

# Obesity: An *Overblown* Epidemic?

A growing number of dissenting researchers accuse government and medical authorities—as well as the media—of misleading the public about the health consequences of rising body weights

By W. Wayt Gibbs

Could it be that excess fat is not, by itself, a serious health risk for the vast majority of people who are overweight or obese—categories that in the U.S. include about six of every 10 adults? Is it possible that urging the overweight or mildly obese to cut calories and lose weight may actually do more harm than good?

Such notions defy conventional wisdom that excess adiposity kills more than 300,000 Americans a year and that the gradual fattening of nations since the 1980s presages coming epidemics of diabetes, cardiovascular disease, cancer and a host of other medical consequences. Indeed, just this past March the *New England Journal of Medicine* presented a “Special Report,” by S. Jay Olshansky, David B. Allison and others that seemed to confirm such fears. The authors asserted that because of the obesity epidemic, “the steady rise in life expectancy during the past two centuries may soon come to an end.” Articles about the special report by the *New York Times*, the *Washington Post* and many other news outlets emphasized its forecast that obesity may shave up to five years off average life spans in coming decades.

And yet an increasing number of scholars have begun accusing obesity experts, public health officials and the media of exaggerating the health effects of the epidemic of overweight and obesity. The charges appear in a recent flurry of scholarly books, including *The Obesity Myth*, by Paul F. Campos (Gotham Books, 2004); *The Obesity Epidemic: Science, Morality and Ideology*, by Michael Gard and Jan Wright (Routledge, 2005); *Obesity: The Making of an American Epidemic*, by J. Eric Oliver (Oxford University Press, August 2005); and a book on popular misconceptions about diet and weight gain by Barry Glassner (to be published in 2006 by HarperCollins).



These critics, all academic researchers outside the medical community, do not dispute surveys that find the obese fraction of the population to have roughly doubled in the U.S. and many parts of Europe since 1980. And they acknowledge that obesity, especially in its extreme forms, does seem to be a factor in some illnesses and premature deaths.

They allege, however, that experts are blowing hot air when they warn that overweight and obesity are causing a massive, and worsening, health crisis. They scoff, for example, at the 2003 assertion by Julie L. Gerberding, director of the Centers for Disease Control and Prevention, that “if you looked at any epidemic—whether it’s influenza or plague from the Middle Ages—they are not as serious as the epidemic of obesity in terms of the health impact on our country and our society.” (An epidemic of influenza killed 40 million people worldwide between 1918 and 1919, including 675,000 in the U.S.)

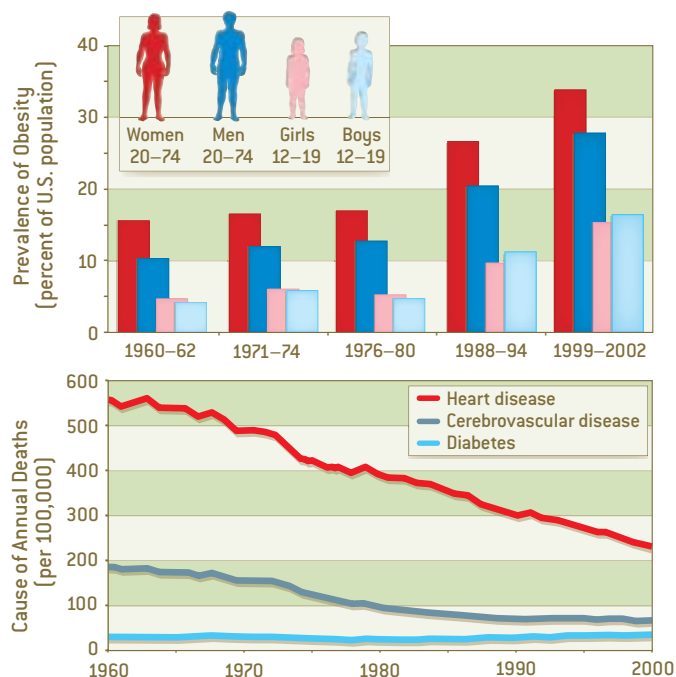
What is really going on, asserts Oliver, a political scientist at the University of Chicago, is that “a relatively small group of scientists and doctors, many directly funded by the weight-loss industry, have created an arbitrary and unscientific definition of overweight and obesity. They have inflated claims and distorted statistics on the consequences of our growing weights, and they have largely ignored the complicated health realities associated with being fat.”

