

Causes of Childhood Obesity

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This UKRI policy briefing outlines the causes of childhood obesity, in order to use this knowledge to review evidence-based policies and interventions that aim to reduce levels of childhood obesity, in the UK. This can be regarded as an update to the 2003 POSTnote (#205), and a contribution to POST's current work ('causes of obesity').

Background

The global prevalence of childhood obesity has increased in recent years^{1,2}, with more than 340 million children being reported as overweight or obese in 2016³. In the UK, data from the 2016/17 National Child Measurement Programme highlighted that one in twenty-five 10 to 11 year olds were severely obese⁴, the highest level since the database was started in 2006/07⁵. Obese children (box 1) are more likely to be obese adults and are more likely to develop various non-communicable diseases at a younger age, such as type 2 diabetes⁶ and cardiovascular diseases^{7,8}. In the long term, adults who were obese as a child maintain a greater risk of premature mortality⁹. Additionally, it is very important to recognise that obesity imposes a substantial economic burden¹⁰ at an individual, national and international level. Therefore, childhood obesity is a significant public health concern, with consequences across the lifespan¹¹ (box 2). However, to understand how to best implement effective policies and interventions, it is crucial to review the known causes of childhood obesity.

Overview

- Levels of childhood obesity have increased in recent years.
- Obese children are likely to remain obese into adulthood.
- Many factors can cause childhood obesity, including genetic factors, ethnicity, physical inactivity, diet and environmental conditions.
- Progress is being made to tackle a number of these factors. However, some of these factors require further action to be taken.



Box 1. Defining Childhood Obesity

Obesity is a condition of excessive body fat (or adiposity) that exceeds what is considered to be healthy. The most common method to screen for excess body fat is to calculate an individual's body mass index (BMI)¹². BMI is weight in kilograms divided by height in metres squared (kg/m^2). However, unlike adults, children should be gaining weight and height as they grow¹³. Therefore, rather than using just one BMI cutoff point to determine obesity, age and sex specific cutoff points are used. In the UK, a BMI that exceeds (or is equal to) the 95th percentile is defined as obesity or overweight, and a BMI that exceeds the 99th percentile is defined as morbid (severe) obesity¹⁴.

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Bodyweight is regulated by a range of physiological mechanisms that maintain balance between energy intake and energy expenditure¹⁵. These mechanisms are usually very precise, in normal conditions. However, any factor that raises energy intake and/or decreases energy expenditure will cause obesity in the long-term. Although this seems like a simple explanation, the causes of childhood obesity are very complex and less understood than first thought¹⁶. However, scientific research has highlighted that genetic factors can influence a child's predisposition to obesity, whilst ethnicity, physical inactivity, diet and many environmental conditions can also contribute to childhood obesity¹, as detailed below:

Genetic Factors

Five genetic mutations have been established that cause obesity¹⁷, all of which present in childhood¹⁸. Also, although relatively rare, a single gene defect can cause obesity. However, it is much more likely that a predisposition to obesity is caused by a very complex interaction between at least 300 obesity-associated genes¹⁹.

Ethnicity

Risk of obesity can be different due to ethnic origin and a number of cultural influences. For example, it has been shown that black and Hispanic children have a larger number of obesity-related risk factors (i.e. greater intake of sugary drinks and fast food), when compared to those children of a white ethnic background²⁰.

Physical Inactivity

Low levels of physical activity are associated with a higher risk of childhood obesity²¹. Independent of physically inactive, a large number of hours spent watching television has been associated with an increased risk of childhood obesity^{22, 23}.

Diet

A range of dietary factors have been identified that contribute to childhood obesity. These include high intakes of saturated fat (i.e. cakes); sugary drinks, foods with a high energy density (i.e. bread), foods with a high glycaemic index (i.e. potatoes), and big portion sizes¹.

Policy Background

The successful prevention and treatment of obesity involves eating less and being more physically active¹. However, long-term weight loss is often extremely difficult to achieve. Currently, the Government are trying to reduce levels of childhood obesity, in England²⁷, by encouraging industries to reduce the amount of sugar in food and drink, in addition to encouraging healthy and active lifestyles in primary schools. The most recent 'Childhood Obesity: Plan for Action' also stresses the importance of reducing the gap in obesity between children in the most and least deprived areas by 2030²⁸. This shift in focus was due to a House of Commons Health Committee report (*Childhood Obesity: Time for Action*)²⁹, published in May 2018, that recommended a 'whole systems approach'; i.e. incorporating a large number of stakeholders. As a result of this report, the updated 'Plan for Action' now addresses three of the identified causes of obesity (i.e. physical inactivity, diet and environmental conditions), all of which can be modified by appropriate interventions.

Areas for Improvement

Several factors associated to the causes of childhood obesity remain under-addressed by the Government's latest policy document on childhood obesity²⁸. These include improving children's access to green spaces in urban environments, to encourage physical activity, in addition to providing better public health information about the risk of chemical exposure (i.e. obesogens), both *in utero* and throughout childhood. Therefore, any future policies should seek to incorporate these elements.

Environmental Conditions

A child's living environment can affect behaviours related to the risk of obesity. For example, children in the lowest socioeconomic groups in high-income countries (i.e. the UK) have raised obesity levels²⁴. Also, a child living in an urban environment is more likely to be obese, when compared to a child living in a rural environment². This could be related to an increased exposure to damaging chemicals, called obesogens (i.e. cigarette smoke), that have been shown to cause obesity²⁵. This exposure can occur when the child is *in utero*.

Box 2. Consequences of Childhood Obesity

Many adverse health consequences are caused by childhood obesity, both in the short-term and long-term (i.e. throughout the lifespan)^{9, 26}.

In childhood, the most common consequences are an increased risk of orthopaedic problems, asthma symptoms, and a social stigma/bullying. However, childhood obesity can also have an adverse effect on the cardiovascular system (i.e. increased blood pressure), in addition to the development of type 2 diabetes and certain types of cancer.

In the long-term, childhood obesity often results in adult obesity. As a consequence, being obese as a child increases the risk of premature mortality as an adult. Additionally, obesity can adversely affect the social and economic prospects of an adult.

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