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Mediterranean diet and public health: Personal reflections

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Abstract (Summary)

The healthy Mediterranean diet is changing, and coronary heart disease is no longer confined to medical textbooks. A key challenge is to persuade schoolchildren to tell their parents to eat as Mediterraneans do.

Full Text (2382 words)

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In January 1993, the Harvard University School of Public Health and Oldways Preservation & Exchange Trust held an international conference on the Mediterranean diet. I addressed that very same subject 40 y ago in lectures in the Netherlands and in New York. I had been invited to talk in Amsterdam in 1952 at a joint meeting of two international congresses, one on diabetes the other on nutrition. On the basis of our findings in surveys in Naples and Madrid earlier in the year, and on some experiments in Minnesota, I said that fats in the diet had an important effect on the concentration of cholesterol in blood serum and, therefore, on the risk of developing coronary heart disease.

What we had seen in Naples in 1952 and thereafter led me to talk about the "good Mediterranean diet" (1). Now the Mediterranean diet is in the limelight, as witnessed by this supplement and by other recent events. Last year, for example, the English Nutrition Society held a symposium entitled "Mediterranean Food and Health." One of the speakers was Flaminio Fidanza, who had greeted us in 1952 when we first went to Naples to examine the question of diet and coronary heart disease. Later, Fidanza spent a year with us in Minneapolis now he is Director of the Istituto di Scienza dell' Alimentazione of the University of Perugia and soon will be emeritus.

In May 1993, a crew from an American magazine came to our home Minnelea in Minnesota, bringing a photographer from California to record the scene while I talked about the Mediterranean diet. A few days later, two women came from London to get advice for a book they proposed to write about the Mediterranean diet. More recently, two American writers requested our help with a proposal to write about the Mediterranean diet.

What is the Mediterranean diet? One definition might be that it is what the Mediterranean natives eat. But as we know and think of it now, it is a relatively new invention. Tomatoes, potatoes, and beans, for example, came from America long after Christopher Columbus discovered the New World. Today, we are interested in the Mediterranean diet as it is now and has been in recent times. The heart of what we now consider the Mediterranean diet is mainly vegetarian: pasta in many forms, leaves sprinkled with olive oil, all kinds of vegetables in season, and often cheese, all finished off with fruit, and frequently washed down with wine.

I say "leaves." Near our second home in southern Italy, all kinds of leaves are an important part of the everyday diet. There are many kinds of lettuce, spinach, Swiss chard, purslane, and plants I cannot identify with an English name such as *lettuga*, *barbabietole*, *scarola*, and *rape*. Some are perennials. The climate permits replanting annuals several times a year so leaves to eat are always at hand. No main meal in the Mediterranean countries is replete without lots of verdure (greens). *Mangiafoglia* is the Italian word for "to eat leaves" and that is a key part of the good Mediterranean diet. In fact, the best Mediterranean diet we associate with health is almost vegetarian (or lactovegetarian) because cheese is and always has been a part of this diet. Cheese, bread, and olive oil sustained the Roman legions as they conquered Europe and established the Empire. The Italians have some 60 kinds of cheese and > 300 cheese names that identify the locality of production.

In addition to the emphasis on the above foods, the Mediterranean diet differs from American and northern European diets in other ways. It is much lower in meat and dairy products and there are some differences in desserts. What we call pie is almost unknown, as are cornstarch and steamed puddings. Cakes are mostly special types for Christmas and Easter and fresh fruit is the standard dessert.

There are dietary variations among the different countries bordering the Mediterranean. Wine in moderation is a part of every main meal for most people, but is forbidden in Moslem countries. There also are differences in food intake within Mediterranean countries. In Italy there is a gradient in "richness" from north to south, with more meat and dairy products in the north and in the diet of rich people; there is a corresponding gradient in coronary heart disease risk as

we observed and reported 40 y ago (2). Those differences are diminishing but they still persist.

