



A meta-analysis of epigenome-wide association studies of ultra-processed food consumption with DNA methylation in European children

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Reviewed by OUR EXPERTS  With Expert Review from Sarah Cassar



Ultra-processed foods (UPFs) such as packaged snacks, sugary drinks, and fast-food are now widely consumed by children in Europe. These foods have been linked to poorer health outcomes; however, it remains unclear if they can affect health at the genetic level particularly through epigenetic mechanisms such as DNA methylation.

This study aimed to determine whether UPF consumption is associated with differences in DNA methylation patterns in European children.

This was a systematic review and meta-analysis of epigenome-wide association studies, which included 3152 children aged 5-11 years.

The results showed that higher UPF consumption was associated with modest methylation differences located on genes involved in metabolic regulation and inflammatory pathways. It was concluded that higher consumption of UPFs may be associated with DNA methylation changes in childhood, which may influence long-term health. ■



Association between vitamin D receptor gene polymorphisms and genetic susceptibility to benign prostatic hyperplasia: A systematic review and meta-analysis

LI RUAN
JOURNAL: MEDICINE 2024;103(9):E37361

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This study aimed to update the previous research on VDR polymorphisms and BPH focusing on Apa-1, Bsm-I, Taq-1, and Fok-1. This was a systematic review and meta-analysis of 10 papers with 1539 individuals with BPH and 1915 controls. The results showed that those with polymorphisms at the Taq-1 gene had an increased risk for the development of BPH. Namely those with the dominant W allele had an increased risk. Those with the recessive w allele had a decreased risk for the development of BPH. It was concluded that Taq-1 polymorphisms may be a genetic biomarker for the development of BPH. ■

A randomized clinical trial of a dietary intervention and mental health associations in adults with increased genetic risk for obesity

MARIA KAFYRA, IRAKLIS VARLAMIS, GEORGE V DEDOISSIS, ET AL.
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This study aimed to determine the effect of a dietary weight loss intervention on mental health in individuals with a genetic predisposition for obesity. It was a secondary analysis of individuals enrolled in the iMPROVE study, a two-arm, parallel randomised control trial. 80 overweight participants were assigned to either a high protein or high carbohydrate diet following the Mediterranean diet principles for 3 months.

Results overall showed no significant change in Quality of Life (QoL) scores from baseline to 3-months in either dietary arm. 2 of the 10 SNPs analysed were shown to be associated with physical health QoL. Some associations were observed between improved mental health and particular genetic SNPs. Authors concluded that despite the presence of genetic variations associated with higher BMI and the links to increased mental health disorders, dietary intervention can improve the mental health in this high risk group. ■

Cost-Effectiveness of Personalised Nutrition in Adults With Overweight and Obesity: PREVENTOMICS Studies in Poland and the UK

MILANNE MARIA JOHANNA GALEKOP, WILLIAM KEN REDEKOP, ET AL.
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The aim of this study was to assess the cost-effectiveness of personalised nutrition in adults aged 18-65 years with overweight or obesity in the UK and Poland using interventions developed for the PREVENTOMICS project.

Long-term health outcomes and cost-effectiveness of personalised nutrition interventions were calculated using data from two randomised-controlled trials (RCT) conducted in the UK (n=54) and Poland (n=170) over 4 months. There were 3 groups in the studies: those with a personalised diet plan (PP) plus behavioural change (PP+B), PP only, or standard dietetic advice (European guidelines for obesity) which acted as control.

Results showed that all groups showed a reduction in BMI. These were greater in the intervention groups compared to the controls, however, did not reach clinical significance and confidence intervals were wide. Analysis suggests potential cost-effectiveness for quality of life years for PP+B and PP groups in the UK and PP+B in Poland.

The authors concluded that personalised nutrition interventions could be a cost-effective approach for managing weight and promoting better health outcomes in adults with obesity and overweight. However, due to the uncertainty around results, further longer and larger trials are needed to validate these findings. ■