Obese Children: A Growing Problem

Participants at a workshop on childhood obesity agree that obese children should be treated but still do not know how or why children become fat

DESPITE the strong emphasis on thinness in our society, more children than ever are obese. And obese children are at substantial risk for remaining obese throughout their lives. So, according to participants at a recent workshop on childhood obesity, sponsored by the National Institute of Child Health and Human Development,* physicians should "intervene." Childhood obesity is most definitely unhealthy, the group concluded, and this admonition to intervene, the participants said, is something new. Although a National Institutes of Health consensus conference has already declared adult obesity to be a health hazard, no previous group has made specific statements about childhood obesity.

The workshop participants presented some new and provocative hypotheses on how children become fat, and why. Nevertheless, they came to no conclusions on how to prevent childhood obesity nor even on which children should be treated and at which ages.

Evidence that obesity among children is a growing problem was presented by William Dietz of New England Medical Center Hospitals in Boston. Using data from the Health and Nutrition Examination Surveys (HANES), which are conducted every 3 to 4 years by the National Center for Health Statistics, he determined that the prevalence of obesity increased by 54 percent among 6- to 11-year-old American children and by 39 percent among 12- to 17-year-olds over the past 15 to 20 years. For some groups of children, the picture is even worse. The prevalence of obesity increased almost twice as much in preadolescent black children as it did in preadolescent whites.

Moreover, the conventional wisdom that fat children outgrow their obesity was disputed. Fat children tend to remain fat, says Leonard Epstein of the Western Psychiatric Institute and Clinic in Pittsburgh. Forty percent of children who are obese at age 7 become obese adults, Epstein notes. Seventy percent of obese adolescents become obese adults.

*The workshop was held on 10 and 11 March at the National Institutes of Health.

Norman Kretchmer of the University of California at Berkeley asks,"How do you *become* obese?" The answer may lie in only subtle differences between obese and normal-weight children. "Small imbalances can lead to obesity," says Dietz. "Most kids can become obese by eating as little as 50 extra calories per day. That would lead to an excess weight gain of 5 pounds per year. There are no data to support the idea that obese kids are any less efficient in burning off calories and there are no data to support the idea that obese kids massively overeat."

What, then, are the differences between obese and normal children that lead the obese children to consume slightly more calories than they can use? Not unexpectedly, obese children tend to be less active. But this inactivity could be a consequence rather than a cause of obesity. "We need more longitudinal studies to determine what happens when a child is becoming obese," says Robert Klesges of Memphis State University. "Virtually all the studies are cross-sectional," looking for causes of obesity by comparing populations of normal and obese children rather than following children to see what makes them become obese in the first place. "There's a difference between the onset and maintenance of obesity," Klesges notes.

The conventional wisdom that children outgrow their obesity is wrong.

One provocative hypothesis is that the increased incidence of obesity in this country over the past 20 years was caused, at least in part, by television. Dietz reports that the HANES data led him to this conclusion. "There was a strong, significant relationship between televison viewing and obesity that persisted even when we introduced control after control," he remarks. Moreover, he has longitudinal data to support his hypothesis.

One-third of the children who were studied in a HANES survey in the early 1970's were restudied in a second HANES survey in the mid-1970's, so it is possible to follow their weight and TV viewing. "Next to prior obesity, television viewing is the strongest predictor of subsequent obesity," Dietz reports. "I argue that television viewing causes obesity. We have shown the relationship consistently in three studies, it is temporally related to the onset of obesity, there is a dose effect, and the effect persisted when subsequent controls were introduced." And, finally, there is a logical explanation of how television viewing can lead to obesity, according to Dietz.

"Children eat more while they are watching TV and they eat more of the foods advertised on TV," Dietz says. "The message that TV conveys is that you will be thin no matter what you eat. Nearly everyone on television is thin." In addition, children who are watching television are inactive. Dietz is now starting studies of the metabolic rates of children while they watch television. The first child he looked at, a 12-year-old boy, surprised him. The boy's basal metabolic rate dropped by 200 calories an hour while he watched cartoons, as though he was in a trance or a stupor.

Nevertheless, obesity does not arise at random. Not every child is equally at risk. Fat parents tend to have fat children and the evidence is that a tendency to be obese is inherited and not just a matter of children picking up poor eating habits from their overweight parents. Albert Stunkard of the University of Pennsylvania reported on a study of 540 Danish adoptees indicating that a person's relative weight in adulthood is strongly correlated with the relative weights of his biological parents and not correlated at all with the relative weight of his adoptive parents.

The study was possible, Stunkard points out, because Denmark keeps records on all children who were adopted between 1924 and 1947. In this adoption registry, 94 percent of the biological mothers and 77 percent of the biological fathers are identified. Now Stunkard reports that he has examined data from another adoption registry, this time in Iowa. The registry includes 172 female adoptees, most of the adoptive parents, 114 biological mothers and 69 bio-

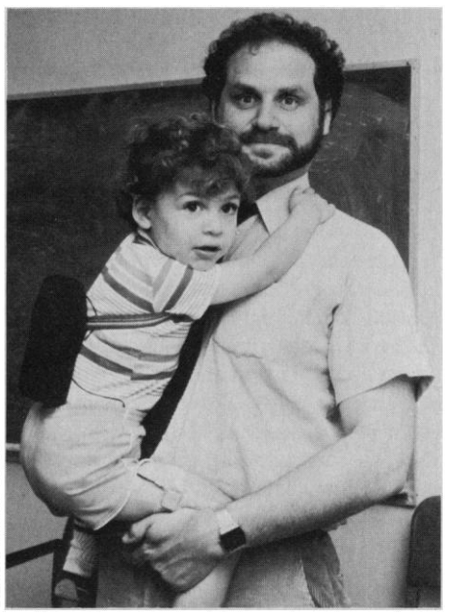
logical fathers. Once again, he and his colleagues find that the relative weight of the adoptees correlates with the relative weights of their biological parents, and particularly with the relative weights of their biological mothers. There is no relationship between the fatness of the adoptive parents and the fatness of the children they adopted.

