

Overweight Children: Is Parental Nutrition Knowledge a Factor?

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A greater proportion of U.S. children and adolescents are overweight than ever before. This has sounded a public health alarm. Overweight children are much more likely to end up obese when they are adults. Obesity in adulthood is a known risk factor for chronic diseases, including heart disease, diabetes, high blood pressure, stroke, and some forms of cancer. According to articles in a 1999 issue of the *Journal of the American Medical Association*, 280,000 annual deaths in the United States are attributable to obesity, and obesity-related diseases may account for 6.8 percent of U.S. health care costs.

What can be done to prevent the growing prevalence of obesity among U.S. children? Establishing a set of standards regarding whom to treat and how to treat them is a key step. In a recent issue of *Pediatrics*, a committee of childhood obesity experts provided a detailed set of guidelines for obesity evaluation and treatment. Prominent among the guidelines is the important role of parents and family. The committee called parenting skills “the foundation for successful intervention that puts in place ... targeted reductions in high-fat, high-calorie

foods.” Yet, little is known about the association between nutrition knowledge and attitudes of the parents and the prevalence of overweight conditions among children. The committee noted that during the evaluation phase of treatment, it is essential to address a family’s readiness to make changes in diets and activity. This evaluation phase will be more effective if it can be ascertained whether the prevalence of overweight children is associated with such factors as parents’ perception of their own weight status, parents’ awareness of nutrition labels,

and parents’ knowledge of links between diet and disease.

USDA’s 1994-96 Continuing Survey of Food Intakes by Individuals (CSFII) is useful for exploring the association between parental nutrition knowledge and the prevalence of overweight children. The CSFII gathered the self-reported Body Mass Index (BMI) of household members, including children. BMI is a weight-for-height measure calculated as the ratio of weight in kilograms to the square of height in meters. An adult’s BMI value can be compared with standard BMI cutoff



The prevalence of overweight children is significantly lower among fathers who use nutrition labels to determine ingredients, nutrient amounts, and serving sizes.

Credit: Ken Hammond, USDA.

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values established by health authorities to determine his or her weight status. Adults with BMI at or above 30 are classified as obese and adults with BMI at or above 25, but less than 30, are classified as overweight. Children and adolescents are identified as overweight or at risk of becoming overweight if their BMI values exceed age- and sex-specific BMI cutoff values in growth charts published by the Centers for Disease Control and Prevention (CDC).

The Diet and Health Knowledge Survey (DHKS), a followup to the CSFII, collected information on the nutrition knowledge, health awareness, and dietary attitudes of an adult member from a subset of CSFII households. For this study, we matched 1,825 children between 6 and 17 years of age with one of their parents or grandparents who answered the DHKS questions. Approximately 54 percent of the matched parents were mothers and 42 percent were fathers. Grandmothers or grandfathers made up the remaining 4 percent. Because many households had multiple children in the 6-17 age range, some parents were matched with more than one child. We did not examine the parental influence separately on each sibling. However, we did account for the sampling design features and weights to make our estimates representative for the U.S. population. Our findings indicate that greater parental nutrition knowledge is associated with lower prevalence of overweight conditions among children.

More Children Are Overweight

Based on recommendations in the *Pediatrics* article, we categorized children with BMI values at or above the 95th percentile of CDC's age- and sex-specific BMI cutoffs as overweight. Children with BMI values at or above the 85th percentile cutoff, but below the 95th percentile

cutoff, were categorized as at risk of being overweight. *Pediatrics* recommended evaluating the at-risk group for complications related to obesity by screening for such factors as family history, hypertension, and total cholesterol. Using these criteria, 15 percent of the children in our study were overweight and an additional 14 percent were at risk of being overweight (table 1).

