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A Scoping Review on Genetic Markers of Obesity in Malaysia

Authors : Siti Sarah Hamzah, Liyana Ahmad Zamri, Norhashimah Abu Seman, Nur Azlin Zainal Abidin

Abstract : Obesity is a significant public health challenge in Malaysia, characterized not only by excess weight but also by complex metabolic and physiological changes. Addressing these multifaceted issues requires comprehensive strategies, including an understanding of population-level differences in genetic susceptibility to obesity. This review aims to consolidate studies on genetic variants associated with obesity among Malaysians and explore their implications for obesity risk. A systematic review of relevant articles published up to March 2024 was conducted using the Scopus, PubMed, and ScienceDirect databases. The review process adhered to the PRISMA-ScR guidelines. Out of an initial 579 articles, 35 met the inclusion criteria and were selected for the final analysis. The review identified several genetic variants significantly associated with obesity in the Malaysian population. These include LEPR (K656N), LEP (G2548A, specific to Indians), ADIPOQ (rs17366568), UCP2 (45bp-I/D), ADRB3 (rs4994), MC3R (rs3827103), PPARγ (Pro12Ala, specific to Malays), IL1RA (intron 2 VNTR), NFKB1 (rs28362491), and FADS1 (rs174547, specific to Indians). These gene variants were found to have significant associations with obesity-related metrics across the studies. The findings underscore the need for more extensive genetic research, including population-based genetic profiling of obesity, starting with children. Sociocultural contexts and environmental factors play a critical role in shaping genetic influences on obesity, highlighting the importance of tailored interventions to address obesity within the Malaysian population.

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