

Metabolic Obesity

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Obesity is a worldwide pandemic, with high prevalence. In the United States, at least 35% of men and 40% of women are obese [1]. In Brazil, the latest Survey of Surveillance of Risk and Protection Factors for Chronic Diseases by Telephone Survey [2], from the Ministry of Health found that the frequency of obese adults has been increasing, from 11.8% in 2006 to 20.3% in 2019, is similar for men and women in 2019 [2].

The increase in obesity is attributed to different factors such as the environment (social, cultural, political, economic), genetics, health behaviors such as food, as well as emotional factors. Obesity affects all physiological functions of the body and comprises a threat to public health.

In many cases, obesity marks the beginning of cardiometabolic disease, due to its association with different comorbidities such as type 2 diabetes, hypertension, cardiovascular diseases, and osteoarthritis, among others. Despite their negative health consequences, not all obese people develop metabolic risk factors, and this fact has led to these individuals being classified into different obesity phenotypes. These phenotypes include Healthy Metabolic Obesity and Unhealthy Metabolic Obesity [3].

The prevalence of metabolic obesity in adults has varied widely between studies and this is due to the differences found in each study and which may influence its prevalence, such as sample size, environmental factors, genetics, race/ethnicity, age, sex, lifestyle, as well as the different criteria for the classification of obesity and the different definitions and cutoff points for Metabolic Syndrome (MS). Ten cohort studies involving 163,517 individuals from seven European countries, aged 18 to 80, revealed significant diversity in the prevalence of healthy metabolic obesity across Europe ranging

from 7% to 28% in women and from 2% to 19% in men and the prevalence increased with age regardless of sex and the definition of the metabolic syndrome [4].

The definition of the diagnostic criterion of metabolic obesity is controversial and has varied between different authors, this difference is due to the lack of consensus in its classification. Some authors use the body mass index (BMI) as a criterion along with one of the diagnostic criteria for MS in adults. Other authors have defined metabolic obesity as the presence, in an individual, of at least two cardiometabolic risk factors, including insulin resistance, hypertension, dyslipidemia, and increased waist circumference [5].

Healthy Metabolic Obesity results from a combination of excessive caloric intake reduced physical activity, and sedentary behavior), genetic predisposition, or a combination of these factors. In metabolically healthy obese individuals, excess calories are deposited in insulin-sensitive subcutaneous adipose tissue, which is why it is observed that visceral and ectopic adiposity (accumulation of fat in the intramuscular, epicardial and hepatic regions) is reduced, and the pro-state - attenuated inflammatory, lipid profile, and blood pressure are normal, insulin sensitivity is preserved and the individual is protected against the development of metabolic syndrome [3,5].

In metabolically unhealthy obese individuals, an accumulation of fat is observed in the visceral region. This results in the infiltration of immune system cells, which results in a pro-inflammatory state, lipotoxicity (toxicity caused by increased levels of lipids in the blood and other tissues), insulin resistance, hypertension, dyslipidemia and a series of changes metabolic disorders, such as SM [5].

Metabolic obesity is a new concept of obesity classification that is important to stratify individuals in order to develop risk stratification strategies, differentiated interventions, and treatments that have come to reduce obesity and improve metabolic health, especially for non-metabolically healthy individuals, because they have a higher risk of cardiometabolic factors. Therefore, it is believed that establishing more personalized strategies to combat obesity, based on an individual's metabolic health history, will offer new opportunities in the diagnosis, intervention and treatment of obesity [3].

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