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THE ASSOCIATION BETWEEN EXCESS BODY WEIGHT AND GASTROINTESTINAL DISEASES IN CHILDREN

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Abstract: Childhood overweight and obesity have become major public health problems and important challenges in modern pediatrics. Excess body weight affects not only the cardiovascular and endocrine systems but also the gastrointestinal and hepatobiliary systems. Children with overweight or obesity may have an increased risk of gastroesophageal reflux disease, functional constipation, gallstone disease and metabolic dysfunction-associated fatty liver disease. The present article analyzes the relationship between excess body weight and gastrointestinal diseases in children based on current scientific evidence. Particular attention is paid to body mass index assessment according to age and sex, dietary habits, physical activity, sedentary behavior and metabolic factors. The possible pathophysiological mechanisms linking obesity with gastrointestinal disorders are also discussed.

Keywords: children, pediatrics, overweight, obesity, body mass index, gastrointestinal diseases, gastroesophageal reflux, constipation, fatty liver disease, metabolic dysfunction, nutrition, risk factors.

Introduction: Excess body weight and obesity during childhood are currently considered one of the major problems in pediatrics and public health. While obesity was previously regarded primarily as a condition associated with adults, its increasing prevalence among children and adolescents now requires a pediatric perspective on this issue. According to recent data from the World Health Organization (WHO), in 2022, more than 390 million children and adolescents aged 5–19 years were overweight, of whom more than 160 million met the criteria for obesity. In children aged 5–19 years, overweight is defined as a BMI-for-age greater than +1 standard deviation above the WHO median, while obesity is defined as a BMI-for-age greater than +2 standard deviations.

The risks associated with childhood obesity are not limited to physical appearance. Excess adipose tissue is considered a metabolically active organ. It may be associated with insulin resistance, chronic low-grade inflammation, disturbances in lipid metabolism, and other metabolic alterations. As a result, the functioning of several organs and systems in the child's body may be affected.

The digestive system is also not exempt from these processes. Recent studies have investigated the association between excess body weight in children and gastroesophageal reflux symptoms, functional constipation, fatty liver disease, and, in some cases, gallstone disease. In particular, liver-related complications of childhood obesity have significant clinical importance.

Pediatric metabolic dysfunction-associated steatotic liver disease is closely related to insulin resistance, central obesity, and dyslipidemia. The NASPGHAN clinical guideline

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notes that fatty liver disease in children is often associated with general or central obesity, insulin resistance, elevated triglyceride levels, and reduced HDL cholesterol levels.

Therefore, anthropometric assessment alone is not sufficient for children with excess body weight. In such children, it is important to identify symptoms of the digestive system, assess dietary habits and physical activity, and, when indicated, perform metabolic and hepatobiliary investigations.

Aim of the Study: To analyze the relationship between excess body weight and gastrointestinal diseases in children and adolescents based on contemporary scientific literature, to identify the main risk factors and potential pathophysiological mechanisms underlying this association, and to develop preventive approaches for pediatric practice.

Research Objectives

1. To assess the current epidemiological significance of excess body weight and obesity in children.
2. To analyze the principles of assessing body mass index according to age and sex in children.
3. To investigate the association between excess body weight and gastroesophageal reflux.
4. To analyze the potential relationship between obesity and functional constipation.
5. To examine the association between childhood obesity and metabolic dysfunction-associated steatotic liver disease.
6. To assess the relationship between excess body weight and gallbladder and gallstone disease.
7. To determine the role of dietary habits and physical activity in these pathological conditions.
8. To develop preventive and clinical recommendations for pediatric practice.

Materials and Methods

This article was prepared based on an analysis of the scientific literature. The analysis included materials published by the World Health Organization (WHO), scientific articles indexed in the PubMed database, international clinical guidelines on pediatric gastroenterology, as well as the findings of systematic reviews and meta-analyses.

Particular attention was paid to the following areas during the analysis:

- excess body weight and obesity in childhood;
- body mass index and age-specific BMI;
- gastroesophageal reflux;
- functional constipation;
- metabolic dysfunction-associated steatotic liver disease;
- gallstone disease;
- dietary habits;
- physical activity;
- sedentary behavior and screen time;
- insulin resistance and metabolic risk.

