD: Choline was about 294, because eggs are a very good source of choline. Spinach also has choline, but not that much.

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00:33:15.940 --> 00:33:20.940

Maria-Luz Fernandez, PhD: Lutein and zeaxanthin, although there are such little amount in the eggs,

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00:33:20.970 --> 00:33:30.319

Maria-Luz Fernandez, PhD: the lutein and zeaxanthin are highly bioavailable. Many studies done, not in my laboratory. In other laboratories they have shown

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00:33:30.360 --> 00:33:39.899

Maria-Luz Fernandez, PhD: the lutein and zeaxanthin are highly

bioavailable. That means they get to the blood, and they get what we need it. Their Antioxidant properties

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00:33:40.090 --> 00:33:46.729

Maria-Luz Fernandez, PhD: and the spinach has no zeaxanthin, but it does have a lot more lutein than the egg, as you can see here.

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00:33:47.300 --> 00:33:52.560

Maria-Luz Fernandez, PhD: So these are some of the methods that we did. We recruited 30 participants,

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00:33:52.620 --> 00:34:03.519

Maria-Luz Fernandez, PhD: and these are the characteristics. They had to have metabolic syndrome, and those are the parameters that I'm sure you already know that they have to have to be characterized for the metabolic syndrome.

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00:34:03.590 --> 00:34:12.690

Maria-Luz Fernandez, PhD: We had a 3 day dietary records, and we evaluated them, using the NDSR Software of the University of Minnesota.

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00:34:12.739 --> 00:34:26.350

Maria-Luz Fernandez, PhD: We collected the fasting blood, and these are the plasma value markers that we measure: plasma lipids, total cholesterol, of course, triglycerides, HDL, glucose, crp and liver enzymes.

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00:34:26.520 --> 00:34:36.270

Maria-Luz Fernandez, PhD: We measure plasma insulin by ELISA. We measure plasma, choline and TMAO and I'm going to talk a little bit about this evaluating

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00:34:36.320 --> 00:34:38.560

Maria-Luz Fernandez, PhD: using LCMS.

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00:34:38.630 --> 00:34:48.180

Maria-Luz Fernandez, PhD: We measure lipoprotein particle size by NMR and plasma lutein and zeaxanthin using reverse phase, high performance, liquid chromatography.

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00:34:49.110 --> 00:34:53.239

Maria-Luz Fernandez, PhD: So this is the effects of the intervention on the BMI.

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00:34:53.340 --> 00:35:01.350

Maria-Luz Fernandez, PhD: The baseline is represented by the blue bar. The yellow bar is the egg, and the substitute is by the pink bar.

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00:35:01.870 --> 00:35:15.240

Maria-Luz Fernandez, PhD: Interestingly, when the subjects were consuming the eggs, they had a lower BMI, which is very important, because, remember, one of the characteristics of the metabolic syndrome is going to be increased body weight.

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00:35:15.640 --> 00:35:23.429

Maria-Luz Fernandez, PhD: This is the plasma lipids during the intervention. It is important to notice that the LDL did not change.



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00:35:23.530 --> 00:35:28.249

Maria-Luz Fernandez, PhD: It was the same whether they were taking 0 eggs,

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00:35:28.510 --> 00:35:42.080

Maria-Luz Fernandez, PhD: 2 eggs, substitutes. The egg substitute is just the white of the egg. It doesn't have the yolk. The yolk is where the cholesterol is, but it's also where the lutein, the zeaxanthin, the choline, and the vitamins are.

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00:35:42.260 --> 00:35:57.000

Maria-Luz Fernandez, PhD: Anyway the LDL did not change. It was the same. We have had several studies showing how LDL doesn't change after eating 2 eggs daily for 4 weeks, or even 3 eggs daily, for 12 weeks.

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00:35:57.260 --> 00:36:11.390

Maria-Luz Fernandez, PhD: However, the HDL did go up. In all the studies that I have conducted in my laboratory with eggs, HDL always goes up with egg intake, and the Triglycerides did not change.

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00:36:11.900 --> 00:36:21.250

Maria-Luz Fernandez, PhD: Then we measure lipoprotein, size and number. I just want to show you here that the NMR gives you a lot of information about the different sizes.

