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Adolescent Overweight and Obesity: A Comprehensive Review

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Abstract

Background: Adolescent overweight and obesity have become pressing global health concerns, with rising prevalence in both developed and developing countries. These conditions are associated with long-term physical, psychological, and social consequences, including increased risk of chronic diseases and reduced quality of life.

Objective: This review aims to synthesize existing literature on the prevalence, risk factors, and health implications of overweight and obesity among adolescents, with a focus on identifying research gaps and informing future interventions.

Methods: A comprehensive search of peer-reviewed articles was conducted across major databases including PubMed, World Health Organization (WHO), and Google Scholar. Studies were selected based on relevance, methodological rigor, and focus on adolescents aged 10–19 years. Both cross-sectional and longitudinal studies were included. Results: Prevalence rates vary widely across regions, ranging from 5% to over 30%, with urban populations showing higher rates. Key contributing factors include sedentary lifestyles, poor dietary habits, increased screen time, socioeconomic status, and genetic predisposition. Psychological impacts such as low self-esteem, depression, and social isolation were frequently reported. Gender differences were noted, with females often exhibiting higher rates of body dissatisfaction despite similar BMI distributions.

Conclusion: Adolescent overweight and obesity are multifactorial conditions requiring integrated public health strategies. There is a need for culturally sensitive, school-based interventions, longitudinal studies, and policies that promote physical activity and nutritional awareness. Addressing these issues early can prevent the progression to adult obesity and associated comorbidities.

Keywords: Adolescents; Overweight, Obesity, Risk Factors, Interventions, Global Health.

1. Introduction

Adolescence (ages 10–19) is a critical developmental stage marked by rapid physical growth, hormonal changes, and evolving psychosocial identities. Nutritional status during this period has profound implications for immediate wellbeing and long-term health trajectories. Historically, undernutrition dominated adolescent health discourse, but the global nutrition transition has shifted the burden toward

overweight and obesity (World Health Organization, 2023). Adolescent overweight and obesity have emerged as critical global health concerns. The World Health Organization (WHO, 2023) reports that the prevalence of overweight and obesity among adolescents aged 5–19 has risen dramatically since 1975, with the steepest increases in low- and middle-income countries (LMICs).

Obesity in adolescence is not merely a matter of excess weight; it is a complex, multifactorial condition shaped by dietary patterns, physical activity, sleep, stress, socioeconomic status, and broader environmental influences. It is associated with cardiometabolic risk factors, psychosocial challenges, and increased likelihood of adult obesity (Reilly & Kelly, 2011). Obesity is one side of the double burden of malnutrition, and today more people are obese than underweight in every region except the South-East Asia Region. Once considered a problem only in high-income countries, today some middle-income countries have among the highest prevalence of overweight and obesity worldwide (WHO, 2025).

In India, the coexistence of undernutrition and obesity reflects a "double burden of malnutrition" (Panda et al., 2025). This literature review synthesizes current evidence on prevalence, determinants, consequences, and interventions. Special attention is given to the Indian context, where the dual burden of malnutrition poses unique challenges.

Methods

This review was conducted by searching PubMed, Scopus, and Google Scholar for peer-reviewed articles, systematic reviews, and global health reports published between 2015 and 2025. Search terms included "adolescent obesity," "overweight," "risk factors," "epidemiology," "interventions," and "public health." Inclusion criteria prioritized large-scale epidemiological studies, meta-analyses, and policy reports from credible organizations such as WHO, UNICEF, and CDC.

Discussion

Global Prevalence and Trends

Obesity has now surpassed underweight as the most common form of malnutrition among school-aged children globally. Obesity now exceeds underweight in all regions except sub-Saharan Africa and South Asia (UNICEF, 2025).

Globally, more than 390 million children and adolescents aged 5–19 were overweight, including 160 million living with obesity in 2022. Adolescent obesity has quadrupled since 1990 (WHO, 2025).

While prevalence has plateaued in some high-income countries, LMICs continue to experience sharp increases due to urbanization, dietary transitions, and sedentary lifestyles. In United States approximately 20% of adolescents aged 12–19 are obese (CDC, 2022).

