

BroadcastMed | Grand Rounds: Eating for a Healthy Heart

AMIR LERMAN: Greetings, My name is Dr Amir Lerman, a Professor of Medicine and the Director of Research for the Cardiovascular Division at the Mayo Clinic. Today I'm here to talk to you about Eating for the Healthy Heart. Our population in the United States and the world is preoccupied with eating and diet. The average American spends nearly 80 minutes a day eating and/or thinking--deciding what to eat.

There is a major problem in stating what is considered healthy food, and the discrepancy between epidemiological data and outcome data. Most data is retrospective or cohort in nature. Randomized clinical trial data is difficult to accomplish in large numbers of well controlled study and blinded. There's also a discrepancy between study examining surrogate cardiovascular markers and study measuring cardiovascular outcome. Few studies have supported one single food as being overly beneficial, and difficulties in maintaining calorie neutral studies. Moreover most positive studies highlight diet as being beneficial without being to link mechanism to outcome.

Today I will tell you the menu is going to be made from the effect of diet. How much do we eat? What do we eat? And how do we eat it? Are we able to change our nature? So from multiple studies it's determined that the health and their contribution to premature death are almost 40% our behavior patterns. From this behavior patterns, the majority of them are actually eating habits, obesity, and smoking.

Other pieces of information that point to the diet are from the seven countries studies. These interesting studies show that the relationship between cardiovascular mortality and the level of cholesterol is different between areas. It is higher correlation in the United States and northern Europe, but it's lower in the Mediterranean and in Japan, indicating again, that the type of the diet and the environment that people are exposed to may have a significant impact and effect on their mortality even with the same level of cholesterol.

How much do we eat? And how is it linked to disease? There are not many studies that link the relationship between diet, reduction of weight, and cardiovascular disease. These are two landmark studies that were published in the New England circulation. This study currently addressed the same question about how dietary weight loss intervention can induce regression of surrogate for atherosclerosis, such as carotid atherosclerosis.

It is easy to see-- as we can see-- from this figure that all diet, including low-fat diet, Mediterranean diet, and low-carbohydrate diet induce more or less the same reduction in weight. And they also reduce the same amount in change in atherosclerosis in the carotid artery, as well as blood pressure. Indicating the two-year's weight loss diet can induce significant regression of measurable parameters of atherosclerosis. And the effect is similar in low-fat diet, Mediterranean, or low-carbohydrate strategies.

We move to the next one. What do we? Eat Now it's essential to know that the amount of calories that is stated on the food, does not necessarily reflect and translate directly to how much the effect on weight is going to be. For instance, if you had the same amount of calorie derived from nuts or french fries, if you eat the french fries, as indicated here, you may gain about three pounds. However if you have the same calorie amount for nuts, you're actually going to lose about half of a pound. It has to do with the way the food is prepared, and the amount of energy in calories which is actually needed to digest this kind of food. So the amount of calories themselves may be misleading. as to how it is linked to the weight, as well as to the surrogate of cardiovascular disease.

In the last decade, we were flooded with multiple diets, all of them promoted as being healthy, inducing weight loss, and reducing cardiovascular disease. However we are lacking a lot of mechanisms of the diet. And it's a problem that diet-- when we go and shop for food, the sections in the supermarket or anywhere we we shop are not divided based on diet. And we need to know how to integrate elements in order to build this healthy diet.

One of the diets that came along is one of the most healthiest one, the Mediterranean diet. They have only 30% to 40% fat. So let's review what's in this Mediterranean diet, and what data do we have that promote this data as one of the healthiest diet. One of the landmark studies that was done is the Lyon Diet Heart Study, and it's randomized almost 600-- more than 600 patients-- to Mediterranean diet and control diet. And they were followed for several years. The results showed total cardiac mortality reduced by 65% and sudden deaths by 64%. And these are the figures that depict the result. You can see that in the group that were in the Mediterranean diet, there was significant reduction in cardiovascular events in five-year follow-up. Surely if you can see such a figure with a new medical intervention, you will elect your patient to be placed on this specific drug.

Another study from Greece that had more than 22,000 patients, which was more of a retrospective analysis, interviewed people about their habits about drinking of wine and diet, and the portions of the diet. And demonstrated that this Mediterranean diet resulted in 25% reduction in death, 30% in heart disease, and also death from cancer that usually comes together with the reduction of events from diet.