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00:36:21.280 --> 00:36:41.580

Maria-Luz Fernandez, PhD: because we didn't have any differences in Vldl or Ldl among treatments, I am going to focus on the Hdl size. So

the Hdl's can be small, medium or large, and the large Hdl has been associated with a more efficient reverse cholesterol transport.

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00:36:41.860 --> 00:36:49.659

Maria-Luz Fernandez, PhD: The large Hdl was increased only during the egg period, and you can see here in the

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00:36:49.860 --> 00:36:51.290

Maria-Luz Fernandez, PhD: Egg group.

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00:36:51.540 --> 00:37:07.220

Maria-Luz Fernandez, PhD: I want to confirm that Hdl from subjects consuming eggs has been shown to increase cholesterol efflux from macrophages. We did a study in patients with metabolic syndrome

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00:37:07.250 --> 00:37:19.150

Maria-Luz Fernandez, PhD: and we confirm that the HDL coming from the eggs, people eating eggs, it's going to be very effective in the reverse cholesterol transport. Fortunately,

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00:37:19.620 --> 00:37:21.310

Maria-Luz Fernandez, PhD: sometime later,

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00:37:21.330 --> 00:37:25.290

Maria-Luz Fernandez, PhD: these findings were confirmed by another lab

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00:37:25.470 --> 00:37:30.220

Maria-Luz Fernandez, PhD: from Cornell, and that this was done in postmenopausal women.

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00:37:31.260 --> 00:37:49.889

Maria-Luz Fernandez, PhD: So now I want to go to lutein and zexanthin, because these are very important carotenoids that are present in eggs. I'm sure that you know that they have a lot of good functions for the eyes, for the liver, for the heart and the blood. What I'd like to point out in the eyes is that they protect against age-related macular degeneration.

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00:37:49.890 --> 00:38:02.080

Maria-Luz Fernandez, PhD: The only carotenoids we have in the eyes are lutein and zeaxanthin and so it's very important to consume them in their diet. And maybe if people know that they are prone to develop

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00:38:02.600 --> 00:38:09.509

Maria-Luz Fernandez, PhD: Age related macular degeneration because there is a genetic component in the family, even supplements should be recommended.

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00:38:09.710 --> 00:38:22.269

Maria-Luz Fernandez, PhD: Then we have that they protect the liver against hepatic steatosis, and they have been shown even to reduce atherosclerosis in in experimental animals, so they are very important antioxidants.

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00:38:22.600 --> 00:38:34.889

Maria-Luz Fernandez, PhD: So what we observe in our study is, 1st of all, the lutein was increased, and it was compared to 0 eggs. But it was not different from the substitute, because, remember,

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00:38:35.000 --> 00:38:38.780

Maria-Luz Fernandez, PhD: the spinach is a very good source of lutein.

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00:38:39.050 --> 00:38:53.319

Maria-Luz Fernandez, PhD: something that I didn't think about when we were doing this study, and so there is not going to be difference.

However, the spinach does not have zeaxanthin and there was a significant increase zeaxanthin with the consumption of the eggs.

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00:38:54.700 --> 00:39:12.950

Maria-Luz Fernandez, PhD: When we try to plot the large Htl against plasma sesanthin, there is a positive correlation, because we know that Hdl is the major transporter of these carotenoids in plasma lutein and sesanth

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00:39:13.020 --> 00:39:29.640

Maria-Luz Fernandez, PhD: an hdl is the one that takes them directly to the retina, and the retina has a receptor called Srb1 that is going to bind to the Hdl and have the lutein something delivered to the macula where we need it.

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00:39:31.030 --> 00:39:42.049

Maria-Luz Fernandez, PhD: The zeaxanthin was also negatively correlated with malodialdehyde, which is a measurement of oxidative stress. So it protects against oxidative stress.

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00:39:42.380 --> 00:39:47.380

Maria-Luz Fernandez, PhD: Now, if I'm gonna talk about choline and

tmao.

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00:39:47.630 --> 00:39:49.859

Maria-Luz Fernandez, PhD: So 1st of all, yes.

