

Early programming of abdominal adiposity in adolescents

The HELENA study

by

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Objective: To examine the relationship between birth weight (BW) and abdominal adiposity in adolescents.

Methods: A total of 284 adolescents (49.3% females) aged 12.5-17y were included in the study. BW and gestational age were obtained from parental records. Abdominal adiposity in three regions (R1, R2, and R3), trunk and total body fat mass (FM) were measured by DXA. Regional FM indexes (FMI = FM/height²), were thereafter calculated (Trunk FMI and abdominal FMI R1, R2, and R3).

Waist to height and subscapular to tricipital skinfold thickness (StT) were also calculated. Physical activity (PA) was objectively assessed by accelerometry (Actigraph MTI). The associations of BW with central adiposity indexes were examined by regression analysis.

Results: BW was negatively associated with abdominal FMI R1, R2 and R3, with waist to height ratio and with StT, independently of gestational age, gender, breastfeeding duration, puberty stage, PA, socioeconomic status and total FM (all P<0.01)

Conclusion: Our study shows an inverse association between BW and indexes of abdominal adiposity in healthy adolescents, independently of total FM. These data may suggest that foetal nutrition, as reflected by birth weight, may have a programming effect on abdominal adiposity later in life.

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