One of those complicated realities, concurs Campos, a professor of law at the University of Colorado at Boulder, is the widely accepted evidence that genetic differences account for 50 to 80 percent of the variation in fatness within a population. Because no safe and widely practical methods have been shown to induce long-term loss of more than about 5 percent of body weight, Campos says, “health authorities are giving people advice—maintain a body mass index in the ‘healthy weight’ range—that is literally impossible for many of them to follow.” Body mass index, or BMI, is a weight-to-height ratio [see box on opposite page for the definition of weight categories].

By exaggerating the risks of fat and the feasibility of weight loss, Campos and Oliver claim, the CDC, the U.S. Department of Health and Human Services and the World Health Organization inadvertently perpetuate stigma, encourage unbalanced diets and, perhaps, even exacerbate weight gain. “The most perverse irony is that we may be creating a disease simply by labeling it as such,” Campos states.

## Overview/A Crisis in Question

- According to conventional wisdom, excess fat is an important cause of chronic disease, and the epidemic increase in obesity portends a coming health crisis.
- Four recent and forthcoming books by academic researchers argue that in fact the consequences of this trend for public health remain far less certain—and almost certainly less dire—than commonly suggested by obesity experts, government authorities and media reports.



PREVALENCE OF OBESITY has roughly doubled in the U.S. since 1980 among adults and has tripled among children (top). Although deaths caused by diabetes have risen somewhat, predicted increases in mortality from heart disease and stroke have not materialized (bottom).

### A Body to Die For

ON FIRST HEARING, these dissenting arguments may sound like nonsense. “If you really look at the medical literature and think obesity isn’t bad, I don’t know what planet you are on,” says James O. Hill, an obesity researcher at the University of Colorado Health Sciences Center. New dietary guidelines issued by the DHHS and the U.S. Department of Agriculture in January state confidently that “a high prevalence of overweight and obesity is of great public health concern because excess body fat leads to a higher risk for premature death, type 2 diabetes, hypertension, dyslipidemia [high cholesterol], cardiovascular disease, stroke, gall bladder disease, respiratory dysfunction, gout, osteoarthritis, and certain kinds of cancers.” The clear implication is that any degree of overweight is dangerous and that a high BMI is not merely a marker of high risk but a cause.

“These supposed adverse health consequences of being ‘overweight’ are not only exaggerated but for the most part are simply fabricated,” Campos alleges. Surprisingly, a careful look at recent epidemiological studies and clinical trials suggests that the critics, though perhaps overstating some of their accusations, may be onto something.

Oliver points to a new and unusually thorough analysis of three large, nationally representative surveys, for example, that found only a very slight—and statistically insignificant—increase in mortality among mildly obese people, as compared with those in the “healthy weight” category, after subtracting the effects of age, race, sex, smoking and alcohol consumption. The three surveys—medical measurements collected in the early 1970s, late 1970s and early 1990s, with

LUCY READING-IKKANDA; SOURCES: HEALTH, UNITED STATES, 2004; U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES; STATISTICAL ABSTRACT OF THE UNITED STATES: 2004-2005; U.S. CENSUS BUREAU

