# The Potential Role of Personalized Medicine in Predicting the Outcomes of Metabolic Bariatric Surgery

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The extent of weight loss following surgery varies greatly and is influenced by genetic factors. Genome-wide association studies (GWAS) have identified numerous single nucleotide polymorphisms (SNPs) that influence individual responses to bariatric surgery.

## Objectives and Methods:

This study aimed to investigate the effects of sequence variants and determine the impact of SNPs on patients' responses to metabolic and bariatric surgery.

This review article summarizes studies that have examined the influence of genetic polymorphisms on the effectiveness of bariatric surgery and weight loss pathways. To conduct this research, we collected data from the Scopus and PubMed databases, which were systematically searched for GWAS studies that provided insights into the genetic factors affecting bariatric surgery outcomes.

# Results

Our findings indicate that the most extensively studied and influential polymorphisms that affect bariatric surgery outcomes include the SNP of the FTO (fat mass and obesity-associated) gene, the MC4R (melanocortin 4 receptor) gene, the SNP of uncoupling proteins 2 (UCP2), the leptin receptor gene the glucagon-like peptide 1 receptor gene and the INSIG2 (insulin-induced gene 2) gene.

Evidence from GWAS studies has revealed that Most of these SNPs are associated with genes involved in the regulation of lipolysis/lipogenesis pathways, adipose cell metabolism, metabolic processes, insulin resistance, insulin/glucagon metabolism, feeding behavior, and appetite regulation.

# Conclusion

Our study highlights the importance of  that Genetic background significantly impacts weight loss following metabolic and bariatric surgery. In the future, genetic testing could potentially be used in the pre-surgical assessment of patients with severe obesity to select the most suitable surgical procedure, thereby minimizing unnecessary adverse effects and costs.

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# Thank You For Your Attention !

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