Even in our time, the Mediterranean diet has been changing. During the 30 y we have followed two rural populations in Italy, the biggest change in the diet has been the increasing use of meat and dairy products. My colleague Fidanza has collected data on the proportion of energy provided by various foodstuffs in the villages in Italy that are in the Seven Countries Study; from 1960 to 1980 there has been a sharp rise in the proportion of energy supplied by meat (3). For all of Italy and southern Spain, food consumption data show much more meat and milk than a few years ago (4). The Aegean Sea can be considered an extension of the Mediterranean, and the Greeks also increasingly eat more meat and milk. Certainly this is true of Crete where we started working 35 y ago and found coronary heart disease to be a medical rarity; now Crete has a medical school and coronary heart disease is no longer confined to medical textbooks (5).

As I mentioned earlier, our introduction to the Mediterranean diet began in the early 1950s. In 1951, I was a visiting professor at Oxford when the Food and Agriculture Organization of the United Nations asked me to chair their first conference on nutrition in their new headquarters in Rome. The conferees talked only about nutritional deficiencies. When I asked about the diet and the new epidemic of coronary heart disease, Gino Bergami, Professor of Physiology at the University of Naples, said coronary heart disease was no problem in Naples.

Back in Oxford, I was free after obligatory lectures. We were freezing in our unheated house and were tired of food rationing. Why not go down to Naples and check Bergami's claim? We found that Bergami was right to some extent. Heart attacks were rare except among the small class of rich people whose diet differed from that of the general population-they ate meat every day instead of every week or two. My wife Margaret measured serum cholesterol concentrations and found them to be very low except among members of the Rotary Club. So there seemed to be an association between the diet, serum cholesterol, and coronary heart disease.

After confirming these relationships in a month's work in Madrid, I presented my views at the 1952 congress in Amsterdam. Few among the large audience accepted my thesis of an important association between the diet and the incidence of coronary heart disease; no one rose to say my views warranted further study. A few months later, I repeated the lecture to a small audience in New York at Mt Sinai Hospital. One listener, Fred Epstein, was convinced by the data I presented; ever since, he has been spreading the message with great effect all over Europe and America. On October 30, 1993, Epstein gave the summary lecture at the international celebration of the Seven Countries Study in Fukuoka, Japan, and 2 wk later he gave the fourth annual Ancel Keys Lecture at the 1993 American Heart Association Convention.

My concern about diet as a public health problem began with our surveys in Naples and Madrid, but my interest in the diet began with experiments. I wanted to know the effect of the diet on serum cholesterol. Some research reports indicated an association between serum cholesterol and coronary heart disease. So we initiated a series of controlled experiments on men confined in a mental hospital. We soon found an effect of dietary fats on serum cholesterol concentrations. These experiments, which were continued for 8 y, defined many details of these relations (6-9).

The major villains in the diet that are responsible for raising the concentration of cholesterol in the blood serum are saturated fatty acids in the fat of meat and dairy products. Preformed cholesterol in the diet also tends to raise blood cholesterol concentrations slightly if the diet otherwise is extremely low in cholesterol. Our Minnesota findings were confirmed by Mark Hegsted at Harvard University in similar experiments (10). Saturated fatty acids and preformed cholesterol are commonly found in the same foods. The good Mediterranean diet is low in both saturated fat and cholesterol.

International surveys and, later, prospective studies on populations demonstrated the need for measures to control serum cholesterol that focus on the diet before resorting to drugs. Educational programs and widespread publicity are already having some beneficial effects, indicated first by lower concentrations of serum cholesterol in population samples, then by declining rates of heart attacks, notably in Finland and in the United States. The challenge is to tell the world at large what should happen and how to make it happen.

There are economic problems, habits, and prejudices to overcome. We learn something from Italian restaurants in the United States and England. Those restaurants are increasingly popular but the food they serve is commonly far from the Mediterranean pattern. There is no such thing as a plain dish of spaghetti or a simple pizza as we found in Naples 40 y ago. Everything has to be loaded with butter or margarine and ground meat. Serving only fruit for dessert is not common; ice cream or pie is customary. Whereas Italian restaurants brag about the healthy Mediterranean diet, they serve a travesty of it (11).