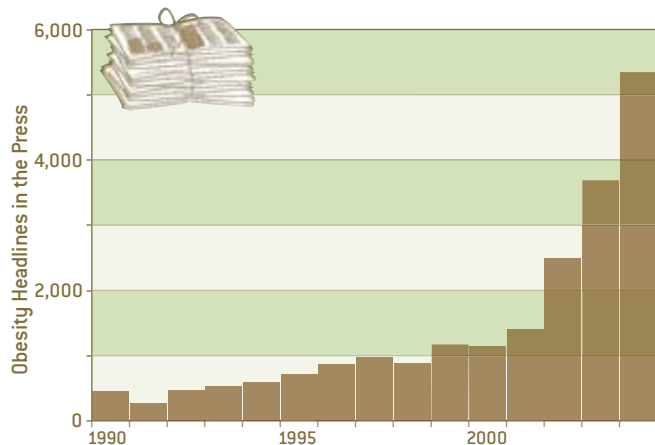
subjects matched against death registries nine to 19 years later—indicate that it is much more likely that U.S. adults who fall in the overweight category have a *lower* risk of premature death than do those of so-called healthy weight. The overweight segment of the “epidemic of overweight and obesity” is more likely reducing death rates than boosting them. “The majority of Americans who weigh too much are in this category,” Campos notes.

Counterintuitively, “underweight, even though it occurs in only a tiny fraction of the population, is actually associated with more excess deaths than class I obesity,” says Katherine M. Flegal, a senior research scientist at the CDC. Flegal led the study, which appeared in the *Journal of the American Medical Association* on April 20 after undergoing four months of scrutiny by internal reviewers at the CDC and the National Cancer Institute and additional peer review by the journal.

These new results contradict two previous estimates that were the basis of the oft-repeated claim that obesity cuts short 300,000 or more lives a year in the U.S. There are good reasons to suspect, however, that both these earlier estimates were compromised by dubious assumptions, statistical errors and outdated measurements [see box on page 75].

When Flegal and her co-workers analyzed just the most recent survey, which measured heights and weights from 1988 to 1994 and deaths up to 2000, even severe obesity failed to show up as a statistically significant mortality risk. It seems probable, Flegal speculates, that in recent decades improvements in medical care have reduced the mortality level associated with obesity. That would square, she observes, with both the unbroken rise in life expectancies and the uninterrupted fall in death rates attributed to heart disease and stroke throughout the entire 25-year spike in obesity in the U.S.

But what about the warning by Olshansky and Allison that the toll from obesity is yet to be paid, in the form of two to five years of life lost? “These are just back-of-the-envelope, plausible scenarios,” Allison hedges, when pressed. “We never meant for them to be portrayed as precise.” Although most



MEDIA STORIES on obesity are exploding in number, but Michael Gard and Jan Wright, authors of *The Obesity Epidemic: Science, Morality and Ideology*, charge the media with oversimplifying research results in ways that reinforce public prejudices and superstitions about body weight.

## A Disease by Definition

U.S. federal policy and WHO guidelines assign weight categories according to body mass index, or BMI, using the following formula and table:

$$\text{BMI} = \frac{(\text{weight in kilograms})}{(\text{height in meters})^2}$$

Below 18.5	18.5 to 24.9	25 to 29.9	30 to 34.9	35 to 39.9	40 or over
Underweight	Healthy weight	Overweight	Mild (class I) obesity	Moderate (class II) obesity	Severe (class III) obesity

media reports jumped on the “two to five years” quote, very few mentioned that the paper offered no statistical analysis to back it up.

The life expectancy costs of obesity that Olshansky and his colleagues actually calculated were based on a handful of convenient, but false, presuppositions. First, they assumed that every obese American adult currently has a BMI of 30, or alternatively of 35—the upper and lower limits of the “mild obesity” range. They then compared that simplified picture of the U.S. with an imagined nation in which no adult has a BMI of more than 24—the upper limit of “healthy weight”—and in which underweight causes zero excess deaths.

To project death rates resulting from obesity, the study used risk data that are more than a decade old rather than the newer ratios Flegal included, which better reflect dramatically improved treatments for cardiovascular disease and diabetes. The authors further assumed not only that the old mortality risks have remained constant but also that future advances in medicine will have no effect whatsoever on the health risks of obesity.

