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MANAGEMENT OF OBESITY BY PERSONALIZING DIETARY AND LIFESTYLE RECOMMENDATIONS: EVALUATION OF GENETIC PROFILING FOR WEIGHT LOSS IN DIETETIC PRACTICE

Cynthia Issa and Helena Jenzer

Bern University of Applied Sciences, Switzerland

Background: Obesity is highly influenced by complex gene-environment interactions. New challenges in obesity research are currently focused on personalizing nutrition recommendations by better adapting them to the nutritional requirements and metabolism of the individual. To save both time and efforts for the individuals with overweight or obesity and dietitians, prescribing a once-for-all individually customized nutrition regime instead of a one-for-all population-based perspective would be a key approach. The concept of nutrigenomics in dietetic counselling is hypothesized in theory to help on deciding the most appropriate level of nutrition care through being based on the individual's obesity genotype/phenotype. In this context, the aim of this pilot project was to evaluate the effectiveness of genetically tailored dietary and lifestyle recommendations in dietetic practice for optimizing weight loss outcomes.

Materials & Methods: Overweight-to-obese patients, with a history of unsuccessful weight loss attempts, were experimentally counselled based on a commercially available genetic test screening 8 single nucleotide polymorphisms (SNP) in 7 obesity-associated genes. Bioelectrical impedance analysis (BIA) was used to measure body weight and composition. The change in body weight and composition measurements between the beginning and end of the pilot was analysed. In addition, the effectiveness of the genetically tailored counselling approach was assessed.

Results: 15 out of 36 patients were found to be previously following the wrong matching diet according to their genetic profile screened; 11 of which achieved the highest weight loss outcomes. Those results reflected in a highly significant loss in body weight and subsequent BMI ($p < 0.001$), where the Body Mass Index (BMI) mean decreased by more than one unit from 35.433 to 34.419 kg/m² in a 3-month period. In addition, the mean decrease in fat mass, fat mass percentage, and visceral fat area was highly significant ($p < 0.001$) and the mean of the waist-to-hip ratio also decreased significantly ($p < 0.05$).

Conclusion: Management of obesity by personalizing dietary and lifestyle recommendations based on genetic profiles offers promise in practice as in theory.

Biography

Cynthia Issa has completed her Bachelor's degree in Nutrition and Dietetics at Beirut Arab University in Lebanon and became Lecturer of Clinical and Therapeutic nutrition for more than a year as a reward of graduating with a scientific excellence award. She completed her Master's studies in Life sciences specialised in Nutrition and Health at Bern University of Applied Sciences in Switzerland, and worked for 6 months as an Intern in the Nutrition and Dietetics research team. Currently, she is applying for her Doctoral studies at the University of Zurich, Switzerland.

cynthiaissa92@gmail.com