Nevertheless, Stunkard does not believe that these studies exonerate the environment. At the time of the studies, the adoptees were adults, who had left their adoptive homes years ago. Stunkard speculates that it is particularly when these people are "out of the adoptive family that the genetic influence shines through. My guess is that when they were 12 years old, there was a relationship [between their weights and the weights of their adoptive parents]." He wants to go back to the Danish school records and check this hypothesis. "The data are all there and for $15,000 we could extract them," he remarks. "This is a burning question. We really need to know."

In the meantime, he argues that there are compelling reasons to believe that environment makes a difference in a person's weight. For example, Stunkard's co-author on the study of Danish adoptees, Thorkild Sorenson of Kommunehospitalet in Copenhagen, also looked at the relative weights of Danish men who were inducted into the army. Between 1962 and 1977, the average fatness of the men stayed the same, but the percentage who were obese increased eightfold, from 1 to 8 percent. Presumably, the increased number of fatter men in 1977 was balanced by an increased number of thinner men. Yet, Stunkard remarks, "there could not have been a change in the gene pool in that time. The changes in obesity must be entirely a social thing."

Another reason why Stunkard suspects that environmental influences on obesity must be strong is that the prevalence of obesity varies dramatically by social class, especially in women. About 30 percent of lower class women are obese, 18 percent of middle class women, and 5 percent of upper class women. This trend becomes particularly apparent in adolescence. "During adolescence, women differentiate themselves according to social class," Stunkard remarks. "Women are becoming thin in response to social pressures."

Staying thin by repeated dieting may be an exercise in frustration says Kelly Brownell of the University of Pennsylvania. He and his associates find that repeated dieting may in effect teach the body to be more efficient in its use of food so that with each diet the weight comes off more slowly and is regained more rapidly. The implications for children are that, by dieting at ever younger ages and continuing to diet for essentially the rest of their lives if they are to remain thin, they may exacerbate this effect. "Much more in known about the consequences of obesity than of dieting. So many adolescents are dieting now and if we are successful, even more will be dieting in the future," Brownell remarks.



Stanford Medical School

Are active babies and toddlers thinner than more passive children? *This child is wearing an activity monitor. By studying children's activity, W. Stewart Agras and his associates concluded that there is no relationship between activity and obesity among children who are up to 18 months old.*

Brownell says he is struck by the fact that many people are in almost constant cycles of dieting and regaining weight. "I've seen some overweight women who gain and lose a ton over the course of their lifetime," he says. "This led us to ask, 'What are the effects of going up and down, going through yo-yo periods of dieting?' " One observation that particularly impressed him is that many women who attended his weight loss clinic at the University of Pennsylvania did not lose weight, even when they consumed as few as 600 to 700 calories a day. "These tended to be the women who had dieted frequently in the past," Brownell says.

George Blackburn of Harvard Medical School has similar data. Obese patients who come to his clinic to consume very low-calorie diets while living in a hospital ward frequently regain the weight they lost and return a second or third time to reduce. When they return, it takes them a longer time to lose the weight, even though they are following exactly the same diet that they followed the first time.

So Brownell and his colleagues proposed that this yo-yo dieting may influence patients' physiology, making them "very metabolically efficient organisms." Brownell, and Elliot Stellar of the University of Pennsylvania and M. R. C. Greenwood of Vassar College decided to test their hypothesis in animals. They made rats obese and then gave them fewer calories so they would reduce to normal weights. Then they made them fat again and restricted their diets again. The results confirm the yo-yo diet hypothesis. The first time they dieted, the rats lost their excess weight in 21 days and regained it in 46 days. The second time, eating "precisely the same amount of food to the gram," they took 46 days to lose the weight and 14 days to regain it, Brownell reports.

Now Brownell is looking at high school and college wrestlers and comparing them to football players and swimmers. The wrestlers, unlike other athletes, spend their season dieting strenuously and regaining weight. "It is not uncommon for a wrestler to weigh 140 pounds at the start of the season and get his weight down to 128. His wrestling weight will be 118 and he will go between 128 and 118 over and over again. It is an extreme case of feast and famine," Brownell say. He predicts that these wrestlers will subsequently have a very difficult time maintaining a normal weight.

But if repeated dieting can have such effects and if few people who restrict their diet remain thin, what should be done about obese children? When should physicians intervene, and how? Epstein, who has treated more than 300 overweight children, argues that early treatment is the best. "I personally think that adolescence is already too late. By adolescence, you have an adult number of fat cells. It's easy to think of treating by age 4 to 6, but the real question is, how much earlier should you treat?" According to Epstein, a number of children who lose weight do not regain it. This leads him to suggest that perhaps weight loss in children really is different. Perhaps obese children who become thin will not have to struggle with their weights for the rest of their lives.

Since there are very few studies in which obese children are followed for years after they lose weight, Epstein's hypothesis remains largely untested. But it may provide a ray of hope for obese children in an atmosphere of very gloomy data. "My own conclusion," says Kretchmer, who chaired the workshop, "is that obesity is an *incredibly* complex problem. At the moment, our society says you dasn't be obese for a variety of reasons—you don't like it, you don't feel good, and it may kill you." Even so, what to do about the growing numbers of obese children remains an open question. ■

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