If all these simplifications are reasonable, the March paper concluded, then the estimated hit to the average life expectancy of the U.S. population from its world-leading levels of obesity is four to nine months. (“Two to five years” was simply a gloomy guess of what could happen in “coming decades” if



an increase in overweight children were to fuel additional spikes in adult obesity.) The study did not attempt to determine whether, given its many uncertainties, the number of months lost was reliably different from zero. Yet in multiple television and newspaper interviews about the study, co-author David S. Ludwig evinced full confidence as he compared the effect of rising obesity rates to “a massive tsunami headed toward the United States.”

Critics decry episodes such as this one as egregious examples of a general bias in the obesity research community. Medical researchers tend to cast the expansion of waistlines as an impending disaster “because it inflates their stature and allows them to get more research grants. Government health agencies wield it as a rationale for their budget allocations,” Oliver writes. (The National Institutes of Health increased its funding for obesity research by 10 percent in 2005, to \$440 million.) “Weight-loss companies and surgeons employ it to get their services covered by insurance,” he continues. “And the pharmaceutical industry uses it to justify new drugs.”

“The war on fat,” Campos concurs, “is really about making some of us rich.” He points to the financial support that

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many influential obesity researchers receive from the drug and diet industries. Allison, a professor at the University of Alabama at Birmingham, discloses payments from 148 such companies, and Hill says he has consulted with some of them as well. (Federal policies prohibit Flegal and other CDC scientists from accepting non-governmental wages.) None of the dissenting authors cites evidence of anything more than a potential conflict of interest, however.

### Those Confounded Diseases

EVEN THE BEST mortality studies provide only a flawed and incomplete picture of the health consequences of the obesity epidemic, for three reasons. First, by counting all lives lost to obesity, the studies so far have ignored the fact that some diversity in human body size is normal and that every well-nourished population thus contains some obese people. The “epidemic” refers to a sudden increase in obesity, not its mere existence. A proper accounting of the epidemic’s mortal cost would estimate only the number of lives cut short by whatever amount of obesity exceeds the norm.

Second, the analyses use body mass index as a convenient proxy for body fat. But BMI is not an especially reliable stand-in. And third, although everyone cares about mortality, it is not the only thing that we care about. Illness and quality of life matter a great deal, too.

All can agree that severe obesity greatly increases the risk of numerous diseases, but that form of obesity, in which BMI exceeds 40, affects only about one in 12 of the roughly 130 million American adults who set scales spinning above the “healthy” range. At issue is whether rising levels of overweight, or of mild to moderate obesity, are pulling up the national burden of heart disease, cancer and diabetes.

In the case of heart disease, the answer appears to be no—or at least not yet. U.S. health agencies do not collect annual figures on the incidence of cardiovascular disease, so researchers look instead for trends in mortality and risk factors, as measured in periodic surveys. Both have been falling.

Alongside Flegal’s April paper in *JAMA* was another by Edward W. Gregg and his colleagues from the CDC that found that in the U.S. the prevalence of high blood pressure dropped by half between 1960 and 2000. High cholesterol followed the same trend—and both declined more steeply among the overweight and obese than among those of healthy weight. So although high blood pressure is still twice as common among the obese as it is among the lean, the paper notes that “obese persons now have better [cardiovascular disease] risk profiles than their leaner counterparts did 20 to 30 years ago.”

The new findings reinforce those published in 2001 by a 10-year WHO study that examined 140,000 people in 38 cities on four continents. The investigators, led by Alun Evans of

### Is Fat Good for the Old?

“A lot of data suggest that the effect of obesity on mortality is less strong for old people than it is for young people,” says Katherine M. Flegal of the CDC. “Some studies suggest that a high BMI is not a major risk factor among the elderly. Having a nutritional reserve seems to make people more resilient if they are hospitalized. So when you make estimates of deaths from obesity, it is very important which estimates you use for the oldest group. Obesity might be a tremendous risk factor in young people, but their death rates are very low.”



