

Effects of a Personalized Dietary Intervention on Diet Quality and Cardiometabolic Factors in Young Adults

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Background

The high prevalence of obesity in US youth is positively correlated with cardiometabolic diseases. NHANES data shows that ethnic and racial minority groups are at increased risk for cardiometabolic diseases such as hypertension, diabetes, and myocardial infarction. Improving diet quality can alleviate the burden of cardiometabolic disorders. The objective of our study is to examine the effects of an 8-week personalized functional food dietary intervention on diet quality and cardiometabolic markers in young adults.

Methods

Black (n=8) and non-Hispanic White (n=11) adults (age: 18-25 years, BMI: 25-45 kg/m²) were recruited for this 8-week randomized, controlled, and parallel-arm trial. Participants were randomized into two groups: personalized diet (PD, n=8) or the conventional dietary advice (CD, n=11). Outcomes assessed included diet quality, food palatability, weight, BMI, blood pressure, endothelial function, fasting glucose, and lipids. Linear mixed model analyses were conducted to determine statistically significant differences by groups.

Results

The PD group had significant improvements in total healthy eating index (HEI), vegetable, fruits, and plant protein score over 8 weeks in comparison to the CD group ($P<0.05$). The PD group's acceptance and palatability scores for most foods demonstrated a decreased trend over 8 weeks. In this preliminary analysis, we do not have enough power to determine statistically significant differences in cardiometabolic outcomes by group or race, however, we report trends observed. The PD group showed greater improvements in fasting triglycerides, diastolic blood pressure, and body fat compared to the CD group.

Conclusion

Personalizing a dietary intervention improved diet quality in all participants and there were trends for improvements in cardiometabolic factors compared to conventional dietary advice which will be explored further in a complete analysis.