

FEATURES

There was a time when red meat was a luxury for ordinary Americans, or was at least something special: cooking a roast for Sunday dinner, ordering a steak at a restaurant. Not anymore. Meat consumption has more than doubled in the US in the last 50 years.

Now a new study of more than 500,000 Americans has provided the best evidence yet that our affinity for red meat has exacted a hefty price on our health and limited our longevity.

The study found that, other things being equal, the men and women who consumed the most red and processed meat were likely to die sooner, especially from one of our two leading killers, heart disease and cancer, than people who consumed much smaller amounts of these foods.

Results of the decade-long study were published in the March 23 issue of *The Archives of Internal Medicine*. The study, directed by Rashmi Sinha, a nutritional epidemiologist at the National Cancer Institute, involved 322,263 men and 223,390 women ages 50 to 71 who participated in the National Institutes of Health-AARP Diet and Health Study. Each participant completed detailed questionnaires about diet and other habits and characteristics, including smoking, exercise, alcohol consumption, education, use of supplements, weight and family history of cancer.

DETERMINING RISK

During the decade, 47,976 men and 23,276 women died, and the researchers kept track of the timing and reasons for each death. Red meat consumption ranged from a low of less than 28 a day, on average, to a high of 113g a day, and processed meat consumption ranged from at most once a week to an average of 42.5g a day.

The increase in mortality risk tied to the higher levels of meat consumption was described as "modest," ranging from about 20 percent to nearly 40 percent. But the number of excess deaths that could be attributed to high meat consumption is quite large given the size of the American population.

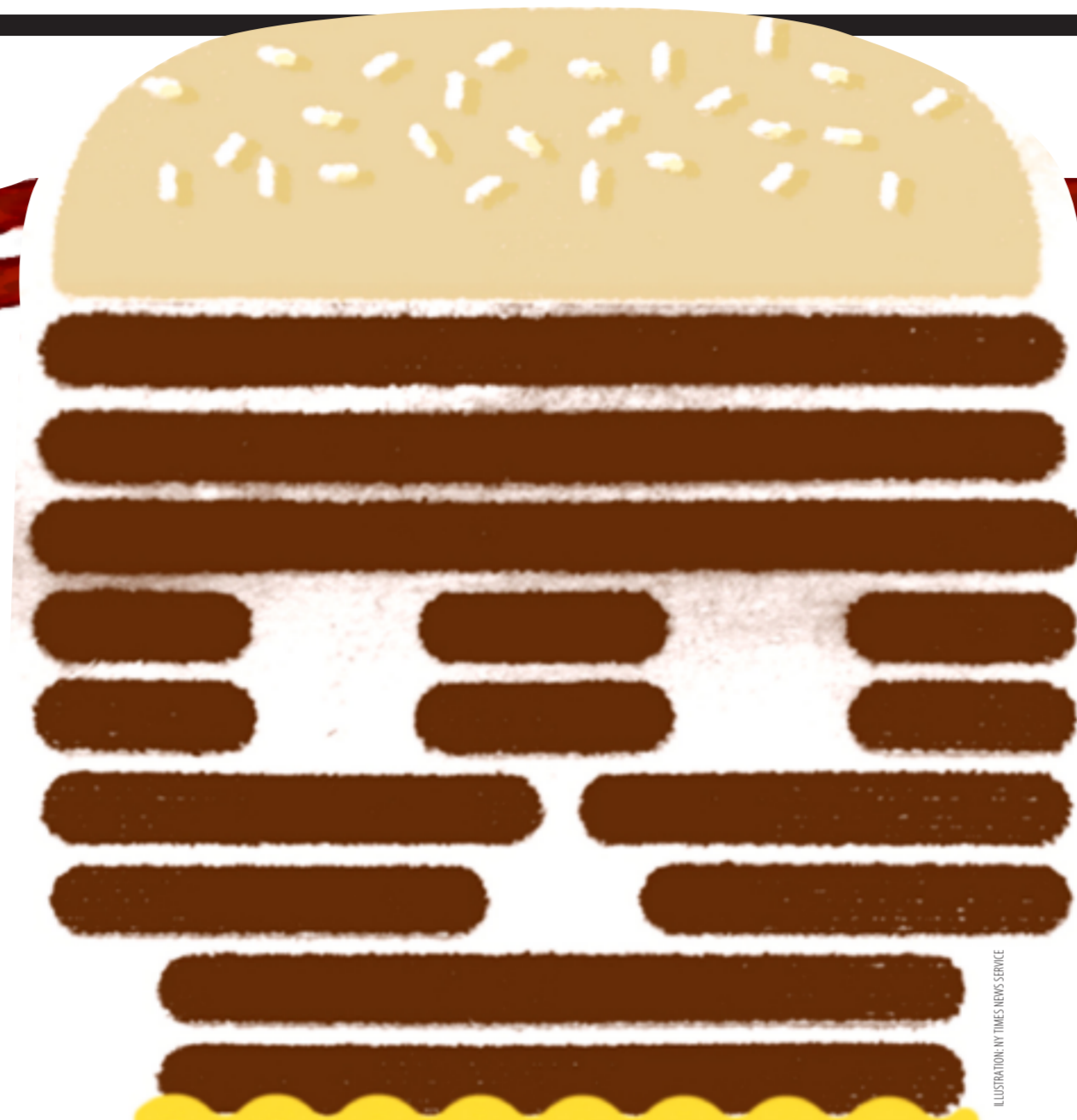
Extrapolated to all Americans in the age group studied, the new findings suggest that over the course of a decade, the deaths of 1 million men and perhaps half a million women could be prevented just by eating less red and processed meats, according to estimates prepared by Barry Popkin, who wrote an editorial accompanying the report.