We also compared our findings with a study by Richard Troiano and Katherine Flegal, who used the National Health and Nutrition Examination Surveys (NHANES II & III) and CDC's age- and sex-specific BMI cutoffs to estimate the prevalence of overweight children in 1976-80 and 1988-94. Troiano and Flegal estimated that 10.6 percent of children age 6-17 were overweight during 1988-94 and an additional 14 percent of children were at risk of being overweight. (Troiano and Flegal provided only an overall figure and did not provide the percentage of children at risk of being overweight by age- and sex-specific groups.) Thus, between 1988-94 and 1994-96, the percentage of children among all 6 to 17 year-olds who were overweight or were at risk of being overweight appears to have

increased from about 25 percent to more than 29 percent.

A word of caution: The 1976-80 and the 1988-94 prevalence rates reported by Troiano and Flegal are based on clinically measured height and weight. By contrast, the 1994-96 CSFII-based prevalence rates are based on self-reported height and weight. Self-reported measures tend to be less accurate than clinical measures. Therefore, the 1994-96 data should be interpreted with caution. However, the CSFII-DHKS surveys are the only available sources of nationally representative data by which to examine the link between parental nutrition knowledge and the prevalence of overweight conditions in children. For the rest of the article, we will use the term "overweight" to refer to children who are overweight or are at risk of being overweight.

Parents' Perception of Their Own Weight Status Is Important

How does the parents' weight status, as well as their perception of it, relate to the weight status of their children? To find out, we applied

Table 1
Children and Adolescents Are at Greater Risk of Being Overweight

Age group/gender	Overweight		1994-96 ¹	
	1976-80 ²	1988-94 ³	Overweight	At risk of being overweight
	Percent			
Age 6-17	NA	10.6	15.1	14.3
Age 6-11	NA	10.6	19.0	15.0
Male	6.5	11.2	19.8	15.1
Female	5.5	10.0	18.0	15.0
Age 12-17	NA	10.6	11.4	13.6
Male	4.7	11.3	14.1	14.1
Female	4.9	9.8	8.7	12.7

NA = Not available.

¹From 1994-96 CSFII.

²From 1976-80 NHANES II.

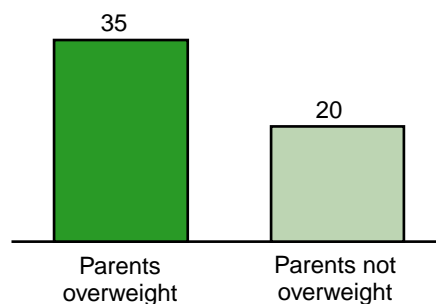
³From 1988-94 NHANES III.

Sources: Troiano and Flegal, 1998; USDA's Economic Research Service.

the adult BMI criteria to the parents and classified them as overweight if their BMI was at or above 25. (Therefore, parents identified as overweight in this study also included those who are obese.) In the CSFII 1994-96 data, 35 percent of the children of overweight parents were overweight, while only 20 percent of the children of parents not overweight were overweight (fig. 1). Thus, if the parent participating in

Figure 1
Overweight Parents Are More Likely To Have Overweight Children

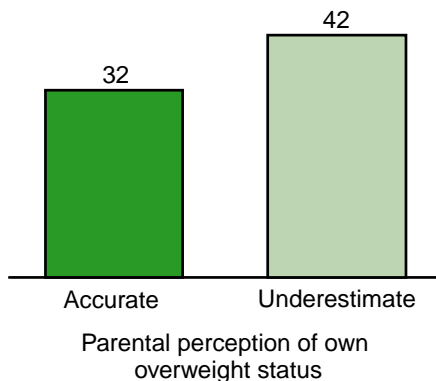
Percent of children overweight



Source: 1994-96 CSFII-DHKS, USDA.

Figure 2
Children of Parents Who Underestimate Their Own Weight Status Have a Greater Likelihood of Being Overweight

Percent of children overweight



Source: 1994-96 CSFII -DHKS, USDA.

the survey was overweight, there was a greater chance of his or her child being overweight. The parent-child overweight link is well documented, but no other study has examined the link between parents' perception of their own overweight status and the probability of their children being overweight. We found that, among parents who correctly perceived themselves as being overweight, 32 percent of their children were overweight (fig. 2). However, among parents who underestimated their weight status—that is, they did not perceive themselves to be overweight, when in fact their reported BMI was at or above 25—42 percent of their children were overweight.

