

# Abstract

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## Obesity and weight gain in adulthood and telomere length.

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**BACKGROUND:** Obesity and weight gain in adulthood are associated with an increased risk of several cancers. Telomeres play a critical role in maintaining genomic integrity and may be involved in carcinogenesis.

**METHODS:** Using data from 647 women ages 35 to 74 years in the United States and Puerto Rico (2003-2004), we examined the association between current and past anthropometric characteristics and telomere length in blood.

**RESULTS:** In a multivariate linear regression model, higher current body mass index (BMI) and hip circumference were inversely associated with telomere length. Higher BMI in the 30s was associated with shorter telomere length among women ages  $\geq 40$  years ( $P_{\text{trend}} < 0.01$ ). Weight gain since the age 30s ( $P_{\text{trend}} = 0.07$ ) and weight cycling ( $P_{\text{trend}} = 0.04$ ) were also inversely associated with telomere length. When current BMI and BMI at ages 30 to 39 years were considered together, the most marked decrease in telomere length was found for women who had overweight or obese BMI at both time points (mean telomere repeat copy number to single-copy gene copy number ratio = 1.26; 95% confidence interval, 1.21-1.30) compared with women who had normal BMI at both times (mean telomere repeat copy number to single-copy gene copy number ratio = 1.33; 95% confidence interval, 1.30-1.36).

**CONCLUSION:** These findings support the hypothesis that obesity may accelerate aging, and highlight the importance of maintaining a desirable weight in adulthood.

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