



HORMONAL HEALTH IN THE YOUNG GENERATION: A CLINICAL OVERVIEW

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ABSTRACT

This article examines the rising prevalence of hormonal and endocrine disorders among adolescents and young adults. It highlights the physiological vulnerabilities of puberty and explores how modern lifestyle factors-such as poor nutrition, digital screen exposure, and environmental chemicals-drive conditions like metabolic syndrome, polycystic ovary syndrome (PCOS), and thyroid dysfunction..

Introduction: As a medical student, I frequently observe a troubling trend: a sharp increase in hormonal imbalances among our younger demographic. Puberty is a critical window of neuroendocrine development, governed by the precise timing of the hypothalamic-pituitary-gonadal axis. However, this highly synchronized biological process is increasingly disrupted by contemporary lifestyle and environmental factors. Consequently, endocrine conditions previously associated with older adults are now routinely diagnosed in adolescents, fundamentally altering their physical and psychological development.

Metabolic and Reproductive Complications: One of the most pressing clinical concerns is the epidemic of childhood obesity, which frequently precipitates Metabolic Syndrome (MetS). This condition acts as a precursor to more severe metabolic and reproductive disorders.

Endocrine Condition	Global Youth Trend	Primary Clinical Drivers
Metabolic syndrome	Affects 26% of obese youth globally	Insulin resistance, central adiposity, hypertension
PCOS	56% global incidence increase since 1990	Hyperandrogenism, altered ovarian morphology

The interplay between insulin resistance and hyperandrogenism permanently shifts how a young body regulates energy and reproductive hormones. Because these changes occur quietly over time, routine screening for markers like lipid profiles and waist-to-height ratios has become essential in pediatric care.

Nutritional Deficiencies and Environmental Toxins: Beyond metabolic weight, silent nutritional deficiencies and environmental toxins severely compromise endocrine function.

Iodine deficiency, which suppresses the synthesis of vital thyroid hormones, remains a primary driver of delayed puberty and growth retardation in vulnerable regions. Similarly, severe Vitamin D deficiency affects a massive portion of youth globally, directly impairing linear growth and compounding insulin resistance. Furthermore, our youth are constantly exposed to Endocrine-Disrupting Chemicals (EDCs) found in everyday plastics (such as bisphenol A) and cosmetics (phthalates). These synthetic compounds mimic or block natural hormones. Even at very low doses, EDC exposure during puberty can lead to altered sexual development and a heightened lifetime risk of hormone sensitive conditions.

Chronobiology and the Stress Axis: Finally, we must address the digital lifestyle. The ubiquitous use of electronic devices exposes young eyes to short wavelength blue light late into the evening. This exposure tricks the brain into suppressing the secretion of melatonin from the pineal gland, severely fracturing sleep architecture. Chronic sleep deprivation acts as a physiological stressor, elevating cortisol levels. High cortisol not only promotes abdominal fat storage but also destabilizes mood, directly contributing to the alarming modern spike in adolescent anxiety, depression, and persistent hopelessness.

Conclusion: The hormonal integrity of today's youth is under unprecedented pressure from dietary, environmental, and chronobiological disruptors. Addressing these challenges requires more than medical intervention; it demands a proactive, educational approach to lifestyle modification, nutritional support, and healthy digital boundaries. By understanding the root causes of these endocrine imbalances, we can better guide the next generation toward enduring physiological and psychological health.

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