



Synthesis on obesity

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How important is it?

Obesity has become a pandemic, with more than a billion people affected worldwide. Over the past 30 years, the frequency of overweight children, defined as those having a body mass index (BMI) greater than the 85th percentile for age and sex, has tripled. Data from the International Obesity Task Force indicate that 22 million of the world's children under 5 years of age are overweight or obese. Obesity has even replaced malnutrition as the major nutritional problem in some parts of Africa, with overweight/obesity being as much as four times more common than malnutrition.

The first years of life are a [critical period](#) for the development of food and flavour preferences, the ability to self-control food intake, the transmission of cultural and familial beliefs about food and eating, and the susceptibility to overweight and obesity later in life. Overweight in infancy tends to increase the risk for subsequent overweight in childhood and this risk appears to increase with age. Obesity by age 4 or 5 is a concern because it tends to persist.

As the incidence of childhood obesity has increased, more consequences of obesity in children have been identified, including obstructive sleep apnea (episodes of pauses in breathing during sleep due to obstruction of the airways), orthopaedic problems, type 2 diabetes, and cardiovascular disease. Psychological problems – for example, depression and reduced quality of life – are also serious correlates of obesity. Bias, prejudice, and discrimination are part of everyday life for overweight children. Moreover, the consequences of bias, such as isolation or social withdrawal, could contribute to the exacerbation of obesity through psychological vulnerabilities that increase the likelihood of over-eating and sedentary activity.

What do we know?

The development of overweight and obesity during the early years of life is influenced both by child characteristics and by factors related to the child's parents and home environment. [Childhood obesity](#) develops when the body's self-regulatory system fails to modulate environmental influences relative to the person's genetic background. Since it is not possible for the gene pool to change in less than a generation, it is likely that changes in nutrition and lifestyle are primarily responsible for the current epidemic of obesity.

Obesity develops when there is an imbalance between energy intake and energy expenditure: reduced physical activity and increased food intake (especially high-fat, energy-dense foods such as snacks, sugar-added beverages and fast-food products) are the primary causes. In young children, levels of physical activity lower than the recommended 60 minutes per day and excessive television viewing (more than two hours per day) are likely to have adverse effects on cardiovascular and bone health, and possibly on cognitive function and social and emotional development.

[Prenatal factors](#) that may lead to overweight in children from birth to five years include maternal smoking, maternal diabetes, and maternal overweight prior to and during pregnancy. [Breastfeeding](#), however, may protect children from obesity. Possible mechanisms for this protective effect include metabolic programming and early-learned self-control of food intake. Another possible explanation is that breastfeeding may influence parental control of child consumption patterns. As well, breastfed babies experience a variety of flavours through the mother's diet, which may make them more accepting of typically rejected foods (such as vegetables) later on.

Introduction to [complementary foods](#) (cereal, fruit, vegetables or meat) before 16 weeks of age in combination with a short duration of breastfeeding (less than 20 weeks) has been associated with higher weight gains from birth to one year. Studies suggest that the late introduction of solids (waiting until at least 15 weeks of age) may have a beneficial effect on childhood obesity and reduce the risk for allergic reactions. Rapid weight gain in infancy and early childhood appears to be a [risk factor](#) for later obesity.

Parents have a major role to play in helping their children to develop healthy eating habits and an active lifestyle. Since children imitate what they see, it is not surprising that parents' own eating behaviours are associated with children's eating behaviours and weight status. Children naturally prefer sweet and salty tastes and do not need to learn to like these foods. However, when given the opportunity to taste new foods repeatedly, such as fruits and vegetables, children learn to like foods they once rejected. Studies have shown that it may take 5 to 16 exposures before a child accepts a new food.

While it is advisable for parents to limit their children's consumption of unhealthy snacks and encourage them to eat more fruits and vegetables, [excessive restriction or pressure to eat](#) may actually have negative impacts on child food intake and weight status by disrupting the child's ability to naturally control their food intake. Parental pressure to eat certain foods may decrease the children's preferences for those foods, while excessive restriction may encourage over-consumption of the restricted foods when they are readily available.

Finally, [psychosocial factors](#) that potentially increase the risk that a child will become obese include low socio-economic status, being an only child, and living with a single parent.

What can be done?

Prevention of obesity in children should be the first line of treatment. This requires a broad-based public health program.

Developments in [health and education services](#) are required to provide more effective surveillance of overweight and obesity in early childhood, better identification of overweight and obese children, and greater and more effective support for families to prevent and treat obesity.

Paediatricians are encouraged to become advocates for the prevention of obesity by identifying and targeting influential specialists (e.g., health care professionals, nutritionists, and child development specialists) for education on obesity. They

should also encourage, support, and protect breastfeeding, promote healthy eating habits, promote physical activity, and recommend limitation of television viewing in their day-to-day practice. In addition, recommending a good night's sleep is of high importance given the emerging literature showing that short sleep duration is associated with overweight/obesity, particularly in children.

Interventions should target modifiable behaviours that might improve child health or development and should target behaviours that are important to the development and maintenance of a healthy weight (i.e., reduction in TV viewing, promotion of breastfeeding, reduction in soft drinks and sugar intake, increase in physical activity).

Parents and caregivers should be positive role models for children's eating and physical behaviours. They should model healthful eating behaviours and make healthful food available to their children in an effort to lower the risk of obesity for their children. In this respect, [insufficient knowledge](#) about healthy nutrition, unhealthy eating behaviours and physical inactivity among parents can lead to poor eating and physical activity behaviours in their children. Treatment is therefore more likely to be effective if the family is the focus (not just the obese child), if the family is motivated to make the necessary lifestyle changes, if the treatment is of significant duration and if it focuses on modifying sedentary behaviour as well as diet.

However, obesity prevention will likely fail if the child's environment is not addressed. For example, research suggests that reducing snack food advertising helps to prevent detrimental eating behaviour. The nutritional quality of foods and beverages served and sold in schools should also be improved. Children should be encouraged to reduce their consumption of soft drinks and other sugar-added beverages, to increase their level of physical activities, and to reduce their amount of television viewing. Macro-environmental changes that promote physical activity and play are urgently required if the paediatric obesity epidemic is to be addressed.