

# The prevention and treatment of cardio metabolic diseases in overweight and obese children: The future of healthcare

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**ABSTRACT:** In this Special Issue, we will look at the impact of obesity on health, reviewing the most recent research on the risk factors linked with cardio-metabolic disorders in children who are overweight or obese, as well as investigating the pathogenic processes and prospective treatment targets. The relevance of weight-loss techniques, such as exercise, dietary adjustments, and nutritional

education, in reducing obesity-related problems will be discussed. Many obesity-related issues will also be improved as a result of bariatric surgery. Implementing preventive interventions in paediatric patients who are overweight or obese on time may reduce the future burden of weight-related disorders and the future of healthcare.

**Keywords:** complications; cardiovascular; metabolic; obesity; children; adolescents; weight-related diseases

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## INTRODUCTION

**C**obesity in kids could be a major public health concern. In step with the planet Health Organization, forty million kids aged five years, similarly as quite 330 million folks aged 5–19 years, were overweight or corpulent, with serious effects for individual well-being and social expenses. Childhood fatness is caused by a mix of biological science, environmental factors, and organic process impacts, similarly because of the knotty interactions between them. Medical specialty fatness causes problems and comorbidities that last into adulthood, impacting each system within the body and predicting reduced anticipation. Children with obesity suffer from cardio-metabolic risk factors such as high blood pressure, dyslipidaemia, type 2 diabetes, cardiovascular abnormalities, respiratory illness, low-grade systemic inflammation, liver issues, and musculoskeletal difficulties in the short term. Obese children can have psychological issues, such as sadness, anxiety, low self-esteem, and behavioural difficulties. Obesity throughout infancy raises the chance of acquiring cardiovascular disease, diabetes, and various malignancies in adulthood, all of which can lead to early mortality.

The onset of cardiometabolic diseases is marked by relative Insulin Resistance (IR). IR appears in childhood, advancing from prediabetes and metabolic syndrome to T2DM or CVD. Beginning in childhood, the chronic inflammatory state

associated with obesity plays a significant role in the development of problems. Obesity causes increased release of proinflammatory cytokines and inflammatory markers, as well as dysregulated secretion of adipocytokines and immune cell infiltration and malfunction. This process may promote a state of low-grade inflammation, which might be a key mechanism connecting obesity to its metabolic and cardiovascular consequences.

The beginning processes in obesity-induced inflammation, including metabolic and cardiovascular derangement, begin in childhood, and the negative consequences of obesity on cardio metabolic health in adulthood are independent of adult weight, implying the need for prevention.

The encouragement of an active lifestyle, as well as behavioral modifications, dietary adjustments, and nutritional education, are the most effective non-pharmacological ways to lower cardiovascular risk. However, in certain situations of extreme obesity, medical therapy or surgery may be beneficial in preventing cardiometabolic problems.

Given that the development of a healthy lifestyle may occur at a later age, a recommendation for a preventative strategy beginning in the pediatric years may help to safeguard children's health.

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Early adoption of an unhealthy lifestyle may have varied effects on adult health; a "metabolic programming route" may have a synergistic adverse effect on cardio metabolic health later in life. Early childhood education is one of the finest investments a country can make to prepare children for learning and provide them with opportunities to succeed later in life. The timely deployment of preventive interventions aimed at lowering the incidence of obesity in childhood can help address health and economic consequences in adulthood.

In this Special Issue, we will look at the impact of obesity on health, reviewing the most recent research on the risk factors associated with cardiometabolic diseases in paediatric subjects who are overweight or obese, as well as exploring the pathogenic mechanisms and potential preventive and therapeutic targets. The importance of weight-management methods, such as behavioural modifications, dietary adjustments, and nutritional education, in reducing obesity-related problems will be discussed. Many obesity-related issues will be improved with bariatric surgery, which will also be recorded. Preventive paediatric treatments must be offered in order to reduce the future burden of weight-related disorders and the future of healthcare.