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00:39:49.900 --> 00:39:55.150

Maria-Luz Fernandez, PhD: want to remind you of the benefits of choline. It has a role in brain development.

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00:39:55.190 --> 00:39:59.890

Maria-Luz Fernandez, PhD: It forms the neurotransmitter acetylcholine.

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00:40:00.090 --> 00:40:11.220

Maria-Luz Fernandez, PhD: It's involved in methyl group metabolism in lipid transport and in cell membrane signaling. So it does have very important important functions in our body.

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00:40:11.510 --> 00:40:23.839

Maria-Luz Fernandez, PhD: Their recommendations for choline are 425 milligrams per day for women, and 550 for men. The average American consumer takes only 350, so

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00:40:23.920 --> 00:40:25.489

Maria-Luz Fernandez, PhD: there is a

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00:40:25.640 --> 00:40:36.460

Maria-Luz Fernandez, PhD: not the ideal intake of choline among the American people. So choline deficiency has been associated with fatty liver and with muscle damage.

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00:40:36.670 --> 00:40:42.709

Maria-Luz Fernandez, PhD: Now we're going to talk a little bit about TMAO, trimethylamine N-oxide.

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00:40:43.000 --> 00:41:03.969

Maria-Luz Fernandez, PhD: One of the things that came out after we clear about the dietary cholesterol in the eggs. Then it came in the literature that choline in the egg can be transformed into tmao. So let's see how this happens. So the dietary choline that is present in the egg is going to be absorbed mostly

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00:41:04.090 --> 00:41:05.160

Maria-Luz Fernandez, PhD: in the

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00:41:05.170 --> 00:41:31.860

Maria-Luz Fernandez, PhD: small intestine, and whatever is not absorbed, it goes to the large intestine, for the intestinal microbiota are going to transform into trimethylamine. Trimethylamine goes to the liver. The liver has an enzyme that is called Fmo-3 that is going to form Tmao. Why do we care about Tmao? Because Tmao concentrations have been related to cardiovascular disease risk.

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00:41:32.070 --> 00:41:38.540

Maria-Luz Fernandez, PhD: So we measure in our subjects both choline and TMAO, and here are the results.

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00:41:39.030 --> 00:41:47.990

Maria-Luz Fernandez, PhD: Choline was significantly increased after

the egg period, and there were no differences between 0 eggs or egg substitutes.

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00:41:48.220 --> 00:42:00.429

Maria-Luz Fernandez, PhD: However, TMAO did not change. It was the same number whether they were eating eggs or not, eating eggs at all, or eating the egg substitute.

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00:42:00.790 --> 00:42:05.909

Maria-Luz Fernandez, PhD: Why do we think that this happened ?I'm going to explain very quickly.

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00:42:05.930 --> 00:42:08.339

Maria-Luz Fernandez, PhD: So when we eat the eggs,

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00:42:08.530 --> 00:42:14.290

Maria-Luz Fernandez, PhD: the eggs choline is present in the form of phosphatidylcholine.

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00:42:14.490 --> 00:42:20.700

Maria-Luz Fernandez, PhD: This is the best way that is absorbed in the small intestine.

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00:42:21.550 --> 00:42:29.789

Maria-Luz Fernandez, PhD: So negligible amounts of choline are probably going to get to the large intestine, but it's very small amounts.

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00:42:29.820 --> 00:42:58.170

Maria-Luz Fernandez, PhD: And so the Tma that is produced and goes to the liver, it's almost nothing. So there is no additional formation of tmao. So we have this good thing about the choline in eggs. I cannot say about in other foods, but in eggs, because it's so highly bioavailable, it's easily absorbed in the small intestine, as we confirm here, and I have done other studies that have proven this even further.

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00:42:58.590 --> 00:43:13.090

Maria-Luz Fernandez, PhD: So in summary, the inclusion of eggs in a plant-based diet resulted in higher concentrations of plasma zeaxanthin and choline, a key nutrient that is not taken in sufficient amount in the US.

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00:43:13.250 --> 00:43:29.390

Maria-Luz Fernandez, PhD: And just remember, without increasing plasma Tmao, eggs also modify lipoprotein metabolism favorably by increasing Hdl cholesterol and the large Hdl that is the one involved in reverse cholesterol transport.