To prevent premature deaths related to red and processed meats, Popkin suggested in an interview that people should eat a hamburger only once or twice a week instead of every day, a small steak once a week instead of every other day, and a hot dog every month and a half instead of once a week.

In place of red meat, nonvegetarians might consider poultry and fish. In the study, the largest consumers of "white" meat from poultry and fish had a slight survival advantage. Likewise, those who ate the most fruits and vegetables also tended to live longer.

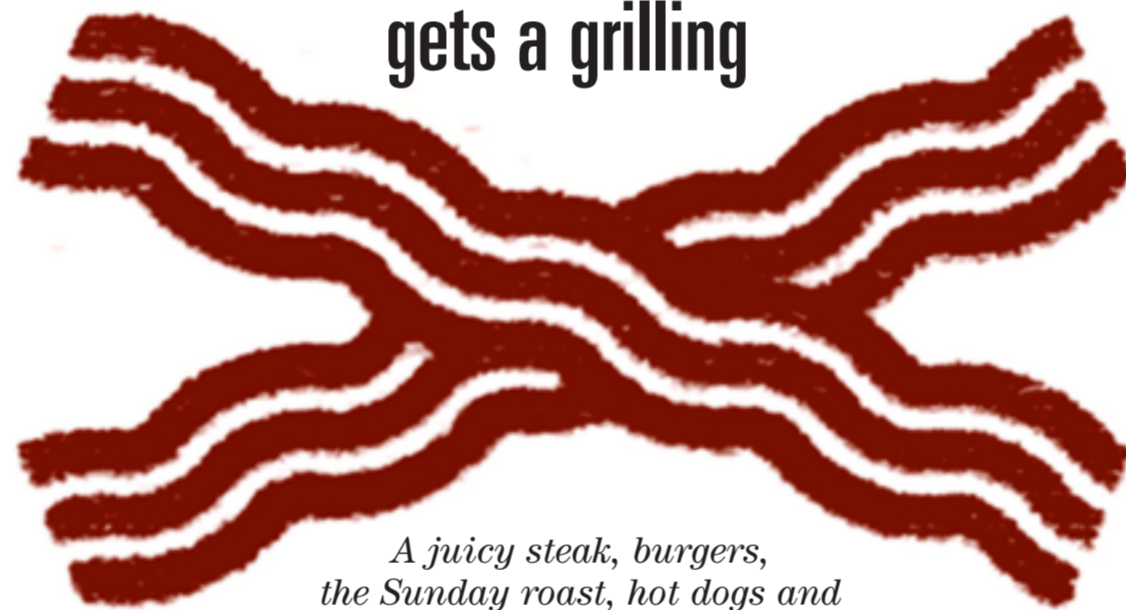
Anyone who worries about global well-being has yet another reason to consume less red meat. Popkin, an epidemiologist at the University of North Carolina, said that a reduced dependence on livestock for food could help to save the planet from the ravaging effects of environmental pollution, global warming and the depletion of potable water.