We all agree about the importance of the diet for public health and what the Mediterranean diet can tell us. But we

must consider what that diet is now, what it used to be, and how it is changing. Unhappily, the current changes in Mediterranean countries tend to destroy the health virtues of the diet as we saw them 40 y ago. Efforts are needed to reverse this change. Education is important. We should concentrate on the medical profession and the schools. It is not enough that doctors measure serum cholesterol and tell patients with high values to avoid butter and fatty meat. They also should emphasize prevention by targeting the general public.

The annual seminars sponsored by the International Society and Federation of Cardiology, and organized by Jeremiah Stamler and his wife Rose, constitute a useful model for teaching doctors. The first two seminars were held in the Mediterranean area, one in Makarska, a small town on the coast of the Adriatic Sea, and the second in Pioppi, a village on the Mediterranean coast ==4 km from our home in Italy. The 25th seminar was held in 1992. As of this date, some 800 doctors from 30 cities in 22 countries have attended the 2-wk seminars.

In these seminars, we stress the Mediterranean type of diet and its helpful role in controlling the concentration of serum cholesterol and reducing the associated risk of coronary heart disease. The importance of cholesterol depends on where it is. We worry about it in the blood serum, but in the diet it is another matter. To advertise food products as being low in or free from cholesterol is misleading. Dietary cholesterol is far less important than are saturated fatty acids in raising cholesterol in the blood serum. We should not object to promoting lean meat, even though the leanness costs a dollar or more per pound. We talk about persuading people not to eat some things, but it may be even more difficult to get them to eat certain things, and to eat them more often and in larger amounts. I tell people to eat more vegetables and fruits because these foods are good in themselves and can replace food items that are bad.

Finally, I believe it is important to bring the diet message to schoolchildren. In the long run, they should benefit the most from beneficial dietary changes and they can take the message home to their parents. Think what happened when Apple computers (Apple Computer Inc, Cupertino, CA) were given free to schools. The children told their parents and soon millions of Apple computers were sold. Our challenge is to figure out how to make children tell their parents that they should eat as Mediterraneans do. At least we should help children get rid of some nonsense ideas and convince them that meat and rich dairy products will not make the boys any stronger and the girls any prettier.

1 From the Division of Epidemiology, School of Public Health, University of Minnesota, Minneapolis.

2 Reprints not available. Address correspondence to A Keys, Division of Epidemiology, School of Public Health, Suite 300, University of Minnesota, 1300 South Second Street, Minneapolis, MN 55454-1015.

REFERENCES

1. Keys A, Keys M. How to eat well and stay well the Mediterranean way. New York: Doubleday & Co, 1975.
2. Keys A. Coronary heart disease in seven countries. *Circulation* 1970;41(suppl 1):1-211.
3. Kromhout D, Keys A, Aravanis C, et al. Food consumption patterns in the 1960s in seven countries. *Am J Clin Nutr* 1989;49:889-94.
4. Food and Agriculture Organization. Food balance sheets, 1984-8 average. Rome: FAO, 1991.
5. Kafatos A, Kouromalis I, Vlachonikolis I, et al. Coronary-heart-disease risk-factor status of the Cretan urban population in the 1980s. *Am J Clin Nutr* 1991;54:591-8.
6. Keys A, Anderson JT, Grande F. Serum cholesterol response to changes in the diet. I. Iodine value of dietary fat versus 2S-P. *Metabolism* 1965;14:747-58.
7. Keys A, Anderson JT, Grande F. Serum cholesterol response to changes in the diet. II. The effect of cholesterol in the diet. *Metabolism* 1965;14:759-65.
8. Keys A, Anderson JT, Grande F. Serum cholesterol response to changes in the diet. III. *Metabolism* 1965;14:766-75.
9. Keys A, Anderson JT, Grande F. Serum cholesterol response to changes in the diet. III. *Metabolism* 1965;14:776-87.

10. Hegsted DM, McGandy RB, Myers ML, Stare FJ. Quantitative effects of dietary fats on serum cholesterol in man. *Am J Clin Nutr* 1965;17:281-91
11. Hurley J, Leibman B. When in Rome....*Nutr Action Health Lett* 1994;21:1,5-7.

Ancel Keys Division of Epidemiology School of Public Health, Suite 300 University of Minnesota 1300 South Second Street Minneapolis, MN 55454-1015

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