CONTRIBUTION OF GENETIC FACTORS AND DIETARY FACTORS TO BODY COMPOSITION IN FEMALES

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Genes or environmental factors: what is their relative contribution to the variance in body composition? Twins provide a valuable model for studying this question as it is possible to assess the contribution of genes and environmental factors to phenotypic expression of particular traits.

Female twin pairs have participated in longitudinal studies investigating the role of genetic and environmental factors to bone density. Body composition was measured by dual energy X-ray absorptionmetry (DXA). Dietary intake was assessed by a four day measured food record and analysed using Diet 3 (Xyris software).

Two different age groups of female twins participated in this study:

(A) 10-26 years (15.1 [3.4] years) (mean [SD])	n = 220
(B) 40-55 years (47.2 [4.4] years)	n = 158

Body composition was measured in 103 twin pairs from group A and 75 pairs from group B. Using stepwise multiple regression analysis age and fibre inversely, was related to percent body fat, total fat and BMI (body mass index). Height, age and fibre inversely was related to lean mass in group A. In group B dietary cholesterol was related to BMI and total body fat and height and protein intake was related to lean mass. Using twin analysis of within pair differences, in group B dietary cholesterol, alcohol intake were positively related to percent body fat, total fat and BMI. Whereas carbohydrate, starch and fibre were inversely related to these factors in this group.

After adjustment for height, genetic factors accounted for up 79% of the variance in fat mass and 65% for lean mass in young women and 67% for fat mass and 51% for lean mass in older women. This study indicates that genetic factors account for a greater amount of the variance in body composition in young females and that in older females environmental factors have a greater effect on body composition.

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