Guthold et al. (2020) found that fewer than 20% of adolescents worldwide meet recommended physical activity levels, exacerbating obesity risk.

Indian Context

The NFHS-5 (2019–21) reported overweight/obesity prevalence of 4.9% among adolescent girls and 4.8% among boys, with higher rates in urban and wealthier households (IIPS & MoHFW, 2021).

A systematic review by Shukla et al. (2016) found prevalence ranging from 2% in rural areas to over 20% in metropolitan regions, highlighting regional disparities.

More recently, a scoping review (Panda et al., 2025) highlighted regional variability and emphasized the lack of longitudinal studies and intervention trials in India, with rising prevalence ranging

from 2% in rural Bihar to >20% in metropolitan Delhi. The prevalence rates of adolescent overweight in India range from 1.25% to 35.8%, and obesity from 0.3% to 24.6%, with urban populations disproportionately affected. These disparities underscore the need for region-specific interventions and more inclusive research targeting rural and marginalized groups.

The coexistence of undernutrition and obesity underscores the "double burden" of malnutrition.

UNICEF's Child Nutrition Global Report (2025) mention that by 2030, over 27 million Indian children and adolescents may be affected by obesity, accounting for 11% of the global burden.

Determinants of Adolescent Obesity

Dietary behaviors: Increased consumption of ultra-processed foods- often driven by aggressive digital marketing, high calorie diets sugar-sweetened beverages, and irregular meal patterns are strongly associated with obesity (Panda et al., 2025 & UNICEF, 2025).

Lifestyle: Sedentary behavior, low physical activity, excessive screen time, and short sleep duration were consistently linked to higher body mass index (Panda et al., 2025).

Physical inactivity: Global data show widespread failure to meet WHO's 60 minutes/day activity guideline (Guthold et al., 2020). The WHO recommends ≥60 minutes/day of moderate-to-vigorous activity.

Sleep and stress: Short sleep duration and academic stress contribute to hormonal dysregulation and unhealthy coping behaviors.

Socioeconomic and environmental factors: Urbanization, food marketing, and limited safe play spaces increase risk (Shukla et al., 2016). Higher socioeconomic status and private schooling were associated with increased obesity risk, possibly due to sedentary routines and dietary patterns (Panda et al., 2025)

Biological factors: Family history, early-life nutrition, and puberty timing also play roles (Reilly & Kelly, 2011).

Health Consequences

Adolescent obesity is linked to cardiometabolic risks (hypertension, insulin resistance, dyslipidemia), Adolescents with obesity face increased risk of bullying, social isolation, and low self-esteem. They also show higher prevalence of anxiety, depression, and disordered eating behaviours, and life course impacts such as persistence into adulthood and increased risk of non-communicable diseases (Reilly & Kelly, 2011). Obesity increased risk of diabetes, cardiovascular disease, and certain cancers (WHO, 2025).

Interventions and Gaps

School-based programs combining nutrition education, healthy canteen policies, and daily physical activity are effective. Evidence suggests multi-component programs (diet + activity + behavior change) are more effective than single-focus interventions (Panda et al., 2025). Family-based approaches emphasizing supportive communication and healthy routines are effective.

Urban planning for safe physical activity spaces, policy measures such as regulating food marketing and implementing sugar taxes have been recommended globally (WHO, 2023).

Research gaps: India lacks longitudinal studies, culturally tailored interventions, and integration of psychosocial wellbeing into obesity management. Limited focus on gender-specific and community-based

factors. Underrepresentation of vulnerable groups like slum dwellers and school dropouts (Panda et al., 2025).

Conclusion

The literature consistently demonstrates that adolescent obesity is a multifactorial condition with rising prevalence globally and in India. Rising prevalence in LMICs, including India, underscores the urgency of comprehensive, context-specific strategies. While determinants are well-documented, intervention research—particularly in LMICs—remains limited. Effective responses must integrate biological, behavioral, psychosocial, and environmental dimensions, while addressing stigma and promoting holistic wellbeing. Future research should prioritize longitudinal designs, culturally tailored interventions, and equity-focused policies. Addressing adolescent obesity requires multi-level strategies spanning individual, family, school, community, and policy domains and also a societal investment in future generations.

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