# Mortal Mistakes

Media coverage of the obesity epidemic surged in 1999 following a report in the *Journal of the American Medical Association* by David B. Allison and others that laid about 300,000 annual deaths in the U.S. at the doorstep of obesity. The figure quickly acquired the status of fact in both the popular press and the scientific literature, despite extensive discussion in the paper of many uncertainties and potential biases in the approach that the authors used.

Like election polls, these estimates involve huge extrapolations from relatively small numbers of actual measurements. If the measurements—in this case of height, weight and death rates—are not accurate or are not representative of the population at large, then the estimate can be far off the mark. Allison drew statistics on the riskiness of high weights from six different studies. Three were based on self-reported heights and weights, which can make the overweight category look riskier than it really is (because heavy people tend to lie about their weight). Only one of the surveys was designed to reflect the actual composition of the U.S. population. But that survey, called NHANES I, was performed in the early 1970s, when heart disease was much more lethal than it is today. NHANES I also did not account as well for participants' smoking habits as later surveys did.

That matters because smoking has such a strong influence on mortality that any problem in subtracting its effects could distort the true mortal risks of obesity. Allison and his colleagues also used an incorrect formula to adjust for confounding variables, according to statisticians at the CDC and the National Cancer Institute.

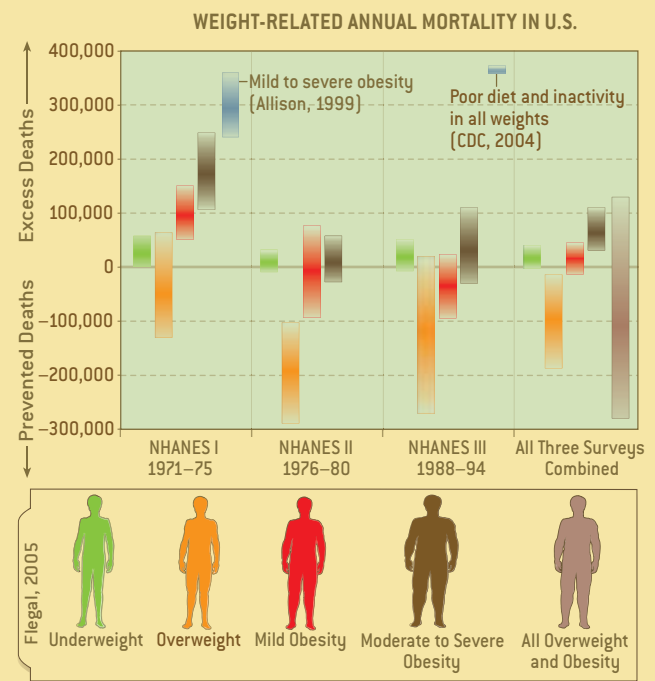
Perhaps the most important limitation noted in the 1999 paper was its failure to allow the mortality risk associated with a high BMI to vary—in particular, to drop—as people get older [see box on opposite page].

Surprisingly, none of these problems was either mentioned or corrected in a March 2004 paper by CDC scientists, including the agency's director, that arrived at a higher estimate of 400,000 deaths using Allison's method, incorrect formula and all. Vocal criticism led to an internal investigation at the CDC; in January the authors published a "corrected" estimate of 365,000 obesity-related deaths a year, which they labeled as

stemming from "poor diet and inactivity." The new figure corrected only data-entry mistakes, however.

Meanwhile another CDC scientist, Katherine M. Flegal, was preparing to publish a new and much improved estimate based entirely on nationally representative surveys that actually measured weights and heights. Flegal's analysis allows for risks that vary with age and claims to correct properly for confounding factors. But "the biggest reason that we get different results is that we used newer data," she asserts.

