Abstract

Obesity is one of the major public health problems worldwide. It is a chronic, complex, and multifactorial-origin disease characterised by body fat excess mainly due to an imbalance between dietary intake and energy expenditure. One of the major complications of obesity is metabolic syndrome, which comprises anthropometrical, clinical, and metabolic dysfunctions that predispose the affected individual to the development of type 2 diabetes mellitus and cardiovascular diseases. It is hypothesised that the variability in the susceptibility to obesity-mediated metabolic complications involves both environmental and genetic factors. Whereas advances in the knowledge of the variations in the human genome have led to the identification of susceptibility genes that contribute to obesity and related disorders, relatively few studies have specifically focused on the interactions between obesity and genetic polymorphisms and the development of metabolic complications. Despite these limited efforts, an increasing amount of evidence suggests that the effects of some gene variants on metabolic traits are modified by or present only in the setting of obesity. Furthermore, some of these loci may have larger effects on metabolic phenotypes in the presence of certain dietary or lifestyle factors. In the present manuscript, we reviewed the genes and their variants that have been evidenced to play a role in obesity-associated metabolic complications through genetic association studies, including candidate gene and genome-wide association approaches in adults and children.

Keywords

Genes, Gene variants, Metabolic syndrome, Obesity, Single-nucleotide polymorphisms.