Food FAQs

Eating a healthy diet is hard work. There are hundreds of guides out there — often providing conflicting instructions. Deciding what advice to take means wrestling with a number of tough questions.

Fruitful analysis: researchers have modelled the contribution of various food groups to the US diet.

STILL PICS

How is science converted to dietary advice?

To make the jump from scientific data to specific recommendations for a healthy diet — that everyone should now eat nine servings of fruit and vegetables a day, for instance — the scientists on the US Dietary Guidelines Advisory Committee turned to computer modelling.

They mixed and matched foods from the traditional groups — fruits, vegetables, grains, meat and beans, dairy foods, fats and sweets — to come up with combinations that met nutritional requirements put forward by the Institute of Medicine's Dietary Reference Intakes. This gave them a series of food patterns for a range of daily calorie intake levels from 1,000 to 3,200, in increments of 200. These model diets were designed to boost nutrients that are often too low in US diets, such as vitamin E, calcium, magnesium, potassium, fibre and vitamin A.

In a twist, the nutritional value of each food group was calculated to reflect what Americans actually eat, rather than as a simple average of all the foods in the group. For example, broccoli accounts for more than half of the greens Americans eat, and spinach about a fifth, according to the 1999–2002 National Health and Nutrition Examination Survey. So the value of the greens group as a whole was calculated as having 0.53 of the nutritional values of broccoli and 0.20 of those of spinach. The remainder was taken as the combined average of other greens.

Committee members say that this approach allowed them to make recommendations with practical value to Americans, who are not likely to radically shift the proportions of foods they eat within the food groups.

But the result did not entirely satisfy nutrition professionals. Dena Bravata, a physician and obesity researcher at Stanford University in California, says that although the guidelines are valuable she would have preferred them to be "based more on the scientific evidence rather than this hybrid approach". The average US diet is hardly ideal, she says, and knowing what food combinations are optimal would allow patients and clinicians to create individualized diets based on the best available evidence.

The approach has its disadvantages, the committee admits. Many people in the United States don't get enough vitamin E, for example, so one might have expected the guidelines to recommend eating more nuts and oils, which are rich in this vitamin. But Americans eat very few real nuts (peanuts, although popular, are actually legumes) and use oils that are low in vitamin E, so nuts and oils ended up with low vitamin E scores in the computation. This meant acrobatic accounting to boost other food groups with average levels of vitamin E. **Declan Butler**

Which countries or cultures have the best diets?

Several groups are in the running. Many people consider the traditional Mediterranean diet to be one of the healthiest. But times are changing. With the globalization of the food market, processed foods are creeping into traditional diets at the same time that physical activity is declining in many parts of the world. More and more, the people with the best diets are those who make a concerted effort.

In collaboration with the Harvard School of Public Health, Oldways, a Boston-based non-profit organization that promotes healthy eating, has assembled several traditional diets into food-guide pyramids, following the shape of the official eating guide set out by the US Department of Agriculture. These take traditional dietary patterns into account, as well as data from clinical and epidemiological research.

The Oldways Mediterranean pyramid is based on the diet of Greece, Italy, Portugal and Spain around 1960, a time when people in those countries lived longer than their northern European neighbours and were less likely to develop heart disease. Their daily fare included wholegrain bread, pasta, rice, fruit, beans, vegetables, cheese, yoghurt and that quintessential Mediterranean ingredient, olive oil. They also ate fish, poultry, eggs and sweets weekly. But red meat, with its artery-clogging saturated fat, was consumed less often.

Today, these eating habits are gradually being abandoned, and at the same time the Mediterranean advantage in life expectancy has decreased[1] and obesity is on the rise[2]. But

the diet itself remains popular among those who try to eat right. As a result, diet-conscious people in places that lack strong nutritional traditions may be candidates for the best eaters today. "Middle-aged, educated women in California eat particularly healthy diets," says Martijn Katan, nutrition scientist at the Wageningen Centre for Food Sciences in the Netherlands.