"In the US," Popkin wrote, "livestock production accounts for 55 percent of the erosion process, 37 percent of pesticides applied, 50 percent of antibiotics consumed, and a third of total discharge of nitrogen and phosphorus to surface water."



Red meat

gets a grilling



A juicy steak, burgers, the Sunday roast, hot dogs and salami: all very tasty, but a new study suggests the result of overindulging in red meat may be an early death from preventable causes

BY JANE E. BRODY
NY TIMES NEWS SERVICE, NEW YORK

FINDING A CULPRIT

A question that arises from observational studies like this one is whether meat is in fact a hazard or whether other factors associated with meat-eating are the real culprits in raising death rates. The subjects in the study who ate the most red meat had other less-than-healthy habits. They were more likely to smoke, weigh more for their height, and consume more calories and more total fat and saturated fat. They also ate fewer fruits and vegetables and less fiber, took fewer vitamin supplements, and were less physically active.

But in analyzing mortality data in relation to meat consumption, the cancer institute researchers carefully controlled for all these and many other factors that could influence death rates. The study data have not yet been analyzed to determine what, if any, life-saving benefits might come from eating more protein from vegetable sources like beans or a completely vegetarian diet.

The results mirror those of several other studies in recent years that have linked a high-meat diet to life-threatening health problems. The earliest studies highlighted the connection between the saturated fats in red meats to higher blood levels of artery-damaging cholesterol and subsequent heart disease, which prompted many people to eat leaner meats and more skinless poultry and fish. Along with other dietary changes, like consuming less dairy fat, this resulted in a nationwide drop in average serum cholesterol levels and contributed to a reduction in coronary death rates.

Elevated blood pressure, another coronary risk factor, has also been shown to be associated with eating more red and processed meat, Sinha and colleagues reported.

Poultry and fish contain less saturated fat than red meat, and fish contains omega-3 fatty acids that have been linked in several large studies to heart benefits. For example, men who consume two servings of fatty fish a week were found to have a 50 percent lower risk of cardiac death, and in the Nurses' Health Study of 84,688 women, those who ate fish and foods rich in omega-3 fatty acids at least once a week cut their coronary risk by more than 20 percent.

TIES TO CANCER

Choosing protein from sources other than meat has also been linked to lower rates of cancer. When meat is cooked, especially grilled or broiled at high temperatures, carcinogens can form on the surface of the meat. And processed meats like sausages, salami and bologna usually contain nitrosamines, although there are products now available that are free of these carcinogens.

Data from 1 million participants in the European Prospective Investigation Into Cancer and Nutrition found that those who ate the least fish had a 40 percent greater risk of developing colon cancer than those who ate more than 50g of fish a day. Likewise, while a diet high in red meat was linked to an increased risk of prostate cancer in the large Selenium and Vitamin E Cancer Prevention Trial, among the 35,534 men in the study, those who consumed at least three servings of fish a week had half the risk of advanced prostate cancer compared with men who rarely ate fish.

Another study, which randomly assigned more than 19,500 women to a low-fat diet, found after eight years a 40 percent reduced risk of ovarian cancer among them, when compared with 29,000 women who ate their regular diets.

[TECHNOLOGY]

iPhone's dominance threatened by a bushel of new devices

It happened before when the Mac brought a mouse to every desktop. Once again, the time is ripe for competitors to reap the benefits of Apple's latest revolution

BY RICHARD WRAY
AND BOBBIE JOHNSON
THE OBSERVER, LONDON

When a black-jumpered Steve Jobs bounded on to a San Francisco stage just over two years ago to give the keynote speech at the annual gathering of the Apple faithful known as Macworld, he made his intentions very plain. "Every once in a while a revolutionary product comes along that changes everything," he said, to whoops and cheers. "Today Apple is going to reinvent the phone."

Jobs is given to hyperbole, but when, later this month, the first wave of British users are freed from the contracts they had to sign to grab one of the early iPhones and start contemplating a replacement, they will be faced with a range of remarkably similar devices.