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00:43:29.540 --> 00:43:35.570

Maria-Luz Fernandez, PhD: and again, eggs did not increase Ldl cholesterol in this population.

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00:43:36.220 --> 00:43:47.370

Maria-Luz Fernandez, PhD: So, in conclusion, from the clinical study, inclusion of eggs in plant-based diet results in additional health benefits for individuals who have metabolic syndrome.

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00:43:47.900 --> 00:43:55.649

Maria-Luz Fernandez, PhD: I just want to acknowledge my 2 Phd students and my master's student, who participated in this study.

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00:43:55.730 --> 00:44:05.399

Maria-Luz Fernandez, PhD: Now, just to finish this presentation, we have to look what are the best recommendations or the best option of a plant-based diet?

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00:44:06.070 --> 00:44:14.970

Maria-Luz Fernandez, PhD: And we need to remember, because it's very important nowadays that precision nutrition addresses, personalized nutrition,

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00:44:15.010 --> 00:44:27.480

Maria-Luz Fernandez, PhD: and not a blanket recommendations. Blanket recommendations are not good. I just show you the story of those children in Peru who developed Kwashiorkor because of a blanket recommendation.

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00:44:27.640 --> 00:44:34.600

Maria-Luz Fernandez, PhD: So we have to think a lot about the population that are our clients that we are advising.

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00:44:34.640 --> 00:44:44.890

Maria-Luz Fernandez, PhD: And so it is very important to have as much information as possible about a person before specific diets are recommended.

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00:44:44.910 --> 00:44:57.359

Maria-Luz Fernandez, PhD: The most important is to focus on the nutrient content of the plants based diet, and make people aware of those foods that do not contain animal fat or not contain fat, but they are still not very healthy.

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00:44:57.370 --> 00:44:59.540

Maria-Luz Fernandez, PhD: like all those sweets and sugars.

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00:44:59.710 --> 00:45:05.179

Maria-Luz Fernandez, PhD: I want to tell you an anecdote from my study. That's why I put it there, because I didn't want to forget

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00:45:05.630 --> 00:45:09.180

Maria-Luz Fernandez, PhD: one of the people who joined my study loved fish.

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00:45:09.760 --> 00:45:18.149

Maria-Luz Fernandez, PhD: And he told me, if I join your study I cannot eat fish. Yeah, you cannot eat fish. It's okay, he says. I am very interested in doing it.

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00:45:18.630 --> 00:45:24.579

Maria-Luz Fernandez, PhD: His triglycerides were borderline when he started this study. There were like a 145

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00:45:24.730 --> 00:45:25.420

Maria-Luz Fernandez, PhD: Or

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00:45:25.710 --> 00:45:27.920

Maria-Luz Fernandez, PhD: something like that.

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00:45:28.230 --> 00:45:40.219

Maria-Luz Fernandez, PhD: Then we go the 1st 4 weeks. I don't remember if he was 1st on the egg or the egg substitute. It really doesn't matter. I measured his triglycerides, and they were 350,

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00:45:40.720 --> 00:46:05.289

Maria-Luz Fernandez, PhD: and I realized, this person needs to eat fish. The fish is the one that is controlling his triglycerides. I had to remove him from my study, unfortunately, but then I understand there are some people like that person that he eats fish because it's the one that keeps his triglycerides under control. So it's one of the things that you find out when you are doing this type of clinical studies.

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00:46:05.650 --> 00:46:08.610

Maria-Luz Fernandez, PhD: other things to consider. It's

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00:46:08.960 --> 00:46:32.279

Maria-Luz Fernandez, PhD: you have to know what is the preference of the client about what they like to eat. They can say I really want or need to eat Vegan diets, or I want to include dairy or eggs or fish, and some people say I would like to have meat now and then, so the preference of the people who are being advised about the diet cannot be ignored.

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00:46:32.340 --> 00:46:43.450

Maria-Luz Fernandez, PhD: But they need to be aware of the benefits and drawbacks of the diets in the Vegan diets, of course they are healthy, it has been clearly demonstrated, but

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00:46:43.560 --> 00:46:53.620

Maria-Luz Fernandez, PhD: people need to be aware of which nutrients are missing, and that they need to be supplemented if necessary, and this becomes more important during pregnancy.

