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Relationship of birth weight with body composition in young adulthood

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Purpose

Low birth weight has been associated with an increased risk of cardiovascular (CV) events and diabetes in prospective studies. However, little information is available on potential underlying mechanisms.

We hypothesized that differences in body composition during adulthood could be a potential mediator for the inverse relationship between birth weight and CV events.

Methods

A population-based cohort study of healthy adults aged 25-41 years without prevalent cardiovascular disease, diabetes or body mass index >35kg/m² was investigated (GAPP-Study).

Birth weight was assessed by self-report, all participants were asked to obtain detailed information prior to their first study visit.

Bioelectrical impedance analysis was used to assess body composition in all participants.

Out of 2170 included participants, complete data of 1774 individuals were available.

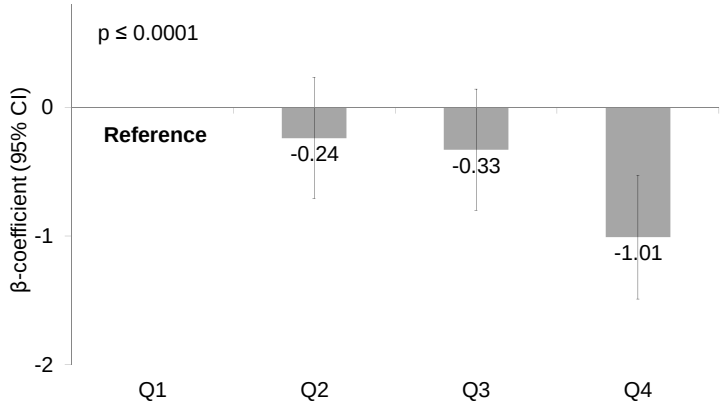
Multivariable regression models adjusting for potential confounders were constructed to assess the relationship between birth weight and body composition during adulthood.

Table Baseline characteristics over birth weight quartiles

	Q1	Q2	Q3	Q4
Birth weight	≤3050g	3050-3355g	3355-3700g	>3700g
Age, years	36.5	36.6	36.0	36.1
Sex (female) **	66.0	62.1	49.6	38.7
BMI, kg/m² **	23.4	23.6	24.2	24.6
Fat mass, % **	26.2	25.7	24.5	23.2
Muscle mass, % **	34.6	34.7	35.4	36.0

Data are medians or percentages . ** = p ≤ 0.0001; Q = quartile

Figure Fat mass levels over birth weight quartiles



Data are β-coefficients and 95% CIs adjusted for sex, age, BMI, eGFR, systolic BP, LDL-C,HDL-C, triglycerides, HbA1c, education, alcohol, vegetable/fruit consumption, physical activity and smoking. Q= quartile; CI= confidence interval

Results

Out of 1774 individuals, 53.4% were female. Median age was 37 years. Other baseline characteristics are shown in **Table.** Median (interquartile range) birth weight was 3355g (3050g; 3700g).

The main results are shown in the **Figure**. Across quartiles of birth weight, there was a highly significant decrease in body fat mass. In continuous analyses, the beta coefficient (95% confidence interval) per 100g increase in birth weight was -0.06 (-0.10;-0.03), p=<0.0001.

There was no significant relationship between birth weight and muscle mass. The beta coefficient (95% confidence interval) per 100g increase in birth weight was -0.002 (-0.03;0.03), p=0.91.

Conclusion

Among young and healthy adults, there was a highly significant inverse relationship between birth weight and body fat mass. This inverse association may mediate at least in part the adverse cardiovascular outcomes among individuals with low birth weight.

GAPP studie www.blutdruck.li

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ESC Congress – The European Society of Cardiology 2015, London, England

Disclosures: none