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When assessing excess body weight and obesity in children, it is essential to take age and sex into account. For children aged 5–19 years, WHO BMI-for-age standards are used; a BMI-for-age above +1 standard deviation is classified as overweight, while a value above +2 standard deviations is classified as obesity. In children younger than 5 years, weight-for-height or BMI-for-age is assessed according to the WHO Child Growth Standards.

Results and Analysis

1. Epidemiological Significance of Excess Body Weight in Childhood: The increasing prevalence of excess body weight among children and adolescents is one of the major trends observed worldwide. According to WHO data, the global prevalence of overweight among children aged 5–19 years increased from 8% in 1990 to 20% in 2022. During the same period, the proportion of children aged 5–19 years living with obesity increased from 2% to 8%. These figures demonstrate that the problem is of substantial importance not only at the individual level but also from a public health perspective.

Children with excess body weight represent a high-risk group for persistent obesity later in life, as well as for the development of type 2 diabetes mellitus, cardiovascular diseases, and other chronic conditions. The underlying causes are considered multifactorial. Genetic predisposition, dietary composition, consumption of high-calorie foods, sugar-sweetened beverages, reduced physical activity, sedentary behavior, sleep disturbances, and environmental factors collectively contribute to the development of obesity.

Therefore, in pediatric practice, it is inappropriate to assess a child using an oversimplified approach such as “eats too much” or “does not exercise enough.” Obesity is a multifactorial chronic condition in which biological, behavioral, and social factors interact with one another.

2. Excess Body Weight and Gastroesophageal Reflux: Gastroesophageal reflux is a process characterized by the retrograde movement of gastric contents into the esophagus and may manifest clinically through a variety of symptoms. Gastroesophageal reflux disease (GERD) becomes clinically significant when reflux symptoms cause considerable discomfort or are associated with complications.

Systematic analyses of the prevalence of GERD symptoms in children have demonstrated substantial variation across different age groups. Several studies have reported that a higher BMI is associated with a greater prevalence of gastroesophageal reflux symptoms.

Several potential mechanisms may explain the association between childhood obesity and reflux. An increase in abdominal adipose tissue may elevate intra-abdominal pressure, which may facilitate the retrograde movement of gastric contents into the esophagus. This is considered one of the possible mechanisms contributing to gastroesophageal reflux.

Some population-based studies have reported that GERD is more common among overweight or obese children aged 6–11 years than among children with normal body weight. A similar association has also been observed among children aged 12–19 years.

In addition, a study involving 153 children found that reflux symptoms were more prevalent among obese children than among children with normal body weight, while more severe symptoms were observed in children with a greater waist circumference.

These findings have important practical implications for pediatricians. When an overweight or obese child presents with recurrent heartburn, acid regurgitation, epigastric

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discomfort, or postprandial discomfort, the possibility of gastroesophageal reflux should be considered and assessed clinically.

However, the association between BMI and GERD should not be considered uniform across all age groups. In younger children, reflux may have physiological characteristics, and symptoms should therefore be interpreted according to the child's age and developmental stage.

3. Excess Body Weight and Functional Constipation: Functional constipation is one of the most common gastrointestinal problems in childhood. It may be characterized by decreased stool frequency, hard stools, painful defecation, stool withholding, and other clinical manifestations.

The scientific evidence regarding the association between excess body weight and functional constipation is inconsistent. Previous systematic reviews have reported heterogeneous findings, making it difficult to establish a clear cause-and-effect relationship. However, subsequent meta-analyses have provided evidence supporting this association.

A systematic review and meta-analysis published in 2023 analyzed nine studies involving 7,444 children and identified a statistically significant association between overweight/obesity and the risk of functional constipation. Another meta-analysis examined the results of 18 studies involving 33,410 children and also reported a statistically significant association between functional constipation and overweight/obesity.

Several factors may contribute to this relationship. In children with obesity, reduced physical activity, inadequate consumption of fruits and vegetables, low water intake, insufficient dietary fiber, and prolonged sedentary behavior may increase the predisposition to constipation.

In addition, potential mechanisms involving the gut microbiota, metabolic inflammation, and intestinal motility are increasingly being discussed in scientific research. However, further prospective studies are needed to clearly establish the causal relationships among these factors.

4. Excess Body Weight and Metabolic Dysfunction-Associated Steatotic Liver Disease: One of the most important gastroenterological problems associated with obesity in children is hepatic steatosis. In children with excess body weight, the accumulation of fat in hepatocytes may be an important indicator of underlying metabolic disturbances.

