Parallel Session RTD Line 1 / Diet and weight (re)gain prevention

Lecture 2: Effects of five different diets varying in protein and GI on body weight and body fat of European free-living children and adolescents following a 6-month dietary instruction period

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Abstract
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Background:
Diets with either a high protein content or a low glycemic index (GI) have been suggested to play a role in body weight control, but their effect on children have not been assessed in large-scale randomised controlled studies. We aimed to investigate the effect of dietary protein and GI on body weight, anthropometric measurements and body composition among free-living children and adolescents participating in the DiOGenes study, following a 6-month dietary instruction period.
Methods:
Eight hundred and twenty seven children (381 males and 446 females), aged 5-18 years, completed the study baseline examinations (CID2). Families with parents who successfully lost ≥8% of initial body weight during an 8-week run-in low calorie diet period were randomised to one of five ad libitum diets: low protein/low GI (LP/LGI); low protein/high GI (LP/HGI); high protein/low GI (HP/LGI); high protein/high GI (HP/HGI); and healthy diet (current dietary recommendations). Three hundred and seventy one children from UK, GR, GER, SP, BUL and CZ (instruction-only centres) were examined one week following their randomisation (CID3) and 244 children from DK and NETH (shop + instruction centres) were examined at the beginning of the instruction period (CID4). During seven visits of the 6-month instruction period, advice on behavioural and food choice modification was provided. Body weight and height, BMI, waist and hip circumference and body composition were assessed using standard protocols and procedures. Two hundred and thirty two children from instruction-only centres and 173 children from DK and NETH completed all examinations [(CID2, CID3 and CID4) and (CID2, CID4 and CID5), respectively] (a total of 405 children, completers' analyses).
Results:
247 children from the instruction-only centres completed their final examination (CID4, 66.6% of those attending CID3) and 175 children from DK and NETH completed the study (CID5, 71.7% of those attending CID4). Drop-out and exclusion at the end of the instruction period was highest in children for whom only one of two parents were randomised ($P<0.001$) and in the LP/HGI group but for DK and NETH only (28.9%, $P=0.035$). Analysis of covariance (using age, gender, family structure and country as covariates) in both types of centres (completers' analyses) showed that overall, there were no significant differences between the diet groups in any of the anthropometric measurement changes between any time points. Between CID2 and CID4 and in instruction-only centres, the LP/HGI group decreased their fat-free mass (FFM) significantly more than the LP/LGI and HP/HGI groups (-2.9kg vs. +2.8kg and +2.8kg, respectively; $P<0.05$) and increased their fat mass (FM) significantly more than the other diet groups (+4.2kg vs. LP/LGI: -0.7kg, HP/LGI: +0.3kg, HP/HGI: -0.3kg and healthy diet: -0.6kg; $P<0.05$). In the two other centres (shop and instruction), the HP/LGI group increased their BMI significantly more during the instruction period (CID4-CID5) compared to the HP/HGI group (+1.1 vs. +0.3kg/m2; $P<0.05$), but no differences in FFM or FM between these groups were observed.
Conclusions:
Overall, dietary protein and GI did not seem to influence body weight and other anthropometric measurements in this sample of European children and adolescents over a 6-month dietary instruction period. It seems, however, that the LP/HGI diet can have a less favourable effect on body composition, at least in the instruction-only centres.