

# CHARACTERISTICS OF COMORBIDITIES IN OVERWEIGHT AND OBESE CHILDREN AND ADOLESCENTS

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## Abstract

Childhood and adolescent obesity is a growing global health problem that significantly increases the risk of developing various comorbid conditions. These include metabolic, cardiovascular, endocrine, orthopedic, and psychological disorders. The presence of such comorbidities at a young age not only affects physical and emotional development but also increases the likelihood of chronic diseases in adulthood. This article reviews the key features of comorbid pathologies associated with excess body weight in children and adolescents and highlights the importance of early diagnosis and multidisciplinary intervention.

**Keywords:** Childhood obesity, overweight, adolescents, comorbidities, metabolic syndrome, diabetes, hypertension, prevention.

## Introduction

The prevalence of overweight and obesity among children and adolescents has increased significantly in recent decades due to lifestyle changes, decreased physical activity, and unhealthy eating habits. According to the World Health Organization (WHO), childhood obesity is one of the most serious public health challenges of the 21st century.

Obesity is not merely an aesthetic or social issue — it is a complex, chronic condition that contributes to the early development of multiple comorbidities. These conditions can negatively impact the child's quality of life, academic performance, and long-term health outcomes.

## Common Comorbidities in Obese Children and Adolescents

### 1. Metabolic Disorders

One of the most common consequences of obesity is **metabolic syndrome**, a cluster of conditions that includes:

- Insulin resistance or type 2 diabetes mellitus;
- Dyslipidemia (elevated LDL cholesterol, low HDL, high triglycerides);
- Central (abdominal) obesity;
- Hypertension.

These factors increase the risk of early-onset cardiovascular disease and must be closely monitored from a young age.



## 2. Cardiovascular System

High blood pressure (hypertension) is frequently observed in overweight children and can lead to long-term vascular damage. Early atherosclerosis and structural changes in the heart (e.g., left ventricular hypertrophy) have been documented even in adolescents.

## 3. Endocrine Disorders

Obesity may contribute to hormonal imbalances, such as:

- Early puberty or delayed puberty;
- Polycystic ovary syndrome (PCOS) in girls;
- Growth hormone deficiency.

Such disorders can impair normal physical and sexual development.

## 4. Musculoskeletal and Orthopedic Issues

Increased body weight places excessive strain on bones and joints, leading to:

- Flat feet, scoliosis, and poor posture;
- Joint pain and early signs of osteoarthritis;
- Slipped capital femoral epiphysis in severe cases.

## 5. Gastrointestinal and Liver Complications

One of the serious complications is **non-alcoholic fatty liver disease (NAFLD)**, which can progress to inflammation and liver fibrosis if left untreated.

## 6. Psychological and Social Effects

Obese children often experience:

- Low self-esteem;
- Depression and anxiety;
- Social isolation and bullying at school.

These factors can exacerbate unhealthy behaviors such as emotional eating or physical inactivity, creating a vicious cycle.

## Diagnosis and Evaluation

Diagnosis of obesity-related comorbidities requires a comprehensive and multidisciplinary assessment, including:

- Body Mass Index (BMI) calculation by age and sex percentiles;
- Laboratory tests (glucose tolerance, lipid profile, liver function);
- Blood pressure monitoring;
- Hormonal evaluations;
- Psychological assessment if necessary.

## Prevention and Management

Management of childhood obesity and its comorbidities involves:

- **Lifestyle modification:** healthy diet, increased physical activity, reduction of screen time;



- **Family involvement:** education and participation of parents in behavior change;
- **Medical treatment:** if necessary, for comorbidities like diabetes or hypertension;
- **Psychological support:** counseling to address emotional and behavioral issues;
- **School and community programs:** promoting health awareness and physical activity.

A multidisciplinary team — including pediatricians, endocrinologists, dietitians, psychologists, and physical therapists — plays a crucial role in treatment.

### Conclusion

Obesity in children and adolescents is closely linked with a range of comorbid conditions that can severely impact physical and mental health. Understanding the characteristics of these comorbidities is essential for early diagnosis, prevention, and effective management. A holistic, family-centered, and long-term approach is vital to reducing the burden of obesity-related complications and ensuring healthy development during childhood and adolescence.

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