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## Correlation Between Telomere Length and Height and Weight

**Introduction:** The analysis aims to find out if there is any correlation between telomere length and height/weight, using the data of nearly 500,000 people in the UK Biobank. Other co-variants will be adjusted including demographics (age, race, sex, education level, income, and Townsend deprivation index), lifestyles (including smoking, alcohol consumption, and those listed in the International Physical Activity Questionnaire), and disease (diabetes, hypertension, and cardiovascular diseases).

**Methods:** The population is stratified as a disease population if participants have any one of the aforementioned diseases, and the population is stratified as non-disease if participants do not have any of those diseases. Data will also be stratified by men and women. Data will be analyzed using linear regression models in R language.

### Results:

**Height:** One unit increase in telomere length (Z-adjusted T/S log) is associated with a 0.097815 cm increase in height. Stratified analysis by disease status shows that the association between telomere length and height is stronger among people with at least one disease (diabetes, hypertension, and cardiovascular disease) (0.111310) than a population with no disease (0.092145). The correlation between telomere length and height is stronger for men (0.103952), and weaker for women (0.089014).

**Weight:** One unit change of telomere length is associated with -0.309277 kg weight. Stratified analysis for the non-disease population shows a weaker correlation between telomere length and weight (-0.283366), whereas stratified analysis for the diseased population shows a stronger correlation between telomere length and weight (-0.300939). The association between telomere length and weight adjusted for demographics only (-0.309277) is in between the estimate for men (-0.249287) and women (-0.348216) in stratified analysis. The correlation between telomere length and weight is stronger for women (-0.348216), and weaker for men (-0.249287).

**Conclusions:** In this study, a correlation is identified between telomere length and height/weight at statistically significant levels. This research is significant to public health because telomere length is found to be associated with aging, and this research can have implications for further research on the association between aging and height/weight. I achieved my overall goals.