

Association between Leptin (G2548A) and Leptin Receptor (Q223R) polymorphisms with Plasma Leptin, BMI, Stress, Sleep and Eating Patterns among the Multiethnic Young Malaysian Adult Population from a Healthcare University

ABSTRACT

Relative leptin resistance in childhood to absolute leptin resistance in maturity suggests sleep, eating behaviour, and the psychological state as probable causes. The current body of research provides inconclusive evidence linking G2548A and Q223R to obesity. Furthermore, we could find very little data that have observed the association between the environment and gene polymorphism, especially in the multiethnic population that exists in Malaysia. This study searched for a possible link between sleeping habits, eating behaviour, and stress indicators with plasma leptin and its genetic variation in young adult Malaysian healthcare students. The study involved 185 first- and second-year medical and dental students from a healthcare university. Polymerase Chain Reaction– Restriction Fragment Length Polymorphism(PCR-RFLP) determined the genotype, Enzyme Linked Immunoabsorbant Assay (ELISA) tested the serum leptin, and a self-administered questionnaire evaluated sleep, eating behaviour, and psychological condition. Gender and ethnicity are linked to fasting plasma leptin levels ($p < 0.001$). Plasma leptin also affects stress, anxiety, and sadness. Leptin (LEP) and Leptin Receptor (LEPR) polymorphisms were not associated with BMI, plasma leptin, sleep, eating behaviour, or psychological state. Young adult Malaysian Indians were obese and overweight, while Chinese were underweight. These findings imply overweight and obese participants were in stage I of leptin resistance and lifestyle change or leptin therapy could prevent them from becoming cripplingly obese as they age