Obesity In Childhood:
The Epidemic Has Emerged

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Newspaper headlines frequently relate to us how obesity is becoming increasingly prevalent. Data from the U.S. National Health and Nutrition Examination Survey III (NHANES III) show obesity to be on the rise and recent Canadian data suggest similar trends.[1,2] The National Longitudinal Survey of Children and Youth in Canada reveals that, in 1996, 35.4% of boys had a body mass index (BMI) greater than the 85th percentile, while 16.6% had a BMI greater than the 95th percentile (Table 1).[2] Those with a BMI greater than the 85th percentile are classified as being overweight, while those with a BMI greater than the 95th percentile are classified as being obese. These standards have risen dramatically, as compared to data collected 15 years ago.

BMI is determined by dividing body weight in kilograms by height in meters squared. An expert committee has recommended the BMI as a guide for adolescent obesity preventive services.[3] It can be reliably used by health-care personnel and is correlated with subcutaneous and total fat in adolescents, although the BMI

may be erroneously high in athletically fit, muscular people.

Social and environmental changes are seen as contributing to the increases in BMI levels. The availability of pre-packaged foods (*i.e.*, pizza snacks, granola bars, fruit leathers) has made it more attractive for children to eat more than one snack at a time. As a result, children are increasing their caloric intake. The expanding fast-food restaurant business also has made it easier for children to chow down. A single fast-food meal, for example, may contain 1,400 calories, or two-thirds of the total daily requirement for most children.[4] In addition, practically every service station now has a convenience store, where food is available.

Compounding this societal change, the younger population's energy expenditure is declining due to increasing time spent watching television and playing video games. The two- or three-car family has translated into less time spent walking, with fewer children walking to school. Another problem involves physical education programs in schools, which have fallen victim to cost-cutting measures by provincial governments.

Summary

Obesity In Childhood

- Social and environmental changes are seen as contributing to the increase in body mass index (BMI) levels, such as an increasing availability of pre-packaged foods and an increasingly popular fast-food industry.
- Compounding this societal change, the younger population's energy expenditure is declining due to increasing time spent watching television and playing video games.
- Medical assessment of the potentially obese child includes a history focusing on dietary intake and eating habits. The child's height, weight and BMI should also be plotted on the appropriate charts.
- Family involvement is key to increasing the child's physical activities and to reducing the passive activities of watching television and playing video games.

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Medical Assessment

When physicians see overweight or obese children, there is always a concern they might miss an important medical condition contributing to the obesity. Endocrine disorders, such as hypothyroidism or Cushing's disease, are associated with short stature. Most children with obesity secondary to increased caloric intake are taller than the 50th percentile; this essentially rules out organic causes of obesity. Other medical conditions, such as Prader Willi syndrome, are rare and have other clinical features that help to establish their diagnoses. Patients who have elevated liver enzyme tests, or who have had an abdominal ultrasound and fatty changes reported in the liver, may be referred to pediatricians. These laboratory abnormalities are seen in non-alcoholic steatohepatitis (NASH), and can be associated with obesity in the pediatric patient.[4,5]

A study by Strauss *et al*, using data from the third annual National Health and Nutrition Examination Survey (NHANES III) showed 6% of overweight adolescents had elevated alanine

Table 1

National Longitudinal Survey of Children and Youth, 1996

Prevalence of overweight (> 85%)		Prevalence of obesity (> 95%)	
1981		1981	
Boys	15%	Boys	5%
Girls	15%	Girls	5%
1996		1996	
Boys	35.4%	Boys	16.6%
Girls	29.2%	Girls	14.6%

aminotransferase (ALT) levels, while 10% of obese patients had elevated ALT levels.[6] Findings from NHANES III suggest overweight and obesity are the most common causes of elevated liver enzymes in adolescents. Histologic analysis of 14 liver biopsies in children with obesity revealed variable degrees of macrovesicular and microvesicular fatty accumulation, with mild inflammatory changes and portal fibrosis.[7]

It is important to consider other causes of liver disease, such as hepatitis B and C, hemochromatosis, autoimmune disease, Wilson's disease and alcohol exposure. Elevation of liver enzymes will require monitoring and, if the elevation is persistent, liver biopsy may be indicated. The combination of NASH and alcohol consumption in adults may potentiate the development of severe liver disease and could be important in adolescents.

