

An Overview on Obesity and its Aetiology

Sasha James*

Department of Medicine, North western University, Illinois, USA

Correspondence:

James S, Department of Medicine, North western University, Illinois, USA

E-mail: James.sas@northwestern.edu

DESCRIPTION

Obesity is a complex disease that involves excessive amounts of body fat. Obesity is linked with several other diseases like diabetes, hypertension, other cardiovascular disorders, osteoarthritis, and some cancers. Obesity management will thus, necessitate a wide range of strategies aimed at both people who already have weight problems and those who are at high risk of becoming obese. As a result, childhood obesity prevention should be prioritized, as there is a danger of obesity persisting into adulthood.

The “New World Syndrome” is a term used to characterize obesity. Its frequency is steadily increasing across all age groups in many developed nations throughout the world. According to statistical information in the previous ten years, obesity has increased from 12%–20% in males and 16%–25% in women. According to recent research, about 15%–20% of the middle-aged European population is obese, and obesity is responsible for up to 3, 00,000 premature deaths per year in the United States alone.

Obese people have a higher risk of morbidity and death than those who are at a healthy weight. Even a slight weight loss of 5%–10% of one’s starting body weight is linked to considerable benefits in a variety of co-morbid illnesses. Obesity, which was traditionally thought to be the consequence of a lack of lifestyle “option” the choice to overeat and under exercise, is increasingly being seen as a chronic condition that requires effective treatment measures in the modern environment.

$$BMI = \frac{\text{Weight of an individual (in Kg)}}{\text{Height}^2 (m^2)}$$

Obesity is a condition of imbalance between calories consumed and calories spent that result in excessive or abnormal fat build-up. The Body Mass Index (BMI) is a weight-for-height measurement that indicates total body fat and has long been the most widely used way to determine obesity.

The ideal BMI increased with age. Overweight was also defined by the WHO based on BMI. In large populations, there is a strong link between BMI and body fat percentage.

Percent Body fat = $1.2 (BMI) + 0.23 (age) - 10.8 (gender) - 5.4$

Where gender = ‘1’ for men and ‘0’ for women.

As a result of this equation, the proportion of body fat in women is around 10% greater than in males for the same height and weight. The explanation for this might be because excess body fat in women is often distributed as subcutaneous fat and is mostly peripheral (thighs, buttocks and breasts), but in males, there is a relative excess of body fat deposited in the abdominal cavity as abdominal subcutaneous fat.

Aetiology of obesity

Obesity is a complex set of disorders with numerous causes, each of which manifests as an obese phenotype. Obesity is caused by a complicated aetiological relationship involving genetic, metabolic and neurological frameworks.

Genetic considerations: Obesity has a genetic factor; however, it is not a simple genetic disorder. The recognition of the ‘ob’ gene on chromosome 7 has renewed interest in understanding the pathobiological basis of obesity’s hereditary susceptibility. The ob gene produces leptin, a 167 amino acid protein that was thought to be generated in adipose tissue as well as the placenta. Leptin receptors are found in the hypothalamus and are related to the IL-2 and growth hormone receptors. Obesity is caused by a mutation in the ‘ob’ gene, which causes incorrect leptin coding. The ‘ob’ gene’s effects are mediated via changes in energy intake and expenditure. Obesity is a “complex characteristic” since it is linked to numerous other genes that code for proteins such as apolipoprotein B, D, E, 3-adrenergic receptor, dopamine D2-receptor, Tumour Necrosis Factor (TNF), glucocorticoid receptor, and so on. There have been 200 genes, gene markers, and chromosomal areas linked to human obesity thus far.

Environmental factors: By revealing genetic or metabolic susceptibilities, these variables play a significant role in the development of obesity. Environmental factors cause an increase in calorie intake or a reduction in energy expenditure with minimal physical activity, resulting in an increased risk of obesity. Obesity is also linked to sedentary habits, such as watching television and owning a car. Passive over consumption, eating disorders, etc., are all factors that contribute to obesity risk.

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