Parental Nutrition Knowledge Is a Factor...

Children's food preferences are influenced by parental eating habits. Once acquired in early childhood, healthful dietary habits tend to be carried into adulthood. Therefore, obesity prevention and/or treatment should focus on early attention and involvement of parents and

promotion of healthful eating and exercise. Parental nutrition knowledge is essential for monitoring eating habits of children, identifying high-calorie foods, and understanding the long-term risks of obesity. To assess the link between parental nutrition knowledge and the prevalence of overweight conditions in children, we calculated the percentage of children who were overweight among parents who correctly and incorrectly answered DHKS questions related to nutrition knowledge, beliefs, and nutrition label use. While the DHKS included many questions, we present only nutrition-related questions whose answers of which showed a statistically significant difference.

We found that greater parental nutrition knowledge is associated with lower prevalence of overweight children (table 2). Most parents responding to the survey were knowledgeable about recommended servings and aware of health problems related to nutrient intake. For example, 84 percent of parents knew that a person should eat at least two to four servings of fruit each day (this includes about 10 percent of

Table 2
Greater Parental Nutrition Knowledge Is Related to Lower Prevalence of Overweight Children

Survey items	Share of children overweight or at risk of being overweight ¹	
	Parent answered incorrectly	Parent answered correctly
	Percent	
Knowledge of recommended fruit servings a person should eat each day.	39.7	26.9
Knowledge of recommended vegetable servings a person should eat each day.	32.7	25.4
Awareness of any health problems caused by not eating enough fiber.	34.1	26.1
Knowledge of which foods have more fat, fiber, or cholesterol.	33.7	25.2

¹Represents children of parents responding to DHKS. Source: 1994-96 CSFII-DHKS, USDA.

the parents who gave an answer of more than four servings). Seventy percent of parents were aware of health problems caused by not eating enough fiber. Among this group of parents, the prevalence of overweight children was around 26 percent. Among the parents who were not aware of the health problems caused by not eating enough fiber, the prevalence of overweight children was 34 percent.

... And So Are Dietary Attitudes and Nutrition Label Use

Parental nutrition knowledge represents just one dimension of the prerequisites for improving the parents' own eating habits as well as those of their children. Health authorities note that parents unwilling to change may express a lack of concern about a child's obesity or believe the obesity is inevitable and cannot be changed. Our data support this observation. Among parents responding to the survey who agreed with the statement "Some people are born to be fat and some thin; there is not much you can do to change this," 33 percent of their children were overweight (table 3). In contrast, among parents who disagreed with that statement, only 22 percent of the children were overweight—an 11 percentage-point difference in prevalence. A similar contrast exists between parents who expressed frustration with dietary recommendations—believing there is too much conflicting advice—and those who did not. The difference in the proportion of overweight children between the two groups is 14 percentage points.

In general, recommendations in the *Dietary Guidelines for Americans* were important to parents responding to the survey. For example, 94 percent of the parents felt that choosing a diet with plenty of fruits and vegetables was personally

Table 3

Parents' Beliefs Are Associated With Children's Probability of Being Overweight

Survey statements	Share of children overweight or at risk of being overweight ¹	
	Parent	
	Agreed	Disagreed
	Percent	
Some people are born to be fat and some thin; there is not much you can do to change this.	33.1	21.9
There are so many recommendations about healthy ways to eat, it's hard to know what to believe.	31.1	17.5
	Parent believed	
	Not important	Important
	Percent	
To you personally, how important is it to choose a diet with plenty of breads, cereals, rice, and pasta?	39.2	24.9

¹Represents children of parents responding to DHKS. Source: 1994-96 CSFII-DHKS, USDA.

important to them and only 6 percent of parents expressed a lack of interest in this recommendation. However, a relatively high 25 percent of parents felt that choosing a diet with plenty of grains (breads, cereals, rice, and pasta) was not important to them. The recommended 6-11 daily servings from the grains group form the "base" of the Food Guide Pyramid. Parents who are not attuned to this recommendation may have difficulty putting together healthful menus. Indeed, the prevalence of overweight children among this group of parents was about 14 percentage points higher than among parents who felt the grains recommendation was important to them.

Nutrition labeling on processed foods has been in effect since mid-1994. Consumer surveys indicate that the labeling influences food choice. For example, a 1995 American Dietetic Association survey showed that 56 percent of people interviewed claimed to have modified their food choices due to nutrition labeling. Among the parents in

our sample, one-half to two-thirds reported using some aspect of nutrition labels at least some of the time. However, a substantial proportion of parents reported that they rarely or never used nutrition labels. Among this group of label nonusers, the prevalence of overweight children was consistently higher (table 4). On average, the prevalence of overweight children was 6 percentage points higher among parents who did not use an aspect of nutrition labels than among parents who did.

We examined whether the relationship between parents' nutrition knowledge and the prevalence of overweight children varied depending on whether the parent responding to the survey was the mother or the father. We found no statistically significant difference in prevalence of overweight children by nutrition knowledge, beliefs, or attitudes between mothers and fathers. However, the prevalence of overweight children was significantly lower among fathers who used three aspects of nutrition labels (list of

Table 4

Prevalence of Overweight Children Is Lower Among Parents Who Use Nutrition Labeling

Survey questions	Share of children overweight or at risk of being overweight ¹	
	Parent Did not use	Used
Percent		
The list of ingredients?	32.1	26.6
The short phrases on the label like "low-fat" or "light" or "good source of fiber?"	32.9	26.1
The nutrition panel that tells the amount of calories, protein, fat, and such in a serving of the food?	33.5	25.9
The information about the size of a serving?	30.2	27.0
Statements on the label that describe health benefits of nutrients or foods?	31.9	25.2

¹Represents children of parents responding to DHKS.
Source: 1994-96 CSFII-DHKS, USDA.

ingredients, amount of nutrients in a serving, and size of a serving), compared with mothers who used these same aspects of nutrition labels. For example, among fathers who reported using the list of ingredients on nutrition labels, only 22 percent of children were overweight. Among mothers who reported using the list of ingredients on nutrition labels, 29 percent of children were overweight. This finding suggests that nutrition awareness among fathers may play a greater role in the prevalence of overweight children than generally believed.

Assessing Parental Nutrition Knowledge, Attitudes, and Habits Is An Important First Step

It is understandable that health authorities consider obesity in children and adolescents a frustrating and difficult condition to treat. A

successful approach toward weight control treatment for children requires parental readiness for change. A lack of parental readiness could cause weight control efforts to fail. Lack of readiness can range from the belief that obesity is inevitable and nothing can be done about it to the nonuse of appropriate tools, such as nutrition labels. Our findings show how some aspects of parental readiness are related to the prevalence of overweight conditions among children. Besides readiness, a parent's own weight status, and, more importantly, his or her perception of that status, can also factor into a child's weight condition. Parents who are overweight are more likely to have overweight children; the prevalence rate among overweight parents who underestimate their own weight status is even higher. Clearly, assessing parental and family readiness is an important step in addressing obesity in children.

While parental readiness may be an important factor in weight control efforts of children, nutrition knowledge alone is not a panacea. Large percentages (around 20 in almost every case) of children whose parents have appropriate attitudes and knowledge are overweight. Nutrition knowledge has to be translated into actual behavior and accompanied by other changes, particularly increased physical activity and exercise. In addition, weight control efforts must take into account the obesity status and nutrition knowledge of the other parent or adults in the family. Thus, much work remains in gaining a full understanding of the factors associated with childhood and adolescent obesity.

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