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00:46:53.730 --> 00:47:19.909

Maria-Luz Fernandez, PhD: The vegetarian diets, they are healthy, but again, they need to focus on those foods that provide the needed nutrients, avoid desserts and sugary drinks. The pescatarian diets might be beneficial for those individuals that have a problem with elevated triglycerides, or risk for heart disease as I had with the participant in my study.

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00:47:20.300 --> 00:47:30.285

Maria-Luz Fernandez, PhD: So with this, I conclude my presentation. I hope we have an interesting discussion. I am going to stop sharing my

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00:47:31.030 --> 00:47:32.479

Maria-Luz Fernandez, PhD: my screen.

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00:47:32.560 --> 00:47:34.600

Maria-Luz Fernandez, PhD: How does this go?

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00:47:34.720 --> 00:47:35.440

Maria-Luz Fernandez, PhD: Cool.

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00:47:38.920 --> 00:47:42.719

Lisa Diewald MS, RDN, LDN: Okay, thank you. Dr. Fernandez.

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00:47:43.226 --> 00:47:47.063

Lisa Diewald MS, RDN, LDN: Before we get to questions, I just wanted to.

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00:47:47.530 --> 00:47:58.559

Lisa Diewald MS, RDN, LDN: mention that now is an excellent time to go ahead and send in questions. We will get to the questions shortly. But 1st I do want to remind you that an evaluation will be sent out by tomorrow.

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00:47:58.700 --> 00:48:05.809

Lisa Diewald MS, RDN, LDN: We really evaluate your feedback and the ideas you provide for future sessions. Do remember that RNs must

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00:48:05.820 --> 00:48:19.499

Lisa Diewald MS, RDN, LDN: complete the evaluation to receive a CE certificate, and certainly Rds and Rdns will be sent a CE certificate within the next day or 2, and we really do appreciate your feedback.

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00:48:24.040 --> 00:48:37.400

Lisa Diewald MS, RDN, LDN: Okay, as I mentioned. We'll be sharing different perspectives about plant-based eating in the next couple of months. Please join us for our next 2 free webinars in our 3 part plant-based eating series.

311

00:48:37.440 --> 00:48:44.550

Lisa Diewald MS, RDN, LDN: Dr. Malcolm Bevel, from Augusta University, Georgia Cancer Center, will be taking a look at the link between food environment

312

00:48:44.860 --> 00:49:09.529

Lisa Diewald MS, RDN, LDN: such as food swamps and food deserts and obesity related cancer outcomes and interventions that focus on plantbased interventions and any effectiveness. And finally, Dr. Andrew Freeman, who's a board certified cardiologist with a passion for prevention will explore the most recent research on plant-based eating

313

00:49:09.560 --> 00:49:23.720

Lisa Diewald MS, RDN, LDN: and health implications from a preventive cardiology standpoint. Registration information may be found on the Villanova University, Mcdonald's center for nutrition education and research website.

314

00:49:24.970 --> 00:49:29.470

Lisa Diewald MS, RDN, LDN: Okay? And I'm going to stop my share.

315

00:49:30.590 --> 00:49:49.695

Lisa Diewald MS, RDN, LDN: Thank you Dr. Fernandez, for your presentation. I think it's always important for us to hear different perspectives about. You know, plant-based eating and what that can mean in different scenarios. And one of the things that I thought was particularly

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00:49:50.210 --> 00:49:58.230

Lisa Diewald MS, RDN, LDN: insightful was to hear your ending statements about precision nutrition, and it really did

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00:49:58.752 --> 00:50:01.470

Lisa Diewald MS, RDN, LDN: emphasize that, you know in this

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00:50:01.540 --> 00:50:08.389

Lisa Diewald MS, RDN, LDN: area of plant-based eating, it's important to remember that you know, one size doesn't necessarily fit all.

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00:50:08.710 --> 00:50:22.419

Lisa Diewald MS, RDN, LDN: There is a spectrum that you can look at in terms of plant-based eating, and look at the various parameters and see what is best in conversation with your patient's lifestyle,

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00:50:23.216 --> 00:50:36.253

Lisa Diewald MS, RDN, LDN: to get the best results. Okay, couple.

