



Introduction

Metabolic syndrome encompasses a constellation of interrelated health issues, including high blood pressure, elevated blood sugar levels, abnormal cholesterol levels, and excess abdominal fat. Individually, each of these conditions heightens the risk of cardiovascular diseases, such as heart disease and stroke, as well as type 2 diabetes. However, when they co-occur within the framework of metabolic syndrome, their collective impact is amplified, significantly elevating the likelihood of developing these debilitating and potentially life-threatening conditions [1].

Traditionally viewed as a concern primarily affecting adults, metabolic syndrome is now emerging as a troubling health phenomenon among adolescents. This shift is deeply concerning, as it signals a departure from the notion that these health complications predominantly manifest later in life. Instead, we are witnessing a disturbing trend where young individuals, often in the formative stages of their lives, are grappling with a cluster of metabolic abnormalities that were once thought to be exclusive to adulthood [2].

The rise of metabolic syndrome among adolescents is multifaceted,

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