

Controlling an epidemic: the problem of overweight in children and adolescents

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Does an epidemic of childhood overweight exist?

An epidemic is defined as the occurrence in a community or region of cases of an illness, specific health-related behavior, or health-related events clearly in excess of normal expectancy (Last 2001). Based on this definition, an epidemic of overweight in children and adolescents exists. Ritchie and colleagues, in this issue of Social and Preventive Medicine, document a two-fold increase in the prevalence of overweight among older children and adolescents in the United States between periods 1963–1970 and 1988–1994 (Ritchie et al. 2003). Additional information, not published at the time of Ritchie's review, indicates that this prevalence has continued to rise. Between the periods 1988–94 and 1999–2000, the prevalence of overweight increased 5 percentage points for adolescents, 4 percentage points for children aged 6–11 years, 3 percentage points for children aged 2–5 years, and 3 percentage points for children aged 6–23 months (Ogden et al. 2002). Furthermore, the epidemic does not appear to be limited to the United States. Increases in the prevalence of overweight have occurred among preschool children in urban areas in China (Luo & Hu 2002), preschool children in Germany (Kalies et al. 2002), children 7–13 years of age in Canada (Tremblay et al. 2002), and adolescents in Finland (Kautiainen et al. 2002).

Why control the epidemic?

The decision to allocate public health resources to the control of an epidemic is in part driven by the magnitude of the problem and the consequences of not addressing the problem. In the United States, nearly one sixth of children 6–17 years of age are already overweight (Ogden et al. 2002). Excess weight can have immediate and long-term deleterious consequences for these young people. First, excess weight is associated with an increased prevalence of

risk factors during childhood for many chronic diseases, including adverse levels of lipids, blood pressure, and insulin (Freedman et al. 1999) and may also be associated with increased childhood morbidity from chronic diseases such as type II diabetes (Rosenbloom et al. 1999). Second, because 25–75% of obese children and adolescents remain so as adults (Serdula et al. 1993; Freedman et al. 2001), excess weight in children and adolescents may increase the risk of adult onset obesity-related morbidities. In fact, the level of excess weight in childhood predicts the severity of overweight and obesity in adulthood (Serdula et al. 1993). Finally, as estimated in a recent review, overweight in childhood is associated with a 50% increase in all-cause mortality and a 100% increase in cardiovascular disease mortality in adulthood (Must & Strauss 1999).

How to control the epidemic?

Because health conditions are caused by the transmission of a disease-causing agent to a susceptible host, a change in one or more of these three conditions may produce an epidemic. Specifically, the transmission becomes more effective, a new or more virulent agent is introduced, or there is an increase in the number of exposed and susceptible hosts or in the host's susceptibility (Kelsey et al. 1996). Thus, the effective control of an epidemic depends on the identification of the specific changes that occurred and the implementation of effective interventions to alter these changes. Unfortunately, neither is well delineated for childhood overweight. Although excess weight gain ultimately is caused by a chronic imbalance between energy intake and energy expenditure, the specific behaviors that have shifted the energy balance for children are not known. Furthermore, only a very limited number of studies have investigated strategies to prevent excess weight gain among children (Gortmaker et al.

1999; Robinson 1999). However, because of the magnitude and seriousness of the problem of overweight among young people, promising actions targeted toward agent, host, and transmission need to be undertaken without definite evidence of a causal link or effectiveness.

The need for this type of public health response was recognized in *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity*, published in 2001 (Anonymous 2001). This report was based on the input of a broad range of persons including researchers, public health practitioners, and the public. It identified a menu of important communication, action, research, and evaluation strategies for combating the overall obesity epidemic in the United States.

Examples of how some of these strategies could address the epidemic of overweight in children are provided below. Strategies to address the agent need to target food and drink as the source of volitional energy intake and physical activity as the source of volitional energy expenditure. Examples of actions that might address these agents include the encouragement of the food industry to provide appropriate food and beverage portion sizes, or the implementation of public policy to provide safe and accessible sidewalks (U.S. DHHS 2001).

Strategies to address the susceptible host need to enable children and adolescents to make appropriate choices about diet and physical activity. Examples of actions that might

address the susceptible host include the incorporation of messages about proper nutrition and regular physical activity in youth-oriented TV programming, or the provision of age-appropriate and culturally relevant health education that helps students develop the needed knowledge, attitudes and skills to adopt healthy eating habits and a physically active lifestyle (U.S. DHHS 2001).

Strategies to address the transmission of the agent need to be targeted at the multiple venues where children and adolescents consume and expend energy, including their homes, schools, day-care centers, and places such as Girl Scout and Little League gatherings where structured social and recreational activity occurs. Examples of actions that might address transmission include the implementation of controls in the home that limit unhealthy snack consumption or time spent watching television, or policies in the school that ensure the inclusion of healthy snacks in school vending machines or provide for increased frequency and quality of physical education classes (U.S. DHHS 2001).

Controlling the epidemic of overweight in children and adolescents is a difficult and daunting task. However, the agent, host, and transmission modes offer promising targets for research and intervention activities.

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