

UNIVERSITI TEKNOLOGI MARA

**RELATIONSHIP BETWEEN PSYCHOLOGICAL
WELL-BEING WITH WEIGHT
CONTROL GENES: SYSTEMATIC REVIEW**

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Abstract

The interaction of social, cultural, and genetic factors frequently results in an energy imbalance that promotes obesity. This risk is further increased by mental health issues such as anxiety and depression. This research focuses on journal papers and original research published between 2010 and 2023 and includes genetic analyses relating to weight management and psychological diseases. Studies on people who are overweight or obese (BMI > 24.9 kg/m²) who have depression, anxiety, or stress in the past or present, as well as genotyping information on weight and BMI before and after an intervention, are among the criteria. Review papers, supplemental studies, individuals with underweight or normal BMI, pregnant women, and individuals with serious medical issues are all excluded. In addition to other pertinent journals and statistics, PubMed, Scopus, Web of Science (WoS), and Wiley Online Library are examples of data sources. This study looks at the reciprocal relationship between obesity and mental disorders, specifically how genes associated with weight affect and are regulated by psychological health. the research determines particular genetic markers linked to variations in body mass index and mental health disorders. For example, in people with major depressive disorder, a higher BMI is associated with the FTO gene variant rs9939609 ($p = 0.0016$). The correlation between mental drug treatments and genetic factors is clear as the MAN2A1 gene rs7736552 SNP substantially relates to changes in BMI ($p = 3.12 \times 10^{-8}$).

Keywords: Mental illness, SNP, Overweight or obese, Genetics, Gene expressions, Weight control genes

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CHAPTER 1: INTRODUCTION

1.1 Research Background

High levels of body fat that have a detrimental impact on health are a feature of obesity, a complex, multidimensional condition. It is a severe public health concern when over 2.5 billion people globally are classified as overweight, with 890 million of them being obese by 2022 (World Health Organization: WHO, 2024). The combination of genetic, social, cultural, and socioeconomic factors results in an imbalance between energy expenditure and consumption, which leads to obesity (Panuganti et al., 2023). Obesogenic environments raise the chance of obesity. For instance, limited access to reasonably priced, healthful foods and a dearth of opportunities for engaging in safe physical activity (World Health Organization: WHO, 2024). Obesity and overweight raise the risk of a number of non-communicable diseases, such as neurological disorders, type 2 diabetes, cardiovascular disease, and several types of cancer, which are expected to cause 5 million deaths in 2019 (World Health Organization: WHO, 2024). Being obese at a young age is especially troubling since it boosts the risk of obesity and related disorders in adulthood and has an immediate negative impact on health, academic performance, and quality of life (World Health Organization: WHO, 2024).

It is a complicated and multidimensional issue of how psychological disease and weight control relate to one another. Studies have indicated that psychological discomfort, encompassing disorders such as anxiety and depression, can have a notable influence on a person's capacity to regulate their weight (Li et al., 2024). According to one research, psychological distress is strongly correlated with eating behavior and only moderately correlated with weight control measures. This suggests that psychological distress influences eating behavior, which increases the likelihood of failing to control weight and complicates weight control for those who are obese