As illustrated in the chart below, the new analysis suggests that it is still far from certain whether there is any measurable mortality toll at all among overweight and obese Americans as a group. Even among the moderately and severely obese (those whose BMI exceeds 35), the plausible annual mortality found in the 1988–1994 survey ranges from 122,000 extra to 7,000 fewer deaths than one would expect based on the death rates of "healthy weight" people. —W.W.G.



the Queen's University of Belfast, saw broad increases in BMI and equally broad declines in high blood pressure and high cholesterol. "These facts are hard to reconcile," they wrote.

It may be, Gregg suggests, that better diagnosis and treatment of high cholesterol and blood pressure have more than compensated for any increases from rising obesity. It could also be, he adds, that obese people are getting more exercise than they used to; regular physical activity is thought to be a powerful preventative against heart disease.

Oliver and Campos explore another possibility: that fatness is partially—or even merely—a visible marker of other factors that are more important but harder to perceive. Diet

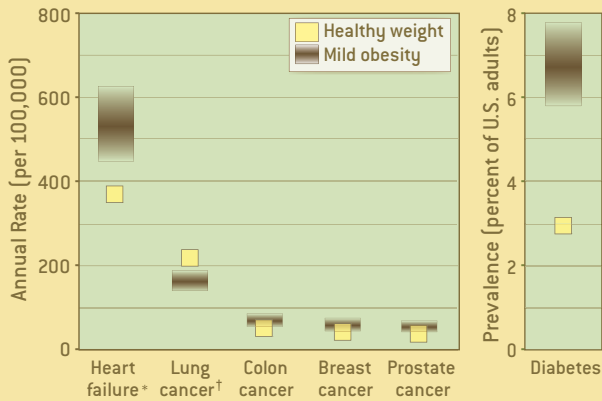
composition, physical fitness, stress levels, income, family history and the location of fat within the body are just a few of 100-odd "independent" risk factors for cardiovascular disease identified in the medical literature. The observational studies that link obesity to heart disease ignore nearly all of them and in doing so effectively assign their causal roles to obesity. "By the same criteria we are blaming obesity for heart disease," Oliver writes, "we could accuse smelly clothes, yellow teeth or bad breath for lung cancer instead of cigarettes."

As for cancer, a 2003 report on a 16-year study of 900,000 American adults found significantly increased death rates for several kinds of tumors among overweight or mildly obese

LUCY READING-IKKANDA; SOURCES: NATIONAL CENTER FOR HEALTH STATISTICS; JAMA, VOL. 282, PAGE 1530, OCTOBER 27, 1999, AND VOL. 291, PAGE 1238, MARCH 10, 2004

# Obesity and Illness

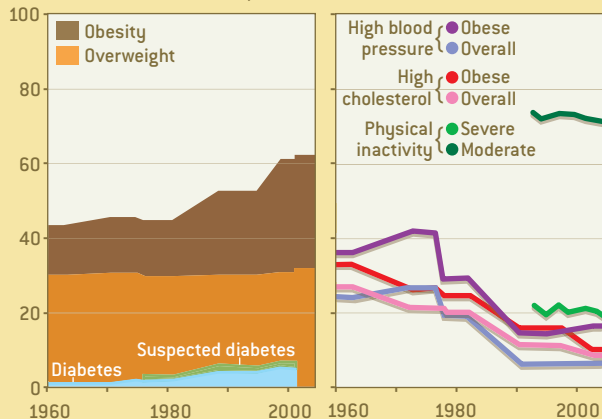
MILD AND MODERATE obesity seem in some studies to elevate risks of several serious diseases (*top chart*). Yet the trends in these diseases (*middle and bottom charts*) reveal no simple connection between the epidemic rise in obesity and public health in the U.S.