Questions regarding potatoes were listed as more less helpful.

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00:50:36.970 --> 00:50:42.995

Lisa Diewald MS, RDN, LDN: you know, we all know that like there's different types of potatoes. They do provide fiber and nutrients

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00:50:43.400 --> 00:50:50.649

Lisa Diewald MS, RDN, LDN: and that kind of thing. Do you have any perspectives on potatoes as part of a plant-based diet?

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00:50:50.650 --> 00:50:58.409

Maria-Luz Fernandez, PhD: Yeah, you know that that classification, of

course, was not done by me is was done by Satifa et. al.

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00:50:58.860 --> 00:51:10.169

Maria-Luz Fernandez, PhD: I don't know when I saw them, I thought, okay for me, potatoes. I would not classify them as well. It's unhealthy because they put it in unhealthy category. I put less healthy.

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00:51:10.620 --> 00:51:24.119

Maria-Luz Fernandez, PhD: Because, like somebody saying, they do contain fiber. And I think again, we need to know how people are. Some people respond a lot to carbohydrates, and they

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00:51:24.130 --> 00:51:24.825

Maria-Luz Fernandez, PhD: get

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00:51:25.550 --> 00:51:30.830

Maria-Luz Fernandez, PhD: they gain weight easily, and they also increase the triglycerides. Everybody's different.

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00:51:31.140 --> 00:51:38.570

Maria-Luz Fernandez, PhD: I would not put them in a bad place. The potatoes, I would just say, limit the amount of potatoes.

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00:51:38.600 --> 00:51:39.240

Lisa Diewald MS, RDN, LDN: This is

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00:51:40.020 --> 00:51:57.769

Lisa Diewald MS, RDN, LDN: something that I thought of, too. You know



I don't know in your study whether you screened for individuals who were sensitive to high cholesterol. I don't know if they were able to be admitted in the study, but if they were sensitive

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00:51:57.890 --> 00:52:01.820

Lisa Diewald MS, RDN, LDN: to cholesterol, how would you handle that?

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00:52:02.020 --> 00:52:13.159

Maria-Luz Fernandez, PhD: It's very difficult to know if somebody is sensitive or not to cholesterol. The only way to know is doing a study like I did like an intervention where you feed them a lot of eggs and see what happens.

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00:52:13.550 --> 00:52:22.069

Maria-Luz Fernandez, PhD: You bring you bring a good point that some people, the vast majority, I have done a lot of studies within that population,

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00:52:22.210 --> 00:52:33.829

Maria-Luz Fernandez, PhD: Their cholesterol doesn't really change with the eggs. Some people do increase a little bit, but they also increase the Hdl. So the Ldl Hdl ratio is not affected.

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00:52:34.090 --> 00:52:39.320

Maria-Luz Fernandez, PhD: And again, I am doing studies that are called

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00:52:40.320 --> 00:52:47.520

Maria-Luz Fernandez, PhD: exaggerated because people normally do not

take 3 eggs per day for 12 weeks it is a lot.

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00:52:47.620 --> 00:52:50.890

Maria-Luz Fernandez, PhD: But you know I could say that for

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00:52:51.000 --> 00:52:55.409

Maria-Luz Fernandez, PhD: almost everybody eating one egg per day is  
is not a bad idea.

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00:52:55.930 --> 00:52:56.990

Maria-Luz Fernandez, PhD: you know?

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00:52:57.618 --> 00:53:11.231

Lisa Diewald MS, RDN, LDN: And was that in combination with like the  
remaining, the remaining part of the day, were they counseled to eat a  
plant based diet, and it was the eggs that were the

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00:53:11.620 --> 00:53:13.970

Maria-Luz Fernandez, PhD: Yes, yes.

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00:53:13.970 --> 00:53:14.820

Lisa Diewald MS, RDN, LDN: The variable.

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00:53:14.820 --> 00:53:42.960

Maria-Luz Fernandez, PhD: So that's why we put them for breakfast,  
because people normally eat eggs at breakfast, and we accompanied with  
spinach. Almost everyone likes spinach. And so that's why we did it.  
Yeah, the rest of the day they follow a plant-based diet, and we were  
very strict about it, we say, could not eat any any animal food, and

not even fish. And you saw what happened to this guy that triglycerides went up so much.