Pediatric fatty liver disease is frequently associated with insulin resistance, general or central obesity, and dyslipidemia. The NASPGHAN guidelines have highlighted the close association between this condition and obesity in children. Epidemiological data from recent years also demonstrate the growing clinical relevance of this problem.

A review published in 2023 identified pediatric obesity as an important risk factor for fatty liver disease. In a large meta-analysis published in 2025, the overall global prevalence of metabolic dysfunction-associated steatotic liver disease among children and adolescents with overweight or obesity was estimated at approximately 41.2%. The analysis included 176 studies and 57,058 participants.

This represents an important clinical finding because hepatic steatosis may initially develop without apparent clinical symptoms. A child may feel healthy, while metabolic processes may already have begun in the liver tissue. Therefore, assessment of liver health in children with obesity, based on medical history, anthropometric parameters, and clinical status, may become an important component of pediatric monitoring.

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However, it would be inappropriate to automatically assign a specific diagnosis to every child with obesity. Diagnostic investigations should be selected according to clinical indications and current pediatric guidelines.

5. Excess Body Weight and Gallstone Disease: Another gastrointestinal consequence of obesity may be associated with pathology of the gallbladder and biliary tract. Although gallstone disease is less common in children than in adults, increasing attention has been paid to this condition in recent years.

The etiology of gallstone disease in children is multifactorial. Genetic predisposition, age, certain medical conditions, medications, parenteral nutrition, hematological disorders, and other factors may play a role. Obesity represents only one of these contributing factors. Therefore, when gallstone disease is diagnosed in a child, it would be scientifically inappropriate to attribute the condition solely to excess body weight.

Nevertheless, the increasing prevalence of obesity among children is making gallbladder disorders a clinically important issue. Contemporary analyses of pediatric gallstone disease emphasize the need for systematic assessment of associated risk factors and comorbid conditions.

6. The Role of Diet: Dietary habits play an important role in the development of excess body weight during childhood. High consumption of energy-dense foods rich in sugar and fat, regular intake of sugar-sweetened carbonated beverages, frequent consumption of fast food, and inadequate intake of fruits and vegetables may contribute to an imbalance in energy homeostasis in children. The WHO recommends, as part of healthy dietary practices for children, adequate consumption of fruits and vegetables, legumes, whole-grain products, and other nutrient-dense foods, while limiting foods and beverages that are high in added sugars.

Dietary patterns may also directly affect the gastrointestinal system. For example, a low-fiber diet may increase the risk of constipation, very large meals and late-night eating may exacerbate reflux symptoms, while excessive energy intake may contribute to obesity and metabolic disturbances. Therefore, when excess body weight is identified in a child, reviewing a dietary food diary may be useful for assessing eating patterns and identifying potentially modifiable factors.

7. Physical Activity and Sedentary Behavior: Reduced physical activity is one of the important factors contributing to the development of excess body weight in children. The increasing use of smartphones, tablets, computers, and television among modern children may contribute to prolonged sedentary behavior. As a result, overall energy expenditure may decrease.

Insufficient physical activity may contribute not only to obesity but also to reduced intestinal motility, increased susceptibility to constipation, and deterioration of overall functional status. Therefore, in programs aimed at improving children's health, it is important not only to restrict caloric intake but also to increase physical activity.

8. Potential Pathophysiological Mechanisms Linking Excess Body Weight and Gastrointestinal Diseases: The association between excess body weight and gastrointestinal diseases may be explained by several potential mechanisms.

First, an increase in visceral adipose tissue may elevate mechanical pressure within the abdominal cavity. This may increase the susceptibility to gastroesophageal reflux.

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Second, obesity is associated with an increased amount of metabolically active adipose tissue, which may contribute to the development of chronic low-grade inflammation and insulin resistance.

Third, insulin resistance and disturbances in lipid metabolism are associated with the accumulation of fat in the liver.

Fourth, poor dietary quality and low levels of physical activity may simultaneously contribute to the development of obesity, constipation, and other gastrointestinal symptoms.

Fifth, the gut microbiota is increasingly being considered as one of the potential mechanisms explaining the relationship between obesity and gastrointestinal health.

Thus, excess body weight should not be regarded merely as an "anthropometric problem," but rather as a complex metabolic condition that may affect multiple organ systems.