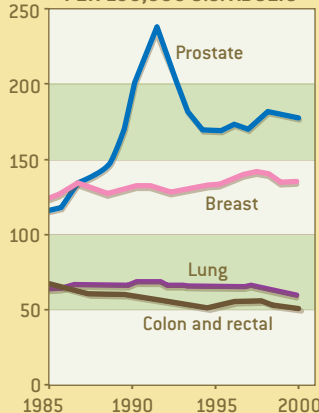
\* Rate for heart failure includes all obesity (BMI >30)  
 † Rates for cancers represent mortality; lung and colon cancer in men only

DIABETES HAS RISEN along with obesity, but it did not spread significantly in the 1990s (*below, left*). And major contributors to heart disease have fallen in recent decades (*below, right*).

## PREVALENCE, PERCENT OF U.S. ADULTS



## CANCER INCIDENCE PER 100,000 U.S. ADULTS



INCIDENCE OF CANCERS linked to obesity (*left*) also paints a complicated picture. New diagnoses of colon and of lung cancer have fallen slightly. (Fatness may actually protect against some lung cancer.) The upward trend in diagnosis of breast and prostate tumors may be a result mainly of increased screening for these diseases, as more sensitive and affordable tests catch tumors that previously escaped detection.

people. Most of these apparently obesity-related cancers are very rare, however, killing at most a few dozen people a year for every 100,000 study participants. Among women with a high BMI, both colon cancer and postmenopausal breast cancer risks were slightly elevated; for overweight and obese men, colon and prostate cancer presented the most common increased risks. For both women and men, though, being overweight or obese seemed to confer significant *protection* against lung cancer, which is by far the most commonly lethal malignancy. That relation held even after the effects of smoking were subtracted [*see box at left*].

## Obesity's Catch-22

IT IS THROUGH type 2 diabetes that obesity seems to pose the biggest threat to public health. Doctors have found biological connections between fat, insulin, and the high blood sugar levels that define the disease. The CDC estimates that 55 percent of adult diabetics are obese, significantly more than the 31 percent prevalence of obesity in the general population. And as obesity has become more common, so, too, has diabetes, suggesting that one may cause the other.

Yet the critics dispute claims that diabetes is soaring (even among children), that obesity is the cause, and that weight loss is the solution. A 2003 analysis by the CDC found that “the prevalence of diabetes, either diagnosed or undiagnosed, and of impaired fasting glucose did not appear to increase substantially during the 1990s,” despite the sharp rise in obesity.

“Undiagnosed diabetes” refers to people who have a single positive test for high blood sugar in the CDC surveys. (Two or more positive results are required for a diagnosis of diabetes.) Gregg’s paper in April reiterates the oft-repeated “fact” that for every five adults diagnosed with diabetes, there are three more diabetics who are undiagnosed. “Suspected diabetes” would be a better term, however, because the single test used by the CDC may be wildly unreliable.

In 2001 a French study of 5,400 men reported that 42 percent of the men who tested positive for diabetes using the CDC method turned out to be nondiabetic when checked by a “gold standard” test 30 months later. The false negative rate—true diabetics missed by the single blood test—was just 2 percent.

But consider the growing weights of children, Hill urges. “You’re getting kids at 10 to 12 years of age developing type 2 diabetes. Two generations ago you never saw a kid with it.”

Anecdotal evidence often misleads, Campos responds. He notes that when CDC researchers examined 2,867 adolescents in the NHANES survey of 1988 to 1994, they identified just four that had type 2 diabetes. A more focused study in 2003 looked at 710 “grossly obese” boys and girls ages six to 18 in Italy. These kids were the heaviest of the heavy, and more than half had a family history (and thus an inherited risk) of diabetes. Yet only one of the 710 had type 2 diabetes.