The Mediterranean diet is composed of multiple elements. Specifically we can see on the daily fruit-- vegetables and fruits, a lot of beans, meat eating is very small in the weekly portion of the poultry and fish, and only rarely red meat. It also has a lot of composing of daily activity. Water to drink, and of course wine in moderation.

So let's go a little bit specifically in-depth into these elements. One of the major components of Mediterranean diet are vegetables and fruit. They are very high in phytochemicals. They are low in calories when we digest them. And they are associated with low risk of coronary heart disease.

Another interesting component of the Mediterranean diet that was drawn attention to in the last years is olive oil. Now olive oil is known to lower total LDL cholesterol. It doesn't lower HDL cholesterol. It creates resistance to oxidation, and is associated with reduced risk of coronary disease. It has recently been shown that it improves vascular and endothelial function and also prevents stroke. So olive oil is one of the major components of the Mediterranean diet that has been shown to have a beneficial effect.

Another significant element is the fish and shellfish that are rich with omega-3 fatty acids. It is known from medical studies to show antiarrhythmic effect, antithrombotic affect, lower triglycerides, lower blood pressure, and it has an anti-inflammatory effect. It is associated with reduced risk of coronary heart disease and sudden death in multiple studies.

Since then people tried to promote only the element of omega-3 fatty acid as a component to supplement the diet in order to reduce events. However this produced the point-- this study showed that there is no difference if you supplement a diet with this diet supplementation. Again indicating that you can not-- it is very difficult to separate one element from the diet-- from the whole diet-- in order to reduce events. And then the whole diet is required probably to have a beneficial effect.

Wine is one of the major components of the Mediterranean diet. It raises HDL, inhibits platelet aggregation, it's high in phenolic antioxidant, and you reduce cardiovascular events. The moderate consumption of wine in patients without and with coronary disease were shown in multiple studies to reduce-- as we can see from this figure-- the cardiovascular events. Higher doses of course were associated with higher events, but moderate consumption is secondly significantly associated with reduction of cardiovascular events.

And of course you cannot finish Mediterranean diet without a significant dessert. And one of the major components of dessert of the Mediterranean diet is the effect of specifically dark chocolate on cardiovascular events. I'm not going to go in deep to all of the studies, but there are multiple studies showing the mechanism of effect of chocolate. Some of them reduce blood pressure and stroke recently, improve vascular function, specifically endothelial function, reduce platelet reactivity, improve insulin resistance, mobilize progenitor cells and-- increase the anti-inflammatory factor. And also it has an antidepressant effect. So dark chocolate specifically has significant effects shown in mechanisms of the effect on cardiovascular health.

In general, if we have fruits, and nuts, and vegetables, and whole grain all of them were associated in cohort studies to be associated with reduction of cardiovascular events, as is seen in this figure. When we look at diet, we need to show that if we look at diet, and label it as a healthy diet, we need to see that it's actually has a scientific background behind it. It has weight reduction, improved lipid profile, reduced oxidative stress, reduced blood pressure, and specifically induces and improves vascular function.

If we take some of the elements of the Mediterranean diet, such as swine, fish, dark chocolate, fruits and vegetables and we combine them, hypothetically, we can have an almost 76% reduction in cardiovascular events. Which is equivalent to if you take multiple drugs such as statins, aspirin, folic acid, an ACE inhibitors. Promoting the concept a little bit from the polypill to maybe that poly-meal.

We also need to know that there are a lot of-- stories about diet-- a lot of myth. So there are several myths on the diet that were disproved or disputed in the past. One of them, for instance, is the beneficial effect of chicken soup. And it's known from multiple in-vitro studies that the element of chicken soup actually inhibiting inflammation and neutrophil chemotaxis. Again putting link of mechanism of the effect. And recently the effect of-- organic food was challenged, and in a recent paper in the *Annals of Internal Medicine*, as well as an article in the *New York Times*, it was promoted that it doesn't have better nutritional elements, and it's not sure that the effect of toxins is different. Trying to challenge again that maybe a regular diet is as good as an organic diet.

Dietary supplementation is very common in our society. It's a \$28 billion-- industry estimated amount that Americans spent on dietary supplementation last year. However the number of times since the '94 that the FDA has approved the safety of the efficacy of supplementation is zero, putting a caution on the fact that these supplementation may not be healthy. So I was trying to tell you and promote that there are some data, and there are in-vitro and surrogate data, that Mediterranean diet is a healthy diet. It's also important how do we eat it? It is known from several studies that eating with the family and friends has a lot of beneficial effect on cardiovascular mortality, then just eating alone. So I hope you enjoyed this talk, and bon appetit.