

Adolescent Obesity

Biochemical and Dietary Disparities in US Youth

TRANSCRIPT

Narrator: Welcome to Abbott Nutrition Health Institute's Nutrition Research Reviews, highlighting current publications in the field of nutrition and clinical care. In this video, we will look at the article, Adolescent Obesity, Biochemical and dietary Disparities in US Youth. Adolescence is a critical stage of growth and development, yet many US adolescents fail to meet recommended nutrient intakes. Obesity during this period, not only increases the risk of chronic diseases, but may also mask hidden forms of malnutrition."

This study explores the intersection of obesity, diet quality, and biochemical markers in US adolescents. To assess obesity prevalence among adolescents aged 12 through 18 years, compare dietary intake by BMI status and evaluate nutritional biomarkers using the National Health and Nutrition Examination Survey, also known as NHANES database. A retrospective observational analysis was conducted using three NHANES cycles, 2013 to 2018.

Obesity was defined as BMI equal to or greater than 95th percentile per CDC growth charts. dietary intake was compared against Estimated Average Requirement, EAR, and Adequate Intake, AI, benchmarks. Blood biomarkers, including vitamin D, vitamin C, iron, and inflammatory markers, including albumin, were evaluated using clinical thresholds. Statistical analyses adjusted for age, gender, and race/ethnicity. Let's consider the results posted in this study.

Obesity prevalence. An upward trend in prevalence of obesity was found across cycles, rising slightly from 20.3% to 21.3%. dietary intake. Over 50% of adolescents, regardless of BMI, failed to meet EAR or AI for key nutrients, such as vitamin D, vitamin C, vitamin E, calcium, potassium, and fiber. Protein intake was notably lower in adolescents with obesity, 50.3% below EAR versus 22.9% in peers, with a p-value less than 0.001, despite no significant difference in absolute protein intake between groups. Blood biomarkers.

Adolescents with obesity had significantly lower levels of vitamin D, vitamin C, serum iron, albumin, and mean corpuscular volume, MCV, and higher levels of total protein, globulin, and hs-CRP, with a p-value equal to or less than 0.05. Prevalence of deficiencies was striking. Low vitamin D, 51.9% versus 26.8%. Low hemoglobin, 16.3% versus 7.5%. Low MCV, 13.4% versus 5.9%.

Combined low hemoglobin and MCV, 11.2% versus 3.3%. Collectively, these findings indicate a coexistence of obesity, micronutrient deficiencies, chronic inflammation, and elevated risk for iron deficiency anemia. Despite similar caloric intake, adolescents with obesity face disproportionately higher rates of nutrient

inadequacies and inflammatory markers. This paradox underscores the need for early, comprehensive interventions, focusing on diet quality, not just calorie reduction, and individualized nutritional monitoring.

Addressing both overt and hidden malnutrition is essential to improve adolescent health outcomes.