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00:53:44.540 --> 00:53:51.129

Lisa Diewald MS, RDN, LDN: Right. And what was the composition of the egg substitute? Was it an over the counter

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00:53:52.588 --> 00:53:54.580

Lisa Diewald MS, RDN, LDN: egg substance?

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00:53:54.580 --> 00:54:10.790

Maria-Luz Fernandez, PhD: Yeah. Actually, the study is supposed to was supposed to be blind to the subjects, because they always said color to the egg substitute. So we gave them in different containers that the egg substitute or the egg. So they they didn't know what they were eating. But

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00:54:10.970 --> 00:54:24.929

Maria-Luz Fernandez, PhD: you know participants are smart. The the eggs come much better with the whole egg that we with a substitute because of the Lecitine. The substitute doesn't have Lecitine, and there is a separation of the watery parts of the of the egg.

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00:54:26.300 --> 00:54:28.197

Lisa Diewald MS, RDN, LDN: Yeah, okay.

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00:54:29.000 --> 00:54:33.519

Lisa Diewald MS, RDN, LDN: I've seen plant-based diets defined as not requiring the elimination of meat.

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00:54:33.610 --> 00:54:39.239

Lisa Diewald MS, RDN, LDN: For instance, Harvard's definition. Have you compared this type of plant-based diet

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00:54:39.895 --> 00:54:47.139

Lisa Diewald MS, RDN, LDN: more similar to the Mediterranean diet to the others you mentioned. And if so, what are the differences in health outcomes?

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00:54:47.380 --> 00:54:55.299

Maria-Luz Fernandez, PhD: Yeah, you know, I'm glad that somebody brought that up. I think that a Mediterranean diet can definitely be considered a plant based diet.

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00:54:55.880 --> 00:55:01.299

Maria-Luz Fernandez, PhD: I would say pescatarian, because they do include fish is one of the main components.

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00:55:01.310 --> 00:55:04.440

Maria-Luz Fernandez, PhD: They do include meat now and then.

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00:55:04.460 --> 00:55:11.499

Maria-Luz Fernandez, PhD: It's not totally, you know, removed from their diet. So yes. So that's the type of diet that

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00:55:11.690 --> 00:55:17.919

Maria-Luz Fernandez, PhD: although people will say, Oh, they are eating animal food. Yeah. But you can say the majority is a plant

based diet.

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00:55:18.320 --> 00:55:30.780

Lisa Diewald MS, RDN, LDN: Yeah, I think it speaks to the fact that we are still working through definitions for plant-based diets. But I think everybody agrees that plant-based

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00:55:31.050 --> 00:55:34.580

Lisa Diewald MS, RDN, LDN: means predominantly plants.

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00:55:34.580 --> 00:55:34.895

Maria-Luz Fernandez, PhD: Yes.

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00:55:36.730 --> 00:55:37.580

Maria-Luz Fernandez, PhD: predominantly.

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00:55:37.580 --> 00:55:48.110

Lisa Diewald MS, RDN, LDN: You know, we we but we're still struggling and working through those definitions. How about the impact of lifestyle, you know in

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00:55:48.350 --> 00:56:00.337

Lisa Diewald MS, RDN, LDN: this, you know, we're kind of talking about diet, but we know that diet and lifestyle kind of go together. So there's exercise and stress management, and you know, adequate sleep, and all those other factors.

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00:56:00.680 --> 00:56:07.590

Maria-Luz Fernandez, PhD: Yeah, of course, it plays major role.

Because you know, now we know that the epigenetics

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00:56:07.780 --> 00:56:16.590

Maria-Luz Fernandez, PhD: that's how your genes can change through the environment. When people are stressed out, when they don't eat healthy, when they don't exercise, when they

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00:56:16.620 --> 00:56:32.960

Maria-Luz Fernandez, PhD: are inhaling something toxic, their genes can change, and and it has been related to obesity, cancer, heart disease. Yeah, so lifestyle is very important. Diet is just one of the components. I totally agree with you.

