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Short communication

Genetically guided dietary counselling versus standard recommendations in weight loss: baseline characteristics from an ongoing randomized controlled trial

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Introduction

Precision Nutrition has emerged as a promising approach for improving dietary interventions by integrating genetic, phenotypic, and lifestyle characteristics into personalized nutritional recommendations. Unlike traditional dietary guidelines that are applied uniformly across populations, genotype-guided dietary counselling aims to enhance dietary adherence and effectiveness through individualized recommendations.

Despite its strong theoretical background, evidence regarding the effectiveness of Precision Nutrition for weight management remains inconsistent. The Food4Me study demonstrated that personalized nutrition could improve health-related behaviours, however, they did not show clear superiority regarding weight loss outcomes (Celis-Morales et al., 2017). Similarly, systematic reviews have highlighted the limited understanding of the biological mechanisms linking genetic variability to differential responses to dietary interventions (Monnerie et al., 2020).

Conversely, other investigations have reported encouraging findings. The NOW Trial demonstrated that genotype-based dietary advice resulted in greater reductions in body fat compared with conventional recommendations (Horne et al., 2020).

More recently, Bermingham et al. (2024) reported improvements in body composition and metabolic health indicators following precision dietary interventions.

Given the growing interest in personalized nutrition and the limited evidence available in Mediterranean populations, the present study aims to compare genotype-guided dietary counselling with standard dietary recommendations regarding weight loss and body fat reduction in overweight and obese adults. This abstract presents baseline characteristics from an ongoing randomized controlled trial.

Materials and methods

This randomized controlled intervention study is being conducted at the Interdisciplinary Education and Research Centre for Rehabilitation (KEDEEA), Metropolitan College, Athens, Greece. Adult volunteers were recruited through institutional communication channels, social media announcements, and on-site advertising.

Participants were randomly allocated to either a genotype-guided dietary counselling group (GD) or a

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standard dietary counselling group (SD). The total duration of the intervention will be 12 months.

Baseline assessment included demographic, anthropometric and lifestyle measurements. Body weight, height, body mass index (BMI), waist circumference, and body composition parameters were assessed using standardized procedures.

Dietary intake was assessed using a validated Food Frequency Questionnaire (FFQ). Physical activity was evaluated using the International Physical Activity Questionnaire (IPAQ), while sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). Behavioural determinants associated with dietary change were evaluated using a questionnaire based on the Theory of Planned Behaviour (TPB).

Preliminary results

Thirty-seven participants were enrolled and randomized (GD: n = 20; SD: n = 17). Mean age was 40.5 ± 13.1 years and mean BMI was 32.1 ± 5.2 kg/m².

Baseline characteristics were comparable between groups with respect to sex distribution, age, blood pressure, smoking status, alcohol consumption, socioeconomic status, sleep quality, BMI, body fat percentage, and muscle mass percentage (all $p > 0.05$). Physical activity levels were significantly higher in the GD group compared with the SD group (2776 ± 2390 vs. 1191 ± 1246 MET-min/week, $p = 0.019$).

Recruitment has been completed and participant follow-up is ongoing. Final analyses will evaluate the effects of genotype-guided dietary counselling on changes in body weight, body fat percentage, and other anthropometric outcomes following the six-month intervention period.

Conclusion

This ongoing randomized controlled trial will provide evidence regarding the effectiveness of genotype-guided dietary counselling for weight management in a Mediterranean population. Baseline analyses demonstrated generally comparable characteristics between groups, supporting the validity of subsequent outcome comparisons. Final analyses are expected to clarify whether nutrigenetic-guided dietary interventions confer additional benefits beyond standard dietary recommendations for weight loss and body composition.

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