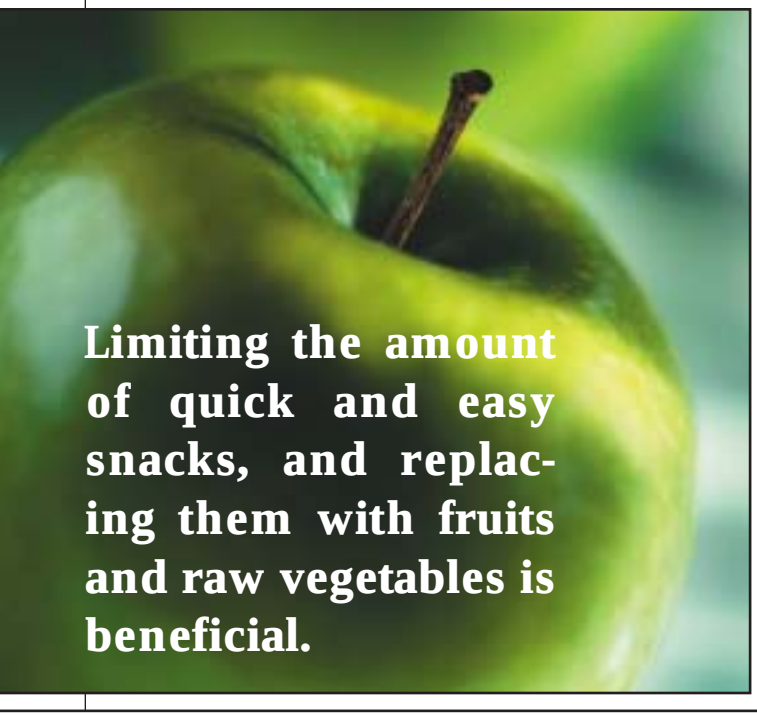
Medical assessment of the potentially obese child includes a history focusing on dietary intake and eating habits. The child's height, weight and BMI should also be plotted on the appropriate charts.[8] The child's level of physical activity needs to be assessed, and the psychosocial aspects of school, friends and social activities needs to be discussed. Self-esteem can be low, especially in the teenager.

Medical assessment of the potentially obese child includes a history focusing on dietary intake and eating habits.

A complete physical examination — emphasizing blood pressure determination, examination of the abdomen for hepatomegaly and careful examination of the lower limbs for orthopedic complications — is important.[9] Laboratory testing for cholesterol, triglycerides and blood sugar, or endocrine tests and liver function testing should be assessed on an individual basis.

Complications of Obesity

Although the long-term complications of obesity, Type 2 diabetes, coronary artery disease and atherosclerosis are well documented in adults, there are more relevant and immediate complications



seen during the childhood years.[9] The psychosocial problems of being teased at school, being the last to be chosen for sports and social activities, and not being able to compete well in sports are considerable. Furthermore, suitable clothing may be difficult to find, meaning the child may have to resort to wearing clothes that are not considered fashionable in our fashion-oriented society.

Management

Managing overweight children is not a simple matter of prescribing a medication and expecting everything to improve. It is often frustrating when progress is absent or slow. There are no weight-reducing medications approved for use in pediatrics. Weight loss is not usually necessary if the

Practice Pointers

- The expertise of a dietitian may be necessary to advise the child and his/her family about a proper diet.
- The physician's role is to provide advice and encouragement, and to monitor the child for obesity-associated complications and intervene when necessary.

child can maintain his/her present weight and "grow into it" over two to three years, as the weight becomes more appropriate for their height. Weight stabilization, however, is a difficult achievement in the growing child with a good appetite. Severe caloric restriction may result in stunted growth, making the monitoring of both height and weight essential.

The expertise of a dietitian may be necessary to help the child and his/her family find a diet appropriate in caloric content that limits the calories from fat to 30% of the child's total caloric intake. The dietitian also can help give the family an idea of the amount of food that supplies the recommended calories for healthy growth.

Limiting the amount of quick and easy snacks, and replacing them with fruits and raw vegetables (*i.e.*, carrots, celery) is beneficial. Eating at fast-food restaurants needs to be controlled and super-sized orders have to be avoided.[4]

Family involvement is key to increasing the child's physical activities and to reducing the passive activities of watching television and playing video games. Family activities, such as walking, swimming, bicycling or bowling, will benefit the emotional and physical health of the entire family, not just the overweight or obese child. Meal times need to be a family affair, with everyone eating together and socializing.

Summary

Children need to be encouraged to increase their activity level by walking to school, to their activities and to visit their friends.

The physician's role is to provide advice and encouragement, and to monitor the child for obesity-associated complications and intervene when necessary.

The obesity epidemic has emerged. Curbing it will require the concerted efforts of families, dietitians, physicians, educators, politicians and governments. This challenge must be met to ensure the health of the current generation and to help reduce future health-care costs associated with this latest epidemic. CME

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