If effort is essential, certainly few countries have tried harder to eat right than Finland. In the early 1970s, Finnish men had the highest rate of heart disease in the world. Their diet consisted of large amounts of whole milk, cheese and salt, with very little in the way of fruit and vegetables. A national programme of education and changes to the food supply over three decades has vastly improved the national diet. Today, the mortality from coronary heart disease in working-age men has been reduced to a quarter of what it was in the 1970s (ref. 3). **Achim Schneider**

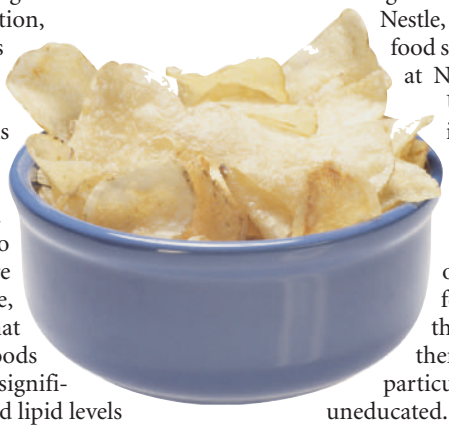
There must be a natural diet for humans — what did we evolve to eat?

The good news is that evolution teaches us that humans can eat just about any mix of the basic food groups. During evolution, we have colonized almost every ecosystem on Earth, and adapted to what was available; from Arctic populations eating almost exclusively animal protein, to villagers in the peaks of the Andes living largely on grains and cereals.

We evolved as "flexible eaters", says William Leonard, an anthropologist at Northwestern University in Evanston, Illinois, and an expert on diet in evolution. Taken from this evolutionary vantage point, arguments in diet books over whether a low-fat, high-carbohydrate diet is better than a high-protein, low-carb diet make no sense, he says. Alice Lichtenstein, a cardiovascular researcher at Tufts University School of Medicine in Boston who sat on the scientific committee that produced the 2000 US dietary guidelines, agrees. "A variety of diets are possible from an evolutionary point of view," she says.

The bad news is that evolution has also left us with a genetic legacy: our brains and genes are hardwired to seek out as much energy as possible for the least physical effort. This served humans well during millennia when starvation was a constant threat to our survival, but is not adapted to the modern world where high-calorie foods are a phone order or short drive away.

Evidence for this can be found in the Arctic, for instance. Indigenous people who maintain a traditional lifestyle eat a great deal of meat, yet they have low blood lipid levels, which is a risk factor in heart disease, and enjoy good cardiovascular health. The explanation, Leonard proposes, is that their rate of metabolism is raised as a result of vigorous physical activity and in response to their frozen environment. But their relatives who have adopted a more sedentary way of life, and a Western diet that has more processed foods and less meat, have significantly increased blood lipid levels and higher rates of obesity and cardiovascular disease[4].



Such findings have implications for the hunt for 'fat genes'. Although some genes may be linked to the risk of getting fat, obesity is less the result of individual genetic propensities than of the shift in environmental conditions, says Ricardo Uauy, an expert on public health and nutrition at the London School of Hygiene and Tropical Medicine. "The past 50 years is too short to modify our evolutionary trajectory." **Declan Butler**

Do we have enough of the right kind of food for everyone on the planet?

Certainly if one considers the world's chronically undernourished, who now number some 850 million people[5], the answer is no. But the surprise is that many of those who are better off or who live in countries with abundant food supplies still fail to get the nutrients they need, and may even be overweight in spite of this.

The problem of chronic hunger occurs almost entirely in poor countries. The condition is particularly lethal to children, of whom more than 3.7 million died in 2002 from the health consequences of being underweight. Another estimated 850,000 died because their diet — although sufficiently rich in calories — did not contain enough vital components such as iron, vitamin A and zinc[5].

That lack of proper nutrients is also a phenomenon in wealthy countries, where food insecurity, if not starvation, is surprisingly common. In the United States, for example, 12.6 million households (about 11%) fall short of basic food needs at some point during the year. In about a quarter of those cases, people fail to get government food aid or find private charities to make up the difference, and so go hungry[6].

Ironically, poverty and obesity often go hand in hand in developed countries[7]. "Obesity is a disease of the poor in rich countries, whereas in poor countries obesity is a disease of the rich," says Katan.

A key factor is that junk food tends to offer the most calories for the least money. "This is the single most important factor influencing food choice," says Marion Nestle, professor of nutrition, food studies and public health at New York University. In US supermarkets, for instance, a 270-calorie doughnut costs about 75¢, the same as 125-calorie apple.

The ready availability of processed and fast foods in many corners of the globe is now making them the natural choice, particularly for the poor and uneducated. Apart from being cheap, they have a natural appeal, Nestle says. "Eating highly refined food rich in sugar and fat is a kind of joy, which poor people do not frequently have," she says.

Although it is true that wholesome foods are also available throughout the industrialized world, evidence suggests that even slight inconvenience is enough to put people off buying them. A representative study involving participants in the US food-stamp programme shows that people tend to buy more fruit the closer they live to a supermarket[8]. **Achim Schneider**

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