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00:56:33.640 --> 00:56:40.709

Lisa Diewald MS, RDN, LDN: Yeah, I think that that's it's so great to see that we are having more conversations about

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00:56:40.730 --> 00:56:53.179

Lisa Diewald MS, RDN, LDN: the various aspects of of lifestyle of which we know that diet plays a super huge part of it, but the others as well. Let's see

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00:56:53.270 --> 00:57:07.189

Lisa Diewald MS, RDN, LDN: if you have a patient who's being attentive to their cardiovascular surgeon. You know they're going to be balking at the liberal use of eggs, and I think, what is your suggestion to bridge this concern. And again

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00:57:07.200 --> 00:57:16.150

Lisa Diewald MS, RDN, LDN: you put a lot of eggs intentionally into your study because you wanted to exaggerate the effect and kind of measure it.

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00:57:16.667 --> 00:57:17.980

Lisa Diewald MS, RDN, LDN: So certainly it

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00:57:18.400 --> 00:57:28.320

Lisa Diewald MS, RDN, LDN: wouldn't necessarily look like that in real life. But what kind of discussion? Let's say a patient did want to have a couple eggs a week.

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00:57:28.410 --> 00:57:34.060

Lisa Diewald MS, RDN, LDN: and they're getting mixed messages. Overall want to follow a plant-based diet?

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00:57:34.060 --> 00:57:40.209

Maria-Luz Fernandez, PhD: A couple of eggs a week is nothing. I think they would eat more.

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00:57:40.680 --> 00:57:57.879

Maria-Luz Fernandez, PhD: I would say one egg daily does not affect anybody, and sometimes they are being deprived of something very healthy. And I want to point out about older people. Sometimes older people, eggs are easier to eat because their teeth and many other problems.

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00:57:58.120 --> 00:58:07.800

Maria-Luz Fernandez, PhD: And you know it's funny because cholesterol

in the blood goes up as you get older, but then it comes a point that it starts going down again.

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00:58:07.990 --> 00:58:12.633

Maria-Luz Fernandez, PhD: So I mean I don't know, I would think that

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00:58:13.200 --> 00:58:27.419

Maria-Luz Fernandez, PhD: if a person really likes eggs they shouldn't argue with a doctor, if they don't care, it's fine. They should follow the doctor instructions for me. It's very important that you eat what you like, or what it makes you happy, and what it makes you healthy, too.

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00:58:28.040 --> 00:58:45.060

Lisa Diewald MS, RDN, LDN: Yeah, I think, as we conclude, though, the webinar and our discussion, I think the emphasis on this individualized approach, and having conversations with your patients about. You know what? What are the important foods that they value and

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00:58:45.060 --> 00:59:04.840

Lisa Diewald MS, RDN, LDN: want to include as part of their plantbased diets? And how can that happen in a way that you know continues to support health. So you've really given us an opportunity to really think this through and remind ourselves that again, it's not necessarily one size fits all we need to figure out

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00:59:05.180 --> 00:59:33.819

Lisa Diewald MS, RDN, LDN: styles of plant-based eating or healthy eating that, you know, is sustainable for patients. So I want to thank



everyone for participating today. And mostly I want to thank Dr. Fernandez for joining us and sharing her perspectives. We really appreciate it. Please remember to look in your email for a link to an evaluation that will be coming in the next day or so, and your CE Certificate

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00:59:33.890 --> 00:59:47.590

Lisa Diewald MS, RDN, LDN: will follow. So for everyone who's watching. I hope you have a wonderful rest of your day, and Dr. Fernandez, continue your good work at University of Arizona in precision, nutrition

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00:59:47.700 --> 00:59:51.219

Lisa Diewald MS, RDN, LDN: and wishing you the best of luck. Yeah.

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00:59:51.220 --> 00:59:54.369

Maria-Luz Fernandez, PhD: Thank you very much. It was very nice to be here.

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00:59:54.370 --> 00:59:56.280

Lisa Diewald MS, RDN, LDN: Okay, thanks everyone.

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00:59:56.530 --> 00:59:57.240

Lisa Diewald MS, RDN, LDN: Bye-bye