Nevertheless, as many as 4 percent of U.S. adults might have diabetes because of their obesity—if fat is in fact the most important cause of the disease. “But it may be that type 2 diabetes causes fatness,” Campos argues. (Weight gain is a

LUCY READING-IKKANDA; SOURCES: INTERNATIONAL JOURNAL OF OBESITY, VOL. 26, PAGE 1050 (heart failure); NEJM, VOL. 348, PAGES 1625–1638 (cancer mortality); JAMA, VOL. 293, PAGE 1871 (diabetes); JAMA, VOL. 288, PAGE 1724, VOL. 291, PAGE 2847, AND HEALTH, UNITED STATES, 2004 (obesity and overweight); DIABETES CARE, VOL. 27, PAGE 2809 (diabetes trend); JAMA, VOL. 293, PAGE 1871 (blood pressure and cholesterol); CDC BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM (physical activity); NATIONAL CANCER INSTITUTE (cancer incidence)



**DISTORTED VIEWS** of medical research largely fuel the public's anxiety about the obesity epidemic, claims Paul Campos, author of *The Obesity*

**Myth.** He castigates health authorities for a "constant barrage of scientifically baseless propaganda" about the risks of fat.

common side effect of many diabetes drugs.) "A third factor could cause both type 2 diabetes and fatness." Or it could be some complex combination of all these, he speculates.

Large, long-term experiments are the best way to test causality, because they can alter just one variable (such as weight) while holding constant other factors that could confound the results. Obesity researchers have conducted few of these so-called randomized, controlled trials. "We don't know what happens when you turn fat people into thin people," Campos says. "That is not some oversight; there is no known way to do it"—except surgeries that carry serious risks and side effects.

"About 75 percent of American adults are trying to lose or maintain weight at any given time," reports Ali H. Mokdad, chief of the CDC's behavioral surveillance branch. A report in February by Marketdata Enterprises estimated that in 2004, 71 million Americans were actively dieting and that the nation spent about \$46 billion on weight-loss products and services.

Dieting has been rampant for many years, and bariatric surgeries have soared in number from 36,700 in 2000 to roughly 140,000 in 2004, according to Marketdata. Yet when Flegal and others examined the CDC's most recent follow-up survey in search of obese senior citizens who had dropped into a lower weight category, they found that just 6 percent of nonobese, older adults had been obese a decade earlier.

Campos argues that for many people, dieting is not merely ineffective but downright counterproductive. A large study of nurses by Harvard Medical School doctors reported last year that 39 percent of the women had dropped weight only to regain it; those women later grew to be 10 pounds heavier on average than women who did not lose weight.

Weight-loss advocates point to two trials that in 2001 showed a 58 percent reduction in the incidence of type 2 diabetes among people at high risk who ate better and exercised

more. Participants lost little weight: an average of 2.7 kilograms after two years in one trial, 5.6 kilograms after three years in the other.

"People often say that these trials proved that weight loss prevents diabetes. They did no such thing," comments Steven N. Blair, an obesity researcher who heads the Cooper Institute in Dallas. Because the trials had no comparison group that simply ate a balanced diet and exercised without losing weight, they cannot rule out the possibility that the small drop in subjects' weights was simply a side effect. Indeed, one of the trial groups published a follow-up study in January that concluded that "at least 2.5 hours per week of walking for exercise during follow-up seemed to decrease the risk of diabetes by 63 to 69 percent, largely independent of dietary factors and BMI."

"H. L. Mencken once said that for every complex problem there is a simple solution—and it's wrong," Blair muses. "We have got to stop shouting from the rooftops that obesity is bad for you and that fat people are evil and weak-willed and that the world would be lovely if we all lost weight. We need to take a much more comprehensive view. But I don't see much evidence that that is happening." SA

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W. Wayt Gibbs is senior writer.

#### MORE TO EXPLORE

**Physical Activity in the Prevention of Type 2 Diabetes in Diabetes,** Vol. 54, pages 158–165; January 2005.

**Excess Deaths Associated with Overweight, Underweight and Obesity.** Katherine M. Flegal et al. in *Journal of the American Medical Association*, Vol. 293, pages 1861–1867; April 20, 2005.

**Secular Trends in Cardiovascular Disease Risk Factors according to Body Mass Index in US Adults.** Edward W. Gregg et al. in *Journal of the American Medical Association*, Vol. 293, pages 1868–1874; April 20, 2005.



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