That ever-expanding array of touchscreen handsets is just the physical evidence of the monumental change the iPhone has wrought. It has sent some of the largest technology companies in the world back to the drawing board and proved that, given the opportunity, people will do far more with a phone than make calls and send texts. For Apple, the iPhone may also be one of the most important products it has produced since its first personal computers in the late 1970s.

Before the iPhone there were already

touchscreen devices; there were mobile phones that could play music and videos; there were mobile phones that could access the Internet and send e-mails; and it was already possible to download applications on to some devices in order to personalize them. But hardly anyone took advantage of these features. Finding them was hard enough; getting them to work was a nightmare and most consumers gave up.

"It is not as though Apple invented a totally new technology," says Adam Leach, principal analyst at consultancy Ovum. "What they did was re-think the whole mobile experience and produce a very polished experience compared with what people were used to."

The iPhone was also aimed at a segment of the market that the giants of the handset industry had been ignoring — the "high end." Nokia, Motorola and Sony Ericsson were chasing the middle of the market where the high volumes and high subsidies from the mobile phone operators were. Their launch strategies involved upgrading their phones bit by bit so as to make the "new" device just a little more attractive. Making a phone a different color boosted sales, but did nothing to persuade anyone to do more than make calls, send texts or download the occasional ringtone.



Apple's iPhone, above, is losing market share to competitors such as HTC's G1, right. PHOTOS: AGENCIES

The iPhone, in stark contrast, is sexy and very, very easy to use. Since its appearance there has been a stampede back into making top-tier phones, not least because the recession has decimated the mid-market. Cash-strapped consumers are demanding a much better phone in return for signing an expensive monthly contract; if they don't get one, they are opting for cheaper SIM card-only deals and holding on to their old handset.

BlackBerry rushed out its first touchscreen device — the BlackBerry Storm — to be followed by the first from Nokia, the 5800; Samsung and LG have been churning out touchscreen devices from the Tocco and the Omnia to the Renoir and the Arena. Waiting in the wings are new touchscreen devices from Palm (the Pre) and Sony Ericsson (the Idoi).

The iPhone's ease of use, meanwhile, has turned the spotlight back on an often-neglected aspect of mobile phones: the software. A month after the iPhone appeared in the UK, Google brought together some of the biggest



names in mobile to develop a new operating system. Called Android, it has already appeared on two touchscreen devices, made by HTC, and many more are planned. A year after the iPhone appeared, Nokia bought out its partners in Symbian, which produces operating systems for smartphones. Then Microsoft rewrote Windows Mobile and its new guise, Windows Mobile 6.5, has borrowed a lot from the iPhone.

Already more than 1 billion iPhone applications have been downloaded from the iTunes store. The Android marketplace is operating, while RIM — maker of the BlackBerry — is also pushing applications at its users. Nokia's Ovi Market and Microsoft's Windows Marketplace are both set to go live this month.

In the 12 months before the handset launched, Apple raked in US\$22 billion in revenues. That has rocketed to almost US\$34 billion in the past year, largely boosted by the iPhone and iPod Touch. The success of the iPod made Apple's Cupertino headquarters one of the coolest places to work in Silicon Valley and the iPhone has made it one of the most powerful.

With so much now at stake, some experts suggest the iPhone will soon become the most important technology Apple's empire has produced, even,

potentially, eclipsing the computer business that revolutionized our lives in the 1980s. There are an estimated 1 billion personal computers in use worldwide, but that many mobile phones are sold every year and for many people their first experience of computing will be through a mobile phone.

But while Apple caused a revolution, it is unlikely to become dominant in the market. It has sold just over 20 million iPhones since the first device appeared in 2007; in that time over 1.5 billion phones have been shipped by everyone else. A similar thing happened with the personal computer market. The concept was championed by Apple when it launched Apple II, the world's first personal computer, in 1977, and the first Macintosh in 1984, but other players now lead the market.

Steve Wozniak, who co-founded Apple with Jobs, reckons the Apple II remains their most important innovation: "That started the company and brought it the great wealth to develop so many things from then on. It also began a revolution of computers at home, at school, etc. The Macintosh has been around for over 20 years. Sure, it's more the name that stuck than any technology, but wait 20 years before comparing the importance of the iPhone in terms of historical importance to the Macintosh platform."