



## Childhood Overweight: Prevention Strategies for Parents

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### ABSTRACT

In recent years, childhood obesity has become a worldwide issue. The growing list of negative outcomes associated with its occurrence is constantly increasing the need for prevention and intervention. Although there is still much to learn about the causes and outcomes associated with childhood obesity, current empirical information is already available and should be used to influence good parenting practices. Observing good nutrition during pregnancy and prenatal monitoring; breastfeeding for 7 months and longer, if possible; introducing young children to healthy food in a positive context; and choosing physical activities are all important strategies for parents in preventing childhood obesity.

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### READER'S QUESTION

Couples in my classes are very concerned about obesity, not just for themselves but for their unborn children. What can parents do, and avoid doing, during pregnancy and their children's early years that might protect against overweight?

– An LCCE Educator in Michigan

### COLUMNISTS' REPLY

In recent years, rates of childhood overweight have increased so rapidly, not only in the United States but also in other parts of the world, that the problem has been called an epidemic. It is not just the sheer frequency that makes the problem so trou-

bling, but also the negative outcomes associated with being overweight in childhood. Overweight children can experience adverse effects, both physically and psychologically, during childhood. Furthermore, weight in childhood predicts weight in adulthood, and being overweight as an adult comes with a whole set of consequences of its own.

Pinpointing the reason for the increase in obesity rates and, in turn, coming up with the best solution is difficult because the problem is likely due to multiple causes. Some of the reasons are biological, and some are environmental; in most cases, it is difficult to differentiate. Children's personal characteristics, family characteristics, and environments affect them directly and interact to produce varying rates of risk for and resiliency to childhood overweight between children. Risk for overweight does not affect children at random. It is important to understand which children are most likely to be at risk

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in order to provide meaningful and successful prevention and intervention during pregnancy and early childhood, when efforts are most effective.

Although babies and toddlers experience their environment as filtered through their parents, this quickly changes as children age. When children begin to walk, play outside with friends, and go to school, it becomes harder for parents to control all aspects of a child's life. The fight for healthy childhood weight begins early—perhaps even before the baby is born.

### **Definitions of Overweight**

Although slightly different, measures of overweight and obesity in children and adults are based on body mass index (BMI). BMI is defined as weight in kilograms divided by height in meters squared ( $\text{kg}/\text{m}^2$ ). For children ages 2 to 19 years, if their BMI is greater than or equal to the 85th percentile, but less than the 95th percentile (for children of the same age and gender, based on pediatric growth charts developed by the CDC and the National Center for Health Statistics), children are deemed “at risk for overweight.” In addition, “overweight” is defined as at or above the 95th percentile. The CDC does not use the term “obese” for children and adolescents. However, the American Obesity Association and many published articles use “obese” and apply it to children at or above the 95th percentile. The term “overweight” is then used to describe children between the 85th and 95th percentiles.

Age-specific percentiles are used instead of BMI to classify children into weight categories because children's body fat changes as they grow. Median BMI decreases from ages 2 to 6 years and then increases again into adulthood. For example, the 95th percentile of BMI for boys is 19.3 at age 2, 17.8 at age 4, 21 at age 9, and 25.1 at age 13. At age 20, the 95th percentile is slightly over 30, which is the adult cutoff for obesity.

### **Factors Influencing Overweight Risk and Resiliency**

Rates of obesity are similar for boys and girls but vary across racial and ethnic groups. Using the 1999–2000 National Health and Nutrition Examination Survey data, Ogden, Flegal, Carroll, and Johnson (2002) found that comparisons between racial and ethnic groups reveal the rates of obesity among 12- to 19-year-old non-Hispanic Black children and Mexican American children are significantly higher than among non-Hispanic White children. Among infants from birth to 23 months of age, about 10% of the non-Hispanic White children are at or above the 95th percentile cutoff, com-

pared to 19% of non-Hispanic Black children. Hispanic 3-year-olds are nearly twice as likely as White children to be overweight or obese. Hispanic children also have twice the odds of overweight or obesity as Black children, despite similar family socioeconomic profiles.

Childhood weight is largely influenced by shared genes passed from the parents to the child (Perusse & Bouchard, 1999). This implies that some children are already at higher risk to be overweight than others. It is for those children that healthy practices during pregnancy and infancy are most important. The best time for prevention and intervention is very early in a child's life because birth weight is predictive of childhood weight and childhood weight is predictive of adult weight (Barker, M., Robinson, Osmond, & Barker, D., 1997; Braddon, Rogers, Wadsworth, & Davies, 1986; Parsons, Powers, & Manor, 2001).

### **Overweight Prevention During Pregnancy**

Regular prenatal visits to monitor the health of both the baby and the mother are vital for many reasons, one of which is the identification of problems that can occur during pregnancy and influence birth weight and overweight risk. Mothers with gestational diabetes mellitus (GDM) may be more likely to have high birth weight babies because the maternal-fetal glucose metabolism and maternal hyperglycemia during pregnancy are altered (Gillman, Rifas-Shiman, Berkey, Field, & Colditz, 2003). These can lead to excess fetal insulin—a growth hormone for the fetus—which can lead to high birth weight (generally, infants weighing more than 4,000 g are considered to have high birth weight). Early diagnosis, treatment, and monitoring of GDM are important for a child's future weight, because high birth weight is predictive of childhood overweight.

Prenatal visits are also important to monitor maternal nutrition and weight gain during pregnancy. Some studies have suggested that excessive maternal weight gain is positively associated with high birth weight (Simpson, Lawless, & Mitchell, 1975), and that this association is stronger for women who are underweight before pregnancy (Abrams & Parker, 1990).

Inadequate maternal nutrition and low birth weight (less than 2,500 grams) has also been studied as a risk factor for overweight or obesity in childhood and adolescence. This link may be due to the possibility of overcompensation, which can lead to rapid weight gain. Early research on the Dutch famine reported that 19-year-old men who



Visit the Web site of the Department of Health and Human Services, National Institutes of Health, National Heart Lung and Blood Institute, and Obesity Education Initiative ([www.nhlbi.nih.gov/health/public/heart/obesity/lose\\_wt/index.htm](http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/index.htm)). This site, titled “Aim for a Healthy Weight,” has links for a BMI calculator, menu planner, and other information for patients, the public, and health professionals.

were fetuses during the famine period were more likely to be obese than those men who were conceived earlier or later. The nutritional deprivation the men experienced may have affected their hypothalamic centers which regulate food intake and growth. So, when food availability increased after the famine was over, an accumulation of excess fat was produced. Another study demonstrated that young children who display rapid "catch up" growth in the first few years of life, after weighing less than their peers at birth, have higher BMI by age 5 (Ravelli, Stein, & Susser, 1976). Low birth weight is of particular concern for pregnant women who smoke or experience other unhealthy practices (von Kries, Toschke, Koletzko, & Slikker, 2002).

### ***Prevention During Infancy***

After birth, a variety of family and environment factors continue to influence childhood weight. High on the list may be how the family feeds their new infant. Whether, and how long, a child is breastfed may be associated with a reduced risk of being overweight, despite the strongest predictor of child overweight being the mother's weight. One study found that children who had been breastfed for 3 months or less, compared with those who had been breastfed for at least 7 months, were more likely to be overweight (Gillman et al., 2001). This finding indicates that any amount of breastfeeding provides some benefit, but, in general, the longer children are breastfed, the less likely they are to be obese or overweight later.

Another study examined whether breastfeeding was more important for children with mothers who were obese than for those mothers who were not. As in previous studies, the researchers found clear differences in the odds of both overweight and obesity for children by mother's weight status. The odds of obesity doubled across all racial and ethnic groups for children of obese mothers compared with children of normal-weight mothers. In this particular study, breastfeeding seemed to be protective against overweight for the children of obese mothers but not for the children of non-obese mothers (Kimbrow, Brooks-Gunn, & McLanahan, 2007). This may indicate that obese mothers should be especially encouraged to breastfeed their babies. In light of these findings, it is interesting to note that African American children (a group in which

19% from birth to 23 months of age are at or above the 95th percentile cutoff) are less likely to be breastfed than either White or Hispanic children.

Similar protective effects of breastfeeding are also found with low birth weight infants. As mentioned earlier, low birth weight infants may display catch-up in weight that could overcompensate for their birth size and result in higher childhood weight. However, differences in growth rates have been found between low birth weight infants who are breastfed and those who are bottle-fed by the time they are 3 months old (Ong et al., 2002). It seems that breastfeeding may have growth-limiting effects. These results taken together suggest that breastfeeding can function as a protective factor against overweight for infants who are otherwise exposed to risk.

### ***Prevention During Early Childhood***

Parents also influence the development of their children's eating habits in very early childhood. Research suggests that differences in physiologic regulation of energy intake begin in early childhood and are influenced by exposure to and repeated experiences with food (Birch, 1998). Early exposure to fruits and vegetables and other foods associated with healthy growth and development may lead to preference for and consumption of these foods. On the other hand, over-controlling children's food choices may be counterproductive, because it may undermine their self-regulation abilities (Hill, 2002).

Children are also susceptible to the context in which foods are offered. Preferences for foods develop when the food is offered in a positive context while dislikes for foods develop in negative contexts. Interestingly, family routines can make a difference for child outcomes. A recent study showed that families who eat regular meals together are more likely to have children who consume a wider variety of healthy foods and who are less likely to consume foods high in sugar and fat (Neumark-Sztainer, Hannan, Story, Croll, & Perry, 2003).

In addition to healthy eating, physical activity is an important part of maintaining a healthy weight. Studies show that children with active parents are more likely to be active than children with inactive mothers. Additionally, there is some evidence that indicates that children who spend large amounts of time watching television or participating in other media activities may be decreasing the amount of time that they participate in physical activities. Finally, some studies have found that having a TV in the bedroom was linked with the prevalence of child overweight (Dennison,

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Erb, & Jenkins, 2002; Lindsay, Sussner, Kim, & Gortmaker, 2006).

Expectant parents today are right to be concerned about the prevention of overweight in their children. Good nutrition during pregnancy and prenatal monitoring, breastfeeding for 7 months and longer if possible, introducing young children to healthy food in a positive context, and choosing physical activities instead of television are all things that childbirth educators can and should encourage expectant and new parents to do to fight obesity in their children's future. During pregnancy, regular visits to a doctor or midwife, participation in prenatal and breastfeeding education programs, and staying active, support a new family in accomplishing these goals and getting off to the healthiest start.

#### NOTE TO READERS

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