Serum 25-hydroxyvitamin D and Ethnic Differences in Arterial Stiffness and Endothelial Function.

BACKGROUND: Vitamin D reportedly influences vascular function, which is worse in African Americans (AAs) relative to European Americans (EAs). It is not clear if ethnic differences in 25(OH)D mediate differences in vascular function. This study examined the relationships of serum 25-hydroxyvitamin D (25(OH)D) with indicators of vascular function among healthy, young AA and EA adults.

METHODS: This is a cross sectional study involving 23 AAs and 22 EAs. The main outcomes were augmentation index (AIx75), central aortic pressure, pulse wave velocity (PWV), flow-mediated dilation (FMD), and seated and supine blood pressures.

RESULTS: Results indicated that 25(OH)D was inversely associated with AIx75, supine systolic blood pressure (SBP), central aortic SBP and central aortic diastolic blood pressure (DBP), independent of age, sex, and percent body fat (standardized β = -0.29 to -0.43, P < 0.05 for all). AAs had greater AIx75 (P = 0.04) and PWV (P = 0.07) and lower FMD (P = 0.02) compared to EA after adjusting for age and percent body fat; further adjustment for 25(OH)D reduced the ethnic differences (P = 0.44, 0.53, and 0.20, respectively).

CONCLUSION: The 25(OH)D was associated with vascular function in healthy adults, and lower 25(OH)D among AAs may contribute to their greater arterial stiffness and reduced endothelial function (Clinical trials.gov NCT01041365, NCT01041547).