Discussion: The analyzed scientific evidence indicates that there is a certain degree of association between excess body weight in childhood and gastrointestinal disorders. The evidence is relatively stronger for fatty liver disease, gastroesophageal reflux, and functional constipation. However, caution is required when interpreting these associations as causal relationships.

For example, although some positive associations have been identified in studies investigating the relationship between constipation and obesity, there are considerable methodological differences among the studies. A systematic review published in 2016 demonstrated substantial variability in study findings and concluded that the evidence available at that time was insufficient to definitively confirm or refute an association between obesity and functional defecation disorders. Subsequent meta-analyses, however, have provided findings supporting this association.

Regarding GERD, several studies have demonstrated an association between higher BMI and reflux symptoms. At the same time, the diagnosis of GERD in children is highly dependent on age, the nature of symptoms, and the diagnostic criteria applied.

In contrast, the association between obesity and fatty liver disease appears to be more evident. Contemporary evidence indicates that metabolic dysfunction-associated steatotic liver disease occurs at a considerable frequency among children and adolescents with overweight or obesity.

Therefore, the most appropriate approach for pediatricians is not simply to monitor the body weight of a child with excess weight, but rather to conduct a comprehensive assessment of the child's overall metabolic and gastrointestinal health.

Practical Significance: Based on the findings of this analysis, the following approaches may be recommended for pediatric practice:

1. **Anthropometric assessment.** The child's height, weight, and BMI should be assessed regularly. In children, BMI should not be interpreted as a simple numerical value, as it is in adults; rather, it should be interpreted according to age- and sex-specific percentiles or z-scores.
2. **Collection of dietary history.** Particular attention should be paid to the frequency of consumption of fast food, sugar-sweetened beverages, high-calorie foods, fruits and vegetables, and fiber-rich foods.

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3. **Assessment of gastrointestinal symptoms.** In children with excess body weight, targeted questioning regarding abdominal pain, heartburn, belching, nausea, constipation, difficulty with defecation, and other gastrointestinal symptoms is recommended.
4. **Assessment of physical activity.** Daily physical activity levels and habits of prolonged sedentary behavior should be assessed.
5. **Assessment of metabolic risk.** When clinically indicated, evaluation of glucose metabolism, lipid profile, and liver-related laboratory parameters may be considered.
6. **Family-based approach.** Rather than placing the child on an isolated "diet," improving the dietary and physical activity habits of the entire family may be more effective.

Conclusion: Excess body weight and obesity during childhood represent one of the pressing problems in modern pediatrics, and their impact is not limited to the endocrine and cardiovascular systems. Obesity may also contribute to the development of clinical problems involving the gastrointestinal and hepatobiliary systems. According to the analyzed data, excess body weight may be associated with gastroesophageal reflux symptoms, functional constipation, metabolic dysfunction-associated steatotic liver disease, and certain hepatobiliary disorders. One of the most important associations is the relationship between obesity and pediatric fatty liver disease. In this condition, insulin resistance, central obesity, and disturbances in lipid metabolism are considered important pathophysiological factors. Regarding functional constipation, contemporary meta-analyses suggest that there may be a statistically significant association between excess body weight and constipation. However, further research is required to establish a definitive causal relationship. Similarly, evidence indicates an association between higher BMI and gastroesophageal reflux symptoms. This association may be clinically significant, particularly among school-aged children and adolescents with excess body weight. Therefore, a comprehensive assessment of children with excess body weight is necessary in pediatric practice. This assessment should include anthropometric measurements, dietary history, physical activity, gastrointestinal symptoms, and, when clinically indicated, relevant metabolic parameters. Early identification of excess body weight during childhood and the promotion of healthy eating, regular physical activity, and a healthy lifestyle are important for preventing gastrointestinal and metabolic complications.

Practical Recommendations

1. Children's height and weight should be measured regularly, and BMI should be assessed according to WHO standards appropriate for age and sex.
2. Dietary habits should be assessed in detail in children with excess body weight.
3. Limiting sugar-sweetened carbonated beverages and energy-dense foods is recommended.
4. Particular attention should be paid to ensuring adequate consumption of vegetables, fruits, legumes, and fiber-rich foods as part of the diet.
5. In children with excess body weight who present with gastrointestinal symptoms, clinical assessment for conditions such as gastroesophageal reflux disease (GERD) and functional constipation is recommended.

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6. Individual assessment of metabolic risk factors is advisable in children with obesity.

7. When clinical or metabolic risk factors related to liver health are present, appropriate investigations should be performed in accordance with current pediatric guidelines.

8. Families should be advised on strategies to increase children's physical activity and reduce prolonged sedentary behavior.

9. Preventive interventions should involve not only the child but also the parents and the family as a whole.

10. In the management of excess body weight, a gradual, pediatrician-supervised healthy lifestyle approach is preferable to strict and unsupervised diets.

Elements of Scientific Novelty: In conducting scientific research in this field, the following aspects may be formulated as elements of scientific novelty:

- assessing the association between excess body weight and gastrointestinal symptoms in children across different age groups;
- determining the relationship between BMI levels and the frequency of gastrointestinal symptoms;
- investigating the association between indicators of central obesity and gastrointestinal symptoms;
- evaluating the interrelationship between dietary habits, physical activity, and gastrointestinal diseases;
- identifying gastrointestinal and metabolic risk groups among children with obesity.

References

1. An evidence-based resource for the management of comorbidities associated with childhood overweight and obesity. PMID:27193136.
2. Naspghan. Clinical Practice Guideline for the Diagnosis and Treatment of Nonalcoholic Fatty Liver Disease in Children. Journal of Pediatric Gastroenterology and Nutrition. 2017;64(2).
3. El-Serag H.B. et al. Extreme childhood obesity is associated with increased risk for gastroesophageal reflux disease in a large population-based study. Journal of Pediatric Gastroenterology and Nutrition. PMID:20615162.
4. Lazarus G., Junaidi M.C., Oswari H. Relationship of Functional Constipation and Growth Status: A Systematic Review and Meta-Analysis. Journal of Pediatric Gastroenterology and Nutrition. 2022;75(6):702–708. PMID:36053122.
5. Herrera R., Lurbe E. A holistic perspective of the comorbidities in childhood obesity. Anales de Pediatria. 2024;101(5):344–350. doi:10.1016/j.anpede.2024.10.001.
6. Piester T.L., Jagtap N., Kalapala R. Review of paediatric obesity and non-alcoholic fatty liver disease—A focus on emerging non-pharmacologic treatment strategies. Pediatric Obesity. 2023;18(10):e13067. doi:10.1111/ijpo.13067.
7. Shapiro W.L., Noon S.L., Schwimmer J.B. Recent advances in the epidemiology of nonalcoholic fatty liver disease in children. Pediatric Obesity. 2022. doi:10.1111/ijpo.12849.

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www.jadr.co.in

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8. Wang G.N., Zhang K., Xiong Y.Y., Liu S. The relationship between functional constipation and overweight/obesity in children: a systematic review and meta-analysis. Pediatric Research. 2023;94(6):1878–1886. PMID:37422494.
9. Koppen I.J.N. et al. Functional Defecation Disorders and Excessive Body Weight: A Systematic Review. Pediatrics. 2016;138(3):e20161417. doi:10.1542/peds.2016-1417.
10. Singendonk M. et al. Prevalence of Gastroesophageal Reflux Disease Symptoms in Infants and Children: A Systematic Review. Journal of Pediatric Gastroenterology and Nutrition. 2019;68(6):811–817. doi:10.1097/MPG.0000000000002280.
11. Pediatric study on total and abdominal obesity as risk factors for gastroesophageal reflux symptoms in children. Journal of Pediatric Gastroenterology and Nutrition. doi:10.1097/MPG.0b013e3182549c44.
12. The Etiology of Cholelithiasis in Children and Adolescents—A Literature Review. International Journal of Molecular Sciences. 2022;23(21):13376. PMID:36362164.
13. Children's Hospital Association consensus statements for comorbidities of childhood obesity. PMID:25019404.
14. Global prevalence of metabolic dysfunction-associated fatty liver disease in children and adolescents with overweight and obesity: a systematic review and meta-analysis. 2025. PMID:41053609.
15. World Health Organization. Obesity and overweight. WHO Fact Sheet. 8 December 2025.
16. World Health Organization. Noncommunicable diseases: Childhood overweight and obesity. 7 May 2025.
17. World Health Organization. Global nutrition targets 2030: childhood overweight brief. 2025.
18. World Health Organization. Healthy